



**Emerging Issues Paper:
State of Environment Reporting
& other planning/reporting
tools**

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THE LINKAGE BETWEEN STATE OF THE ENVIRONMENT (SOE) REPORTING AND OTHER PLANNING/REPORTING TOOLS

This document provides information on emerging issues that may affect the future state of the environment. The purpose of this paper is to draw attention to issues in preparation for the next state of environment reporting cycle.

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Introduction

State of the Environment (SoE) reporting aims to provide comprehensive and science-based information on environmental conditions and trends considered important for decision-making (United Nations Environment Program Division of Environmental Information and Assessment (UNEP/DEIA), 1996). The purpose of SoE reporting is thus to support decision-making by providing reliable information on the environment, and its value lies in transforming fragmented data into meaningful information that can be used for decision-making or awareness-raising (UNEP/DEIA, 1996; New Zealand Cabinet Policy Committee (POL), 2007). This is supported by those involved with reporting in South Africa, where for example, the SoE outputs are “intended to provide valuable information on the North West Province’s environment, in line with the province’s commitment to sustainable development and principles of Agenda 21” (North West Department of Agriculture, Conservation and Environment (NW DACE), 2003).

SoE reporting initiatives have always had the essential aim to reach and inform planning/management processes and decision makers. The means to best achieve these aims is, however, a learning curve – and is the focus of this essay.

Since the United Nations Conference on Environment and Development (UNCED; United Nations, 1992) and the adoption of the Rio Declaration on Environment and Development, the world began to recognise the need for improved environmental information to assist with effective environmental management. The international community continues to look for ways of providing such information in a manner that facilitates more informed decision-making and management. Indicators for monitoring progress are seen as an important tool for decision makers at a number of scales, and

environmental monitoring and assessment is noted as “a key prerequisite for the achievement of policy objectives” (United Nations Economic Committee for Europe (UNECE), 2007). Notably, the fourteenth session of the United Nations Commission on Sustainable Development (UNCSD) acknowledges that indicators of sustainable development, if effective, can

‘... increase focus on sustainable development and ... assist decision makers at all levels to adopt sound national sustainable development policies. ... Indicators of sustainable development have large potential to assess sustainability of economic, social and environmental development, to assist political priority setting, to measure effectiveness of strategies and policies, and to assist communication among stakeholders, governments and the public at large’ (DESA/DSD/2006/2).

However, this same report notes that currently the influence of indicators, indices and reporting systems on actual policy and practices often remains limited. This suggests that the development and refinement of such indicators and systems should be a central concern, particularly for improving environmental (in the broad sense) information available for decision making.

This short essay discusses South African experiences in attempting to achieve the aims of SoE reporting, and leads to some preliminary recommendations for developing effective connections with planning / management processes. Countries around the world have chosen a variety of means to address the aim of integrating environmental information into relevant processes, and these examples are also described in this essay as a starting point for suggesting possible ways forward for South Africa.

Discussion

In South Africa, the South Africa Environment Outlook (SAEO) (© 2006) contains information on a wide variety of complex, interconnected aspects of the environment, which have the potential to be useful in planning and management processes. The benefits of effective reporting initiatives such as SoE reporting, are:

- Helpful to depict the existing condition of systems that are complex, multi-faceted and interdependent
- Facilitating evaluation of the performance of various management actions and policies implemented
- Alerting users to impending changes in social, cultural, economic and biophysical systems (McCool and Stankey, 2004).

In each case, changes in the SoE data condition have the potential to trigger significant policy and legal actions, with equally important social and economic consequences. South Africa has made considerable progress with SoE reporting implementation; however, experience has confirmed operational and technical challenges to the process. Muller *et al.* (2006) note that SoE reporting in South Africa is 'undertaken as a stand-alone process. Reports are completed and disseminated but do not logically fit into any specific decision-making process, thereby reducing the impact of their primary purpose – to influence decisions' (Muller *et al.*, 2006).

These authors summarise the following interlinked challenges:

- Absence of legal requirements for reporting (while there is a requirement for providing access to environmental information, the SoE reporting process is not a legal mandate)
- Absence of formalised arrangements (i.e. poorly defined roles) for reporting at most government levels

- Disagreement regarding standardisation of reporting
- Lack of alignment of reporting within and between levels of government.

A review of international literature highlights that several countries experience similar shortcomings. National case studies of environmental reporting in Asia and the Pacific (Thailand Environment Institute (TEI), 2008) note constraints to the use of report recommendations and findings as:

- Inconsistencies in environmental laws and application
- Weak monitoring and enforcement
- A lack of proper economic incentives
- The integration of environmental concerns into wider sectoral policies is incomplete.

