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Chapter 3: Challenges in determining the effectiveness of sustainability assessment

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3.1 Introduction

Considering the environment (including the place of human beings in it), and how best it might be managed, is really thinking about environmental governance. As an approach to environmental governance sustainable development is just one of many 'discourses'¹ which exist and we have previously made the point that it reflects a view that socio-economic development and environmental conservation are, to an extent, compatible goals and that socio-economic development is necessary (Bond and Morrison-Saunders, 2009). Not everyone shares this view and it is important to bear in mind that whilst this book assumes sustainable development is a good thing, proponents of 'deep ecology' (as just one example) would argue that sustainable development inappropriately favours an anthropocentric view of the world in which humans have a right to dominate nature (Grey, 1993; Jacob, 1994; Williams and Millington, 2004).

Sustainability assessment is based on an implicit premise that sustainable development is the appropriate discourse on environmental governance. The fact that there are other discourses on environmental governance has implications for whether sustainability assessment can ever be considered 'effective' as it is promoting a governance view which is not universally held. That said, Sustainable Development "*has become the dominant rhetorical device of environmental governance*" (Adger *et al.*, 2003, p.1095) and, therefore, could be argued to be the dominant discourse in environmental decision-making in most jurisdictions at present. In this context, sustainability assessment needs to be contributing to the achievement of sustainable development, and it is based on this assumption that this chapter and the overall book is written.

If sustainability assessment is to be of lasting value in shifting institutional decision-making towards less environmental and social damage and more just and lasting relations between natural and human systems, its effectiveness needs to be considered in terms of practice. But just how might 'effectiveness' be judged? This chapter identifies key issues that need to be considered when attempting to establish just how 'effectiveness' might be judged, and to set the scene for chapters that follow. In this book, we do not prescribe a singular and authoritative definition of sustainability assessment and what it should and should not involve, but some statement is warranted. Sustainability assessment is, to put it simply, a process that directs decision-making towards sustainability; it can be applied to any field of endeavour and any type of decision (derived from Hacking and Guthrie, 2008).

¹ Following Svarstad *et al.* (2008) we define a 'discourse' as a system of knowledge or beliefs – or a worldview in laypersons' terms

Whether a process like sustainability assessment delivers on its promise of increased sustainability depends a lot on the values and aspirations that frame the questioning. In any particular country, there will be legislative and procedural constraints that prescribe how sustainability assessment is undertaken and what happens to the information and advice it produces, but there will also be diverse values and opinions that provide foundations for political judgement about its effectiveness and what it delivers. This mirrors the case for Environmental Impact Assessment (EIA) where Fuller (1999) set out differing key stakeholder expectations as, amongst others, for proponents - certainty of outcome; for the public - the right to be heard; and for decision makers - a minimisation of delays.

This chapter sets out three key challenges that need to be considered when attempting to establish just how 'effectiveness' might be judged. In doing so, it sets the baseline for chapter 8 to develop a framework for evaluating effectiveness that is put to use in Chapters 9 through to 12 which describe and evaluate Sustainability Assessment as it is practiced in four very different jurisdictions.

Initially, our first challenge is to consider what might be contested, that is, the issues which are critical to Sustainability Assessment, but which have no single, accepted meaning or definition. We refer to these as critical debates in that they are central to the interpretation of Sustainability Assessment, and also there tends to be a spectrum of views between (often) polar opposites within each particular debate. Our discussion indicates just why Sustainability Assessment can deliver outcomes which are variously interpreted as being good or bad (effective or ineffective) by different stakeholders – even before we consider the questions of temporal and spatial scales in chapters 4 and 5 and legal and social pluralism in chapters 6 and 7 sustainability assessment. Our discussion also serves to provide some guidance to practitioners for how to design a sustainability assessment process.

Our second challenge is to consider how 'effectiveness' might be measured. Some considerable progress has been made by researchers in terms of categorising effectiveness and developing criteria and this work will be summarised. The third challenge relates to the issue of pluralism and the implications it has for the interpretation of effectiveness; a particular challenge being that effectiveness will be measured based on a framing that favours some views over others.

