

## Transition Challenge for Sustainability Assessment

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### Abstract

We are particularly interested in the transition of traditional impact assessment into sustainability assessment (SA) to help deliver the 'Green Economy', which is analogous with environmentally sustainable development. We present five theoretical and practical challenges that practitioners face when attempting to implement SA and suggest ways forward to address these, based on our own observations of SA practice in England and Western Australia and some key published works. The SA challenges that we address are (1) agreeing on the meaning of sustainability, (2) tailoring the definition of sustainability for the decision at hand, (3) factoring in long-term time horizons, (4) maintaining a holistic approach, and (5) delivering sustainable outcomes (not just sustainability oriented processes). We provide discussion and examples of each followed by a concluding section in which we reflect on the way ahead with respect to the challenges of transitioning to the green economy through SA.

### Introduction

The concept of the 'Green Economy' is analogous with that of environmentally sustainable development. Our particular interest lies in the transition of traditional impact assessment into what we refer to as sustainability assessment (SA). Simply defined SA is a process that directs decision-making towards sustainability (derived from Hacking and Guthrie 2008); in the context of 'traditional' forms of impact assessment this might occur at project (EIA - environmental impact assessment) or strategic (SEA - strategic environmental assessment) levels, but this broad and simple definition is inclusive of other forms of decision-making too. This paper presents a series of theoretical and practical challenges that practitioners face when attempting to implement SA and offers suggested solutions or promising pathways that attempt to address these. It is based on our own observations of SA practice in our respective countries as well as some key works from the published literature. Our paper is aimed at practitioners interested in pushing the boundaries of SA practice and presents a summarised précis of the issues only.

The SA challenges that we address in turn are: agreeing on the meaning of sustainability; tailoring definition of sustainability for the decision at hand; factoring in long-term time horizons; maintaining a holistic approach; delivering sustainable outcomes. These are followed by a concluding section in which we reflect on the way ahead with respect to the challenges of transitioning to the green economy.

### **Challenge 1: Agreeing on the meaning of sustainability**

Definitions of sustainability abound and, at least on the surface, it is easy to blithely define the concept. 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 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. It is not our intention to review the literature regarding different definitions of sustainability. Ultimately the 'devil is in the

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detail' and the key point is that different people and institutions have different understandings of the concept and frame sustainability differently (Bond and Morrison-Saunders, in press). By way of comparison the concept of 'environment' in EIA is generally not contested (notwithstanding that different definitions are applied in different jurisdictions around the world).

The first key challenge when conducting SA is therefore to define or frame the concept of sustainability such that stakeholders share an understanding of its meaning. In the spirit of sustainable development, a SA might be expected to simultaneously deliver environmental protection and enhancement, improvements to human well-being and economic growth (colloquially known as a win/win/win outcome). For a project-based decision on resource development of a greenfield site (e.g. mining), it may not be possible to deliver a positive environmental outcome since some impact on the environment must occur and it may not be possible to provide a suitable offset for that impact (i.e. meaning an outcome of lose/win/win).

This highlights two conflicting framings of sustainability: weak and strong (George 1999) 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 the previous lose/win/win outcome for the greenfield mining project example 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.

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). Therivel *et al.* (2009) found SAs undertaken in England to lead to social and economic benefits relating to the appraised plans (sample of 45 examined) but negative environmental effects. They did not find there to be explicit application of weak sustainability, rather this appeared to arise implicitly as a product of institutional bias. Examples of private proponent driven SA from Western Australia point to more explicit acceptance of a weak sustainability approach (Pope *et al.* 2004, Morrison-Saunders and Fischer 2006).

There are many other contested aspects of sustainability that lead to different framings of the concept. While most if not all governments aspire, through policy, to sustainable development, different framings of the concept favour particular discourses and marginalise others. It leaves SA as a generic practice open to failure through trying to be 'jack of all trades...master of none' (Bond and Morrison-Saunders 2009) and highlights the need for individual institutions to be explicit about their own conception and prepared to challenge intrinsic bias.

### ***Challenge 2: Tailoring definition of sustainability for the decision at hand***

Whereas the concept of 'environment' in EIA practice is largely uncontested within a given jurisdiction, sustainability is not so straightforward. The integrated and relatively complex concepts bound up in the notion of sustainability may not necessarily always be possible to deliver in a single SA process. Recalling our definition of SA at the outset of this paper, it is clear that the sustainability considerations for a decision on a mining project will be very different from those for a land-use plan or other more strategic types of decision. Consequently an important first step is to define the meaning of the term in the context of the decision at hand. This may lead to SA 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 SA practice, to be compared.