The UNECE (2007) records that for the countries of Eastern Europe, Caucasus and Central Asia (EECCA), technical figures and the use of jargon pose a difficulty for decision makers and the public to understand the causes and effects of environmental conditions, to link these with economic and social developments, to assess the cost-effectiveness of policy implementation or to make comparisons with other countries. For Western European countries, a central challenge is noted to be that the systems for monitoring and gathering environmental information are “insufficient and wasteful” (i.e. they generate excessive amounts of data on subjects which do not require priority attention, while not focusing on providing timely and relevant information on other subjects where there is an urgent policy need) (UNECE, 2007).

Improving the link between SoE reporting and other processes

Despite the current challenges outlined above, a variety of potential solutions can be proposed – the suggestions in this section stem from an analysis of South African and international literature on monitoring and reporting.

Muller *et al.* (2006) put forward that as a basis for improvements to the SoE process, reporting should, amongst other interventions, be integrated with strategic planning and management. In particular, planning tools such as the National Spatial Development Perspective, Provincial Growth and Development, and Integrated Development Plans of local government are highlighted as potentially relevant planning/management processes within which to streamline SoE outlook results.

In order to achieve this, suitable ***institutional arrangements*** are required. Links should be made between the monitoring/reporting authority and those responsible for implementation of sustainable development priorities in other government departments and organisations. This is supported by the United Nations Development Programme – United Nations Environment Programme (UNDP-UNEP) Poverty-Environment Facility (www.unpei.org), which notes sustained/long-term governance arrangements as being central to effective mainstreaming of environment linkages into development planning. It is noted that scales/levels of government have different focus and priority areas (and therefore different input requirements from SoE reporting processes), therefore these different levels of government are discussed in the sections that follow.

A good example of such arrangements can be seen from New Zealand, where at a national level the findings of “Environment New Zealand” provide a platform from which to engage key sectoral groups and the public on their cross-government sustainability work programme. The links are made between these different role-players through both the *physical sharing and integration of information from key reports* developed by each set of role-players, as well as through the establishment of a steering group containing key representatives from appropriate agencies. The policy/decision making link is thus created when the *steering group reports back to their respective portfolio ministers* with advice on the need for any new or strengthened policy initiatives (POL, 2007). In addition, following the release of

"Environment New Zealand", *officials are responsible to assess the findings of the report in relation to existing central and regional government work programmes and industry initiatives*, to focus attention on those concerns requiring further action (POL, 2007). Importantly, the New Zealand Minister for the Environment works alongside the reporting team to *champion* the use of the results by others – for example, by presenting the outputs and expectations for further action to the New Zealand Cabinet Policy Committee amongst others (POL, 2007) to raise their profile and urgency. The SoE reporting process should aim to stimulate improved communication within government departments, and between these departments and the wider community, on the spectrum of environmental issues.

This approach is carried through to regional levels of government, where for example, the SoE report is *aligned with Community Outcomes and the eight overarching goals of the Auckland Sustainability Framework (ASF)*. The project manager states that "doing this leverages the consensus obtained during the development of the ASF and avoids duplication of time, effort and resources" (Auckland Regional Council, 2008). Then, the reporting results will also *inform the Auckland Regional Policy Statement (ARPS)*, so that information on social, economic and environmental conditions and trends can directly link to policy review and development (Auckland Regional Council, 2008).

A further example, from a local level of government, is the New South Wales (NSW) initiative to integrate their SoE report into management planning. The SoE report forms *part of the council's annual reporting cycle, and directly feeds into the management planning each year* (NSW, 2000). To do this, the information requirements to ensure the reports link are that:

- The management plan must be sufficiently detailed and comprehensive to provide the persons monitoring the environment and preparing the SoE report know the key areas that should be included;

- The SoE report should include the issues identified in the management plan, as well as identifying other environmental issues affecting the area. It may even go so far as to suggest tangible and achievable responses to those issues (NSW, 2000).

The local government approach, similar to approaches at higher scales in New Zealand, also ensures that a *close working relationship* between the Strategic Planning Unit and the SoE co-ordinator is adopted. These officials are responsible for maintaining the link between both processes.

In parallel to establishing the necessary institutional networks and profile for the dissemination of environmental information, the ***science (i.e. methodology, and data collection and analysis)*** behind the monitoring and reporting system must continue to be enhanced. The purpose behind improving the technical process that forms the foundation for dissemination of environmental information via SoE reports, is to ensure that the results produced are sound and based on the latest scientific understanding. This plays a critical part in ensuring that role-players regard the monitoring and reporting process/products as adding value to their work, and meeting their needs.