One of the key lessons from the chapter is that the criteria that have been developed to date do not fully address the critical debates and fail to accommodate pluralism, and this point is considered in the conclusions.

3.2 Critical debates

Below, we examine five critical debates that determine the trajectory of a sustainability assessment in practice. While we are sure there are more debates that we are not yet aware of, experience to date has exposed these five as especially deserving attention by practitioners when designing and undertaking a sustainability assessment.

3.2.1 Contested meanings of sustainable development

Definitions of sustainable development abound and, at least on the surface, it is easy to blithely define the concept. Drawing on the terms developed in the original Brundtland Report (World Commission on Environment and Development, 1987), most definitions revolve around integration of environmental, social and economic dimensions of development (e.g. expressed in terms of three pillars or a three-legged stool, the triple bottom line (see Elkington, 1997) or a Venn diagram with three intersecting circles). There is usually also some consideration of long-term time horizons with respect to giving consideration to future generations (i.e. inter-generational equity) and the overall environmental, social and economic conditions that they will inherit as a consequence of the decision currently being made. The key point is that different people and institutions have different understandings of the concept and frame sustainability differently (Bond and Morrison-Saunders, 2011).

This, however, requires some clarification of our use of the terms 'sustainable development' and 'sustainability' in this chapter. Some authors consider these to have very different meanings, and Lélé (1991) provided a semantic map which separated notions of sustainability from notions of development in which sustainable development = sustainability + development. Using a triple-bottom line approach, some might expect sustainability in terms of economic prosperity, social justice and environmental quality; but we will see that there are others who accept trade-offs between the three. Because of the contested nature of the definitions, we do not risk alienating readers and choose to use sustainability interchangeably with sustainable development. So, achieving sustainability means achieving sustainable development.

As one example (there are many others, see Bond and Morrison-Saunders, 2009) two conflicting framings of sustainability: weak and strong (Pearce *et al.*, 1993; George, 1999; Neumayer, 2010) are important to note which differ with respect to the treatment of natural and human-made capital (see, for example, Cabeza Gutiérrez, 1996). In summary strong sustainability does not permit the substitution of one of these types of capital for the other, while weak sustainability does as long as the total capital passed onto future generations does not decrease. Thus an example of a new road through pristine forest represents the weak sustainability position where a decline in natural capital is considered acceptable (and hence to be 'sustainable') provided the socio-economic benefits are considered to compensate for the environmental degradation. Most environmentalists would not accept this outcome as being truly sustainable, arguing that all social enterprise is dependent upon a healthy environment and therefore it is not acceptable to continue to erode natural capital. Others (Costanza *et al.*, 1997; Costanza *et al.*, 2007) suggest that considering the ways in which environmental services such as clean air, clean water, energy etc, are delivered into both natural and human systems is a useful way of understanding whether particular environmental relations are sustainable and whether, therefore, particular decisions are justifiable.

We suggest that most institutions, which traditionally have been aligned to the separate environment, social and economic 'silos', are biased at the very least according to whether they advocate strong or weak sustainability (and with further specific interests or biases if supportive of the weak position). Sustainability assessments undertaken in

England were found to lead to social and economic benefits relating to the appraised plans (Thérivel *et al.*, 2009) for the sample of 45 examined, but negative environmental effects (this is considered in more detail in Chapter 9). They did not find there to be explicit application of weak sustainability, rather this appeared to arise implicitly as a product of institutional bias.

There are many other contested aspects of sustainability that lead to different framings of the concept. Particular framings favour particular discourses and marginalise others. This potentially leaves sustainability assessment as a generic practice open to failure in the eyes of some observers! The key learning point is that a sustainability assessment must clearly establish the meaning of 'sustainability' or 'sustainable development' as it applies to that assessment for the benefit of all stakeholders in the process. This leads us to the second critical debate relating to the context of a sustainability assessment.

