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Global megatrends and their implications for environmental assessment practice

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ABSTRACT

This paper addresses the future of environmental assessment (EA) practice in light of a rapidly changing world. We apply a literature review-based methodology to firstly identify key global megatrends and then reflect upon the implications for EA practice based on some known challenges. The key megatrends identified are synthesised into six categories: i) demographics, ii) urbanization, iii) technological innovation, iv) power shifts, v) resource scarcity and vi) climate change. We then discuss the implications of these megatrends for EA practice against four known EA challenges namely: dealing with i) complexity and uncertainty, ii) efficiency, iii) significance and iv) communication and participation. Our analysis suggests important implications for EA practice such as: increased difficulties with accuracy of prediction; the need for facilitative adaptation; an increase in the occurrence of unexpected events; higher expectations for procedural efficiency; challenges with information and communication management; dealing with significance judgements; and mitigation amidst resource scarcity and increasing pressures on earth systems. The megatrends underscore the need for continued evolution of EA thinking and practice, especially moving away from seeking a predictable single future or outcome towards the possibility of multiple scenarios with associated adaptability and enhanced system resilience capable of responding to rapid change.

1. Introduction: a rapidly changing world

Environmental Assessment (EA) is arguably one of the most successful environmental policy interventions of the past four decades being now applied in almost 200 countries (Morgan, 2012). EA is founded on the basic premise that it makes sense to consider consequences before decisions are made and actions taken (Caldwell, 1989). EA is predicated on the founding assumption that future development can be anticipated and formally planned for, in a relatively static world. However, the world in which EA was initially introduced during the 1960s and 70s was very different from that of today and, moreover, it is predicted that humanity is now entering a period of potentially unprecedented and even more rapid global change driven by human activities, the so-called Anthropocene (Steffen et al., 2015). These global changes are typically referred to as megatrends (Sadler, 1996; Sunter, 2013).

The Oxford English Dictionary defines a megatrend as "an important shift in the progress of a society or of any other particular field or activity" (oed.com). Ilbury and Sunter (2004) note that the term megatrend is frequently used within the scenario planning literature, especially as a particular step in scenario planning methodology, where it is commonly understood to mean those global influencing factors which have a high degree of certainty but over which there is little control. Megatrends therefore refer to trends that are global and call for strategies for adaptation, rather than strategies for effecting change to the trends themselves. Because understanding these trends is highly relevant to major fields of human 'development' such as economics, agriculture, energy, urban planning, resource planning, etc. a body of practitioner literature around megatrends has emerged in recent years (EEA, 2015; KMPG, 2012; PWC, 2014; EY, 2015; Hajkowicz et al., 2012; Vielmetter and Sell, 2014). The earliest example in the EA literature we can find where explicit reference is made to megatrends and subsequent implications for EA practice is the effectiveness of environmental assessment study by Sadler (1996). In this instance Sadler (1996) drew attention to

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megatrends in the context of thinking about the future of EA, but with little suggestion as to what the implications for EA practice might be. The topic has since received scant attention by the EA community. Given the wide ranging implications of megatrends, and the inherent challenges they pose, we are interested in how EA practice might need to adapt to remain an effective and value adding policy implementation intervention into the future.

Since EA emerged in the 1970s, it has been adapted to changing circumstances and government rhetoric. For example with the advent of the sustainable development discourse, entrenched in global policy after the Rio 'Earth Summit' in 1992, it has generally been interpreted as a tool for achieving sustainable development (Sheate, 2010; Pope et al., 2013; Morrison-Saunders et al., 2014; Bond, 2015). This adaptation has led to changes in the scope of assessments, and also general improvements over time in the extent to which the process engages with citizens. Going forward it is clear that there will be a continuing need for EA to evolve and adapt in light of current and future trends and challenges. The megatrends are global and will likely play out in different ways within the different jurisdictions in which EA takes place depending upon the process and capacity characteristics and specific environmental and social setting. However some common challenges and experiences can be expected. It is thus timely to reflect on what the implications of current global megatrends might be for EA practice, and how EA practice might change or adapt if it is to remain as the decision-aiding tool of choice for countries across the globe. Thus the aims of this paper are to:

1. Identify consensus on the key global megatrends;
2. Reflect upon the implications of the key global megatrends for EA practice based on four main challenges.

