



Special Issue on Data and Scale Issues for SEA, E. João (Guest Editor)

# A research agenda for data and scale issues in Strategic Environmental Assessment (SEA)

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## Abstract

The way in which Strategic Environmental Assessment (SEA) succeeds in its key aim – to integrate the environment into strategic decision-making – is affected by the choice of both data and scale. The data and scale used within SEA fundamentally shape the process. However, in the past, these issues were often not discussed in an explicit or in-depth way. This article proposes a research agenda, and recommendations for future practice, on data and scale issues in SEA. Future research on data issues, spatial and temporal scales (both in terms of detail and extent), tiering, data quality and links to decision-making are recommended. The article concludes that questions of data and scale in SEA are not just technical, they are essential to identifying and understanding the issues that SEA should be addressing, and therefore are a core element of SEA.

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## 1. Introduction

This article is about data and scale issues in Strategic Environmental Assessment (SEA). This topic goes to the heart of the SEA process in more ways than one. From a pragmatic point of view, data is essential as it can be argued that data is needed in order to carry out an SEA. From a quality perspective, the choice of ‘appropriate’ data and respective scale (both temporal and spatial) are also key, as different data (or scale) might produce different outcomes to the SEA process. In more philosophical terms, data issues are also fundamental in terms of what the SEA process is about. Namely, should issues identified by the SEA process work as a ‘cookie-cutter’ to select the data

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needed or should data collection precede the identification of key issues? One overall-arching theme discussed in this article is what should come first — data or issues.

The article starts by discussing the links between SEA and decision-making (Section 2). Ultimately, which data (and which scale) is chosen, depends not only on the needs of the SEA process but also on the requirements of the decision-making that the SEA is informing. SEA data issues are discussed next (Section 3), taking into account that SEA is composed of different topics (e.g. biodiversity, health, water) and can be applied to different sectors (e.g. transport, forestry) — all with many different data and scale needs. Section 4 proposes a research agenda related to scale issues in terms of scale effects, spatial and temporal scales, and choice of both the amount of detail and the extent of the study. Tiering versus multi-scale analysis is discussed in Section 5, in terms of scale choice for each tier and also in terms of the need to investigate the interaction or dialogue between those tiers. The study of data quality, metadata and uncertainty issues is fundamental considering the importance of generating results that decision-makers and the public can trust. This is covered in Section 6. Section 7 discusses the importance of researching the possibility of data and/or scale abuse. This is the rare occasion when data and/or scale might be chosen by corrupt practitioners or politicians as a way to get a preferred result. Finally, Section 8 concludes the article.

## 2. Links between SEA and decision-making

SEA is a tool that intends to inform decision-making processes related to proposed policies, plans and programmes. Therefore, a discussion on which data and scale are needed for SEA should start with understanding the nature of SEA and how it intertwines with the decision-making associated with proposed strategic actions. The ultimate aim of SEA is *not* to carry out the SEA *per se* but to use the SEA to achieve the best possible strategic decision (João, 2005a). Therivel (2004, p. 209), for example, concludes her book with the following statement, while talking about what hopefully will happen in the future:

“... decision-makers will start ‘thinking SEA’ while they develop their strategic actions. Instead of perceiving SEA as a separate process that is ‘done on’ their strategic actions, they will start integrating environmental and sustainability thinking into their strategic actions ... to the point where ultimately, hopefully, SEA will make itself (and this book) redundant”.

The established best-practice way to achieve this is through an ‘integrated model’, which assumes that strategic actions are subject to multiple stages of decision-making and attempts to integrate SEA into each of those decisions (Therivel and Partidario, 1996).

More research is needed on how data collection and analysis matches the needs of decision-making processes. For example, in terms, of what are the data and scale needs for *informal* decisions and also *how timely* it is all done. SEA needs to keep pace with the often swift decision-making (see Partidário, 2007-this issue). This also means that SEA might need to rely on less ‘data-hungry techniques’. Therivel (2004, p. 162), for example, suggests that “quick-and-dirty techniques may be the only ones that can keep up with a rapid decision-making process”. It is also crucial to research how best SEA can interact at the ‘appropriate points’ in the decision-making process — the so called “decision windows” (ANSEA Team, 2002). From an environmental point of view, it can be argued that the key decision windows of concern to SEA are when critical choices are made which have *significant* environmental consequences.

Other ‘real world issues’ related to data collection (and scale choice) are what can be called the ‘pragmatic aspects of SEA’. In other words, how resources (e.g. money, staff) – or lack of them –

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