3.2.2 Sustainability and context

An assessment process should be context-specific (Bina, 2008), in that it needs to be flexible and adapt to the different dimensions of context (which Bina indicates are: values; cultural; political; and social). To illustrate the point, consider the notion of sustainability in different sectors. For a typical mining project in Australia, for example, a natural resource would be extracted from the earth and converted into another form; in doing so, land of significant value to Aboriginal people might be degraded. From a strong sustainability perspective, this is unsustainable; from a weak sustainability perspective it can be sustainable. However, is it really feasible to adopt a strong sustainability framing for a mining project where the only option (assuming recycling cannot meet demand) is not to supply raw materials which are in demand? In such a context, one decision has already been made – that development of the resource is needed. In many cases, this changes the context against which sustainability is judged because extraction somewhere is a given. However Howitt (2011, p.142) argues that “*context matters – the historical, geographical, social and cultural context in which we undertake research fundamentally shapes what we come to know*”. This suggests that the interpretation of sustainability is dependent both on the decision-context (of those in power), and on the context defined by time, place and culture (and in the mining example, the land degradation cannot be acceptable to the Aborigines). This reinforces one of the imperatives set out by Gibson in chapter 1: that sustainability assessment must respect the context. However, ‘context’ itself is a plural concept.

This may lead to sustainability assessment being perceived as problematic because it may imply that the meaning of ‘sustainability’ is uncertain and it may not lend the process substance and allow outcomes of different assessments, each of which may claim to represent sustainability assessment practice, to be compared. The key learning point is, like for critical debate 1, that the meaning of sustainability must be established to avoid confusion or conflict among sustainability assessment stakeholders; the difference is that this must take into consideration the context in which development and decision-making will occur for that sustainability assessment, so we cannot establish the meaning of sustainability once in one sustainability assessment, and copy it for others (Pope and Morrison-Saunders make this clear in their review of pluralism in practice – chapter 7).

3.2.3 Contested time horizons and spatial boundaries

Definitions of sustainable development invariably refer to intra- and intergenerational equity with a very specific consideration of equity in present generations and the level of capital passed down to future generations (whether a weak or strong framing of sustainability prevails). However, evidence suggests that the timescales considered in sustainability assessments are intra-generational at best and, often, are constrained by the nature of the lifetime of the plan or project being assessed (Bond and Morrison-Saunders, 2011). The situation is complicated by arguments that intra- and intergenerational equity are, to an extent, mutually exclusive in that protecting natural capital for future generations does so at the expense of today's poor (Barrett and Grizzle, 1999).

Examples of contested time frames are provided by Rich and Brent Stoffle in Chapter 4. What these indicate is that, again, different stakeholders will have different views as to the appropriate timescale to consider in any assessment and there is no simple argument for one view being better than another. Assessment over long timescales is difficult, which may be a reason that it is rarely attempted. In the context of predicting impacts, Gee and Stirling (2004) distinguish between *risk* (where impacts and their probabilities are known), *uncertainty* (where impacts are known but their probabilities are not) and *ignorance* (where neither impacts nor their probabilities are known). Over very long timescales, predictions in sustainability assessment are likely to be based on both uncertainty and ignorance. There is little practice on which to draw for such predictions, and certainly no follow up studies. Just because something is difficult does not mean that it should be ignored. The key learning point here is that the time frames of a sustainability assessment need to be explicitly identified - as with the previous critical debates, clear unambiguous communication is paramount for effective practice.

Similarly, one of the big drivers of changes in environmental governance in late 20th Century was the challenge of cross-boundary environmental effects (Schrage and Bonvoisin, 2008), in which the jurisdiction responsible for making decisions and receiving benefits from a decision was different to the jurisdiction in which environmental or social costs were being met. The spatial separation of causes and effects and the development of increasingly sophisticated global institutions and processes for environmental governance means that the spatial boundaries and scales at which sustainability effects of any decisions are assessed cannot be restricted to a single jurisdiction and need to consider the ways in which cross-boundary and cross-scale effects operate. Sanden and Howitt take up these concerns in more detail in Chapter 5, but the key learning point from this is that while sustainability assessment will always be framed in a particular jurisdictional and institutional setting, that setting itself needs to be considered in terms of its historical and geographical context and the ways in which boundaries of sustainability effects are considered needs to be well-justified and explicitly discussed.