Bina (2008) argues that the SEA system should be context-specific, in that it needs to be flexible and adapt to the different dimensions of context (which she indicates are values, cultural; political; and social). We agree that the consideration of context is all-important, but would suggest that it is not just the SA method which needs to accommodate the context, it is also the framing of sustainability.

### ***Challenge 3: Factoring in long-term time horizons***

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, in press). 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).

In the UK, a process to identify a waste management strategy for the legacy of radioactive waste needs to consider impacts over 100,000 years, as this is the timescale over which the waste will be considered to be a potential hazard. However, regulators won't accept a safety case made for the radioactive waste disposal for a period greater than 300 years because that is the longest period they have confidence that institutional control can be guaranteed (CoRWM, 2006). 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 SA 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.

### ***Challenge 4: Maintaining a holistic approach***

SA 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 therefore used as the basis for predictions where there is an intervention (Bockstaller and Girardin, 2003; Donnelly *et al.*, 2007). However, there is a debate over the degree to which an SA 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 (i.e. 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 SA is very much on reductionism, but that the degree of reductionism varies a great deal within particular systems (e.g. in England and Western Australia)(Bond and Morrison-Saunders, in press). These SAs 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 SA 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 SA 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 (see challenge 5) and changes the focus of decision making from sustainable development to delivery of the 'least worst' outcome.

### ***Challenge 5: Delivering sustainable outcomes (not just sustainability oriented processes)***

Just as follow-up studies provide the ultimate test for effectiveness of EIA in achieving its environmental protection goals, it is the outcomes and legacy of SA 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. While we applaud the increasing interest in utilising SA approaches that appears to be occurring worldwide, we are concerned that emphasis on process may come at the expense of outcomes. The previous challenges underscore elements of process that can be problematic. One mechanism for ensuring that sustainability outcomes are not overshadowed in SA processes is to formally require accounting for any trade-offs that occur in decision-making. We strongly advocate application of the decision-making trade-off rules espoused by Gibson et al (2005) in which proponents of development (and decision-makers in turn) must be required to mount an argument or explicit justification for any trade-offs made, that net gains to capital must be delivered (e.g. through offsets), that significant adverse impacts must be avoided unless the alternative is worse, that displacement of negative effects to the future must be avoided unless the alternative is worse, and that the trade-off process is an open one involving affected stakeholders. Ultimately trade-offs are matters of choice so having an open and accountable process for dealing with them is essential if sustainability outcomes are going to be maximised.

## Conclusions and Recommendations

In order to aid transition to a green economy and attain sustainable development, SA offers a refreshingly new approach to impact assessment practitioners. However, more than ever before we need to be on our guard to ensure that the decision-making processes we formulate and implement are well thought through and truly capable of delivering sustainable outcomes. We have identified five challenges for SA practitioners and with respect to these we make the following recommendations.

- Agreeing on the meaning of sustainability: Through open discussion with affected stakeholders, define or frame the concept of sustainability so that a shared understanding of its meaning is established. In doing so, be prepared to encounter and unearth institutional bias as well as alternative understandings of the concept.
- Tailoring definition of sustainability for the decision at hand: Ensure that the definition of sustainability agreed on for any given SA is workable or achievable in the context of the decision being made. This is particularly challenging in some sectors, such as mining, where environmental resources are consumed. We would advocate a definition which still aims at strong sustainability, which requires environmental offsets to be negotiated.
- Factoring in long-term time horizons: Ensure that the conception of sustainability utilised in a given SA accounts for long time-frames into the future and explicitly identifies what these will be. The subsequent assessment should actively consider what impacts will be inflicted on future generations and what capital they will inherit. In common with other forms of Impact Assessment, SA deals with uncertainty and ignorance badly and this needs to form the basis for future research effort to ensure we can have confidence in long-term forecasts.
- Maintaining a holistic approach: Explicitly justify and account for indicators selected for use in a SA. During each step of the assessment, actively reflect (with appropriate documentation) on the original goals and objectives for the decision-making process and the conception of sustainability adopted to ensure that the 'big picture' is being taken into account.
- Delivering sustainable outcomes: Ensure every SA process includes an open and accountable process for addressing decision-making trade-off rules. Choices should be aligned to maximising the deliverable outcomes for all aspects of the conception of sustainability adopted for the assessment process.

Every apparent weakness of SA that we have identified is equally a potential strength. We don't wish to discourage practitioners from embarking on the application of SA over traditional approaches to impact assessment. Rather we simply urge practitioners to be vigilant, rigorous, transparent and accountable every step of the way. We believe that effectively constructed and implemented sustainability assessment offers great promise for successfully transitioning to a green economy.

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