There are many possible approaches to the improvement of environmental reporting processes; however Sustainability Science researchers are involved with a particularly innovative investigation of environmental management, which highlights some potentially useful suggestions for SoE reporting¹.

¹ SoE reports are not the same as sustainability reports – each has its own structure and purpose. However, there is much that the science of sustainability can add to SoE reporting in terms of the manner in which the environmental system is understood and its trends interpreted. This learning is highlighted in this essay.

Sustainability Science research focuses on subjects of transdisciplinarity, resilience, complexity and systems theory, and adaptive management².

Complex systems can be described using ten characteristics (summarised in Box 1). These characteristics are critical to consider when attempting to measure and interpret indicators of social-ecological systems (or SES).

The indicators used to monitor the sustainability of such systems must be carefully chosen to *take into account the system's structure*, and be able to measure and describe key interactions and feedback loops taking place within them. In order to effectively and most accurately interpret the indicator results, the indicator framework used must involve the construction of a *meaningful context or basis for the indicators*, so that the results can be understood within this context. The development of such an indicator framework is complicated because of the very nature of a complex system (as described in Box 1). However, the thinking of the Resilience Alliance outlined in the sections that follow may provide a basis from which to begin.

Gunderson and Holling (2002) identify three properties which appear to influence the response of ecosystems, institutions and individuals to change:

- The 'potential' available for change:

This determines the range of options possible. 'Potential' sets limits to what is possible; it determines the number of alternative options for the future.

- The degree of 'connectedness' between internal controlling variables and processes:

This is a measure that reflects the degree of flexibility or rigidity of such controls (i.e. their sensitivity to external variation). 'Connectedness'

² See Burns *et al* (2006), Gunderson & Holling (2002) and Burns & Weaver (eds) (2008), for Sustainability Science research outputs.

determines the degree to which a system can control its own destiny – as distinct from being caught up by external variability.

- The 'resilience' of the system:

This is a measure of the vulnerability of the system to unexpected or unpredictable shocks. 'Resilience' determines how vulnerable the system is to unexpected disturbances and surprises that can exceed or break the system's internal control. 'Resilience' is measured by the amount of disturbance that can be absorbed before the system changes its structure, by changing the variables and processes that control behaviour.

Box 1: Characteristics of complex systems (Cilliers, 1998)

Sustainability Science recognises that systems are complex, and must be researched and treated as such. Cilliers (1998) discusses some key characteristics of complex systems. These are usually open systems consisting of a large number of elements. The interaction between these elements is rich, dynamic and non-linear. The complexity emerges as a result of the patterns of interaction between the elements. While interactions between elements tend to be fairly short-range, they have wide-ranging influence – since the interaction is rich, the route from one element to any other can usually be covered in a few steps. As a result, the influence gets modulated along the way. It can be enhanced, suppressed or altered in a number of ways. Complex systems also have a history. Not only do they evolve through time, but their past is co-responsible for their present behaviour. When we look at the behaviour of a complex system as a whole, our focus shifts from the individual element in the system to the complex structure of the system (Cilliers, 1998).

A shift to viewing the environment using thinking like that presented above should prove useful in refining the types of indicators included in the monitoring set; promoting the move toward those that track connectedness, key controlling variables and critical feedback loops (i.e. understanding how the system is functioning), in addition to those that measure factors identified as important to the locality (i.e. whether specific values and needs

are being met). At present, attention is focussed on the latter without adequate understanding of the former; reducing the effectiveness of the information produced by the monitoring for decision making. Interventions to improve the robustness of the technical process within SoE reporting will support the ability of those responsible for information dissemination to the variety of target audiences, to do so effectively. It should be noted that this shift in thinking does not imply that the types of reporting products developed for various stakeholders (policy makers vs. school-level learners) will change; rather their content may be presented using the latest framework.

Conclusion

SoE reporting, although a relatively new environmental tool in South Africa, has already made some progress in highlighting the importance of understanding environmental issues and incorporating this information into decision making. However, many factors currently limit the effectiveness of SoE reporting and in the worst case scenario, this could lead to the reports not being compiled or used at all.

As has been shown in this essay, links can be improved through interventions in institutional arrangements and the scientific/technical process behind the SoE reporting process. Both activities will facilitate enhanced value of the reporting products in planning/reporting processes, allowing SoE reporting to support these other established planning/reporting processes to a greater extent.