3.2.4 Holism versus reductionism

Sustainability assessment typically requires the derivation of indicators, or criteria, which can be used as measures of the state of the socio-economic and biophysical environment and are therefore used as the basis for predictions where a change is proposed (Bockstaller and Girardin, 2003; Donnelly *et al.*, 2007). They also provide the basis for comparing alternatives. However, there is a debate over the degree to which a sustainability assessment should be reductionist and the degree to which it should be holistic (Bell and Morse, 2008). Reductionism we define as breaking down complex processes to simple terms or component parts; for example, selecting a few sustainability indicators to represent the sustainability of a whole system. Steinemann (2000, p.640) defines a holistic approach as one which facilitates “*moving away from analyses of isolated risks and toward a broader understanding*”.

Evidence currently suggests that the emphasis in sustainability assessment is very much on reductionism, but that the degree of reductionism varies a great deal within particular jurisdictions. For example we previously reported on variance within sustainability assessment practice in England as well as great contrast with practice in Western Australia simply with respect to the number of indicators applied (Bond and Morrison-Saunders, 2011). These sustainability assessments can be criticised by observers for using the wrong indicators, or too few indicators. From a pragmatic point of view, a large number of indicators leads to an unwieldy, time consuming and expensive sustainability assessment exercise, and there have already been calls in England to reduce the number of indicators used (Institute of Environmental Management and Assessment, 2006). The reality of the application of sustainability assessment is that some indicators will suggest benefits of particular alternatives, and others will suggest negative impacts for the same alternatives; this inevitably leads to trade-offs and changes the focus of decision making from sustainable development to delivery of the 'least worst' outcome. The key learning point here is that the choice of indicators will determine the characteristics of sustainability considered in a sustainability assessment and consequently the types of alternatives considered and selected in decision-making. This can lose sight of the bigger picture and those involved in a sustainability assessment need to take a step back from time-to-time to reflect on the relevance of the indicators and to satisfy themselves the right things are being measured.

3.2.5 Process versus outcomes

Just as monitoring and follow-up studies provide the ultimate test for effectiveness of EIA in achieving its environmental protection goals, it is the outcomes and legacy of sustainability assessment into the future that will establish the ultimate sustainability credentials of any decision-making process. The long time frames for sustainability considerations mean that points of follow-up and verification may not occur for a considerable time period. This underscores the necessity to get the decision right before action occurs.

Because the nature of any assessment is to 'think before you act' or, in more technical terms, to attempt to predict the future consequences of a proposed activity, a lot of effort is invested in ensuring that a sound or effective process is followed. However there is

no guarantee that a 'good process' will ensure delivery of the assessment goals; i.e. that it will automatically equate with good or sustainable development once the proposed activity becomes operational and changes to the physical and social environment actually occur.

This critical debate can be explored by considering the role of courts in assessment disputes. One particular issue, considered by Donna Craig in Chapter 6, is that the courts tend to focus on procedural compliance and not outcomes. Courts typically ensure that steps set out in legislation have been adhered to, but do not (usually) have jurisdiction over the implications of decisions made after assessments are complete (discretion to interpret assessments is left to the elected representatives who tend to make the final decisions). This is not to say the courts are not performing a useful function, the issue is more that legislation is established to ensure assessment takes place (in the name of sustainable development) but does not require sustainable development to ensue. The key learning point here is that a sustainability assessment process must be carefully designed both in terms of the processes to be followed as well as the outcomes that are intended to be delivered. Ideally these would be explicitly stated and linked wherever appropriate. Further, there is an overwhelming need to ensure that institutional commitment to monitoring and follow-up in sustainability assessment is matched by a willingness to undo decisions that prove, with hindsight, to be more damaging than anticipated.

3.3 Measuring effectiveness

Having outlined some of the key challenges with designing and undertaking sustainability assessment in practice, our second challenge is to consider how 'effectiveness' of a sustainability assessment process might be measured. Determining whether an assessment process is 'effective' seems to be a shared goal for academics, investors and policy makers alike. There are literally hundreds of academic papers which consider the effectiveness of environmental assessment, but what do these researchers mean when they consider 'effectiveness'?