The next section describes the identified key global megatrends. This is followed by a discussion on the implications of the megatrends for EA practice framed against four challenges. In light of these challenges and implications we conclude in the final section by making recommendations for future EA research, especially the need to identify specific strategies to deal with the different implications.

1.1. Identifying key global megatrends

In order to address the first aim of identifying consensus on key global megatrends we conducted a literature search on the term 'megatrends'. Since the academic literature on megatrends is limited, our approach focused on internet search engines rather than academic databases. We identified mainly work from the business sector that operates at a global level and recognises the strategic importance of considering megatrends in forward planning. Megatrend reports have been produced recently by global accounting and management consultancy firms KPMG (2012), EY (EY, 2015), Hay Group (Vielmetter and Sell, 2014) and Price Waterhouse Coopers (PWC, 2014), as well as research organisations such as the Australian Commonwealth Scientific and Industrial Research Organisation (Hajkowicz et al., 2012) and the European Environment Agency (EEA, 2015). This 'grey' literature is not peer-reviewed, but arguably it does reflect the agendas and policies of multilateral agencies and global companies; as such it reflects the current scenario planning focus of international organisations that drive practice in resource management. Consensus is defined as agreement across the source literature whereby at least five of the six sources must identify the megatrend. This definition is pragmatic: requiring complete consensus would limit the number of megatrends identified for analysis.

For the purposes of our analysis we prepared a matrix, shown in Table 1, listing our sources against the megatrends identified therein. The sources included in Table 1 cover a total of 16 recently identified megatrends. The purpose of the matrix analysis, however, was to identify megatrends that are common to the majority of sources, suggesting some level of consensus, or at least convergence. In doing so, we adopted the labels and descriptions employed in each study, some of which overlap with labels used in different reports. The analysis identified the following six categories of key global megatrends to be common in some form to five or more of the sources, namely: i) rapidly changing demographics, ii) rapid urbanization, iii) accelerated technological innovation, iv) power shifts, v) resource scarcity and vi) climate change. Each of these is introduced in more detail below. However, it is stressed that these key megatrends all interact and therefore there is no suggestion that these trends could be isolated or should be considered in isolation. For example changing demographics is also reflected and influenced by urbanization, and power shifts are made possible by accelerated technological innovation. Furthermore, we acknowledge that there are regional variances across the different trends and that some have been ongoing in certain regions. For example, demographic trends differ widely between regions and the impacts of urbanization have already been felt for a considerable time, particularly in the developing world. However, notwithstanding these regional differences, the global interconnected nature of the world means that global megatrends warrant consideration across regions. For example, the young demographic profile and low levels of urbanization in Africa has implications for other regions in terms of migration patterns, trade, consumption, etc.

Table 1
Megatrend matrix analysis.

International megatrends	Selected megatrends literature					
	European Environment Agency (2015)	KPMG (2012)	PWC (2014)	EY (2015)	Hajkowicz et al. (2012)	Vielmetter and Sell (2014)
1. Rapidly changing demographics	✓	✓	✓	–	✓	✓
2. Rapid urbanization	✓	✓	✓	✓	✓	–
3. Accelerating technological innovation	✓	✓	✓	✓	✓	✓
4. Power shifts	✓	✓	✓	–	✓	✓
5. Resource scarcity	✓	✓	✓	✓	✓	✓
6. Climate change	✓	✓	✓	–	✓	✓
7. Global health risks	✓	–	–	✓	–	–
8. Continuing economic growth	✓	–	–	–	–	–
9. Ecosystem pressure	✓	–	–	–	–	–
10. Increasing environmental pollution	✓	–	–	–	–	–
11. Diversifying approaches to governance	✓	–	–	–	–	–
12. Individualism	–	✓	–	–	–	✓
13. Economic interconnectedness	–	✓	–	✓	–	–
14. Public debt	–	✓	–	–	–	–
15. Entrepreneurship rising	–	–	–	✓	–	–
16. Technological convergence	–	–	–	–	–	✓