An early attempt to take a global look at the effectiveness of environmental assessment was coordinated by the International Association for Impact Assessment and culminated in the 'International Effectiveness Study' (Sadler, 1996). In this study 'effectiveness' was defined as "*whether something works as intended and meets the purpose(s) for which it was designed*" (Sadler, 1996, p.37). However, operationalising this concept to break down the measurement of effectiveness into criteria which can be used as the basis for evaluation is more complex, although progress has been made.

Three types of effectiveness are defined by Sadler (1996):

- *Procedural* – which indicates the extent to which the assessment process properly follows established, or legally mandated, procedures;
- *Substantive* – which indicates the extent to which the goals, or objectives, of the assessment process have been met (this might mean a more sustainable outcome);
- *Transactive* – which considers the extent to which the substantive outcomes are delivered efficiently in terms of cost and time.

Another type is introduced by Baker and McLelland (2003):

- *Normative* – the extent to which the assessment facilitates the achievement of the normative goals. Normative goals are those which are derived from a combination of social and individual norms. There is no universal definition of what such norms are (Gibbs, 1965), but they tend to be considered as standards which society expects conformance with (irrespective of whether we do conform). In the context of sustainability assessment, these norms reflect what we expect the sustainability assessment to achieve, and how it achieves it.

When examining the effectiveness of EIA, Cashmore *et al.* (2004) concluded that the research focus to date has been largely procedural (a typical, and worthwhile, example is Wood, 2003), with some rare inclusion of substantive elements (see, for example, Jones *et al.*, 2005). Theophilou *et al.* (2010, p.137) focus on what they argue to be the “*least-researched types of effectiveness*” which they consider to be substantive and transactive. So there is some agreement that our understanding of effectiveness is somewhat limited to a narrow set of easily measured parameters dealing with legal procedures. Cashmore *et al.* (2004) make it clear, however, that substantive outcomes of assessment processes are important, but are significantly complicated by the plurality of views on what the purpose of the assessment might be. That purpose needs to be agreed before we can expect different stakeholders to agree that sustainability assessment has been effective. The progress which has been made in the past by studies like the International Effectiveness Study (focussing on EIA) has been based on a defined purpose for assessment (in the 1996 study on EIA this was: to facilitate sound decisions in which environmental considerations are included; and to support the goals of environmental protection and sustainable development).

So we can categorise types of effectiveness and conclude that we know little about how well assessment processes perform except procedurally. A special issue of the journal *Impact Assessment and Project Appraisal* examined further the consideration of effectiveness in impact assessment and concluded that, at present, the “*notion of effectiveness as some sort of absolute measure is untenable*” (Cashmore *et al.*, 2009, p.93). This suggests that dividing the evaluation of effectiveness into categories (procedural, substantive, transactive and normative) and developing criteria under each of these categories to test against particular examples of sustainability assessment will not tell us whether it is effective. Why? Because a key consideration in evaluating substantive and normative effectiveness is the pluralism (by which we simply mean that there is more than one view) associated with discourses related to the purposes of sustainability assessment. We now explore the relationship between pluralism and effectiveness in more detail (the third challenge).

3.4 Pluralism and effectiveness

Pluralism in the context of environmental decision-making is discussed by Adger *et al.* (2003). They emphasise that different actors will have different values regarding desirable decision outcomes (for example whether a solution should be sought that favours one species over another), but they also have values based on different ethical premises (for example whether benefits should be maximised in total, or whether the equitable distribution of benefits should be the goal). In the context of sustainability

assessment, the message is that pluralism complicates our consideration of effectiveness because there are different views both on what effectiveness means, and the underpinning arguments for the different views.

Arguably those in charge of setting the objectives for a sustainability assessment are determining the context for effectiveness (Elling, 2009) and, therefore, the developer and the authorities are likely to control the process. Evidence that such control is exerted in the assessment process was found by Cashmore *et al.* (2008) through an in-depth study of environmental assessment cases in the UK, where powerful stakeholders controlled the process, including the selection of other stakeholders to become involved, and the methods to be used. In the context of pluralism, this means that, of all the discourses that might exist regarding sustainability assessment and its purposes, it is the actors who wield power that get to impose their own discourse, both through setting the goals of the assessment and through control over those who are engaged such that only those sharing the same discourse were included. This brings our discussion back to questions of environmental governance and the institutional arrangements governing decision-making, accountability and assessment. The need for assessment to operate in the context of power was emphasised by Richardson (2005). So different discourses over the purposes of sustainability assessment exist, but typical practice favours some of those discourses at the expense of others. To put it bluntly, the views of some people are actively ignored which manipulates the assessment.

Hommel *et al.* (2009) cite a case where they consider ‘superfluous knowledge’ to have been generated in an EIA because it did not address the perceptions of all stakeholders in decision making. They also indicate, in a review of the assessment process associated with a proposed extension of Rotterdam port that decision makers could use knowledge in a strategic way which was at odds with the views of specific stakeholders. In this particular example, knowledge on ecological impacts was derived from modelling studies and from expert knowledge; however, some modelling work was completed after experts gave their initial views. The experts then wanted the opportunity to re-appraise the impacts, but the decision makers chose to re-interpret their original findings themselves in the light of the modelling results. This reinforces the point made about power above, but here the focus is on knowledge generated in the assessment which will subsequently inform decisions.

Elling (2009, p.130) insists that assessment processes should aim for outcomes of mutual understanding in terms of “*truth, rightness and truthfulness*”. O’Faircheallaigh (2009) argues, in the context of decision processes which have historically excluded Aboriginal peoples in Australia, that control of the assessment process by indigenous people is an essential prerequisite of effectiveness. Van Buuren and Nooteboom (2009) argue that effectiveness relies on collaborative dialogue to achieve consensus and frame reflection. Owens *et al.* (2004, p.1943) argue that assessment processes should “*provide space for dialogue and learning in the making of policies*”. All of these authors, although taking different perspectives and working with different assessment tools, have reached a common conclusion that pluralism has to be accommodated by the assessment process.

Bond *et al.* (2011) emphasise that each sustainability assessment process should be undertaken with an explicit aim of 'learning while doing' because this engenders an approach whereby discourses are not assumed, including those surrounding what the goals of the sustainability assessment might be. Cashmore *et al.* (2010, p.371) concur with this approach in concluding that "*learning derived from analysing the meaning and implications of plural interpretations of effectiveness represents the most constructive strategy for advancing impact assessment and policy integration theory*". Thus, we should not assume there is a correct model for sustainability assessment, rather, we should consider practice to be a learning experience in terms of the accommodation of different views and the generation and legitimate use of relevant knowledge. For this reason, Jenny Pope and Angus Morrison-Saunders explore current practice related to the accommodation of pluralism in chapter 7.

3.5 Conclusions

The five critical debates examined in this chapter demonstrate how values and circumstances can influence the way observers view the effectiveness of the sustainability assessment process. We strongly advocate that each of these five debates concerning sustainability definition and context, time horizons and spatial boundaries, being holistic and whether process or outcome based must be clearly articulated to stakeholders from the design stages onwards in a sustainability assessment process. Failure to communicate these effectively will create uncertainty that will undermine the credibility of the sustainability assessment.

We have also examined the term 'effectiveness' and have begun to understand the different ways of conceptualising it. Underpinning all these has been pluralism and the need to accommodate it and learn from practice. So what scope is there to move forward and develop sustainability assessment such that it can satisfy the effectiveness discourse of a wide variety of stakeholders?

Pluralism underpins all the challenges. The five critical debates illustrate how pluralism leads to contested views which inevitably affect interpretations of effectiveness. The challenge of measuring effectiveness makes it clear that particular criteria for sustainability assessment can be selected and examined in an objective way, but the derivation of the criteria can emphasise particular viewpoints in relation to the five critical debates, and therefore bias the evaluation that is undertaken. In chapter 8, we build on these challenges to develop a means of evaluation that can accommodate the pluralism.

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