Those responsible for SoE reporting should focus on advancing the indicator science in each specialist field included in the process. In particular, methods to measure qualitative or integrative aspects of the environment and its management require attention. Improved science behind the

indicator sets should aim to allow for stronger statements to be made about the current condition of the theme or issue concerned in relation to the bigger environmental and developmental context. These are not political statements, but rather concise information on how policy decisions and the actions of society are truly affecting the environment. Therefore while SoE reports are not sustainability reports (and do not need to be), they must be able to make known the environmental effects of policy decisions and resultant actions that are made in the context of sustainable development.

According to adaptive management principles, SES sustainability is strongly determined by context and history and must, therefore, be promoted at the local scale (Kates and Parris, 2003) with strong links to influences from higher/broader scales. Key in this regard is the local formulation of a management vision for an SES and the design of correlated monitoring and reporting systems to track the achievement of this vision. As stated by Norton (2005), "once indicators are chosen, the deliberation of the participants will naturally turn to the question of setting goals and substantive criteria applicable to the indicators. ... choices of indicators can fulfil the dual function of defining the self-identity of a community and incorporating community values into the environmental management process".

Lastly, Owens *et al.* (2004) suggest that an important role for processes such as SoE reporting "may be that of providing spaces for dialogue and learning in the making of policies and decisions". This is important in terms of developing the capacity of all role-players to manage and live within their ever-changing environment, and it is suggested that SoE reporting processes can focus on being a "learning space" for decision makers, as the links between SoE reporting and other planning/management processes are improved. The learning promoted is in relation to the role-players' understanding of their 'environment' for use in improved decision making (in other words, it supports other planning/management processes that they are

involved in), and is not learning about the SoE reporting process itself. The institutional arrangements for developing the working relationships between role-players will likely prove critical in fostering this dialogue and learning.

References

Auckland Regional Council. (2008). *State of the Environment Project Plan*, Version 1.0. Auckland Regional Council.

Cilliers, P. (1998). *Complexity and Post-modernism: understanding complex systems*. Routledge, London.

DESA/DSD/2006/2. (2006). *Global Trends and Status of Indicators of Sustainable Development*. Background Paper No. 2. Fourteenth session of the Commission of Sustainable Development. United Nations Department of Economic and Social Affairs, Division of Sustainable Development.

Gunderson, L. and Holling, C. (eds) (2002). *Panarchy: Understanding transformations in human and natural systems*. Island Press, USA.

Kates, R. W. and Parris, T. M. (2003). Long term trends and a sustainability transition. *PNAS*, 100(14): 8062-8067.

McCool, S.F. and Stankey, G.H. (2004). Indicators of Sustainability: Challenges and Opportunities at the Interface of Science and Policy. *Environmental Management*, 33(3): 294 – 305.

Muller, E., Pretorius, R. Patrick, M., Will, C., Binedell, M. and Ramasar, V. (2006). The State of State of the Environment Reporting in South Africa. *Journal of Environmental Assessment, Policy and Management*, 8(2): 111-134

Norton, B.G. (2005). *Sustainability: A Philosophy of Adaptive Ecosystem Management*. The University of Chicago Press, Chicago

NSW. (2000). *Management Planning for NSW Local Government*. Appendix 5 – Integrating the SoE report with the management plan. New South Wales Local Government, New Zealand.

NW DACE. (2003). *North West Province Environment and Sustainable Development Summit*. Keynote address by MEC B.E.E. Molewa, Department of Agriculture, Conservation and Environment, North West Province, June 2003.

Owens, S., Rayner, T. and Bina, O. (2004). New agendas for appraisal: reflections on theory, practice and research. *Environment and Planning A*. 36: 1943-1959.

POL. (2007). *Environment New Zealand 2007 – National-level State of the Environment Report*. Cabinet Paper prepared by the Office of the Acting Minister for the Environment for the Cabinet Policy Committee, POL (07) 386.
<http://www.mfe.govt.nz/state/reporting/cabinet-paper-enz-07.html>

Taylor, B. Green, W. and Phipps, H. (2004). *Missing Links: Connecting science with environmental policy*. Report compiled for the Office of the Parliamentary Commissioner for the Environment, Wellington.

TEI. (2008). National Case Studies of Environmental Reporting in Asia and the Pacific. PowerPoint Presentation by the Thailand Environment Institute, 9 September 2008.

UN. (1992). *Rio Declaration on Environment and Development*. Rio de Janeiro, Brazil. <http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm>

UNDP-UNEP. (No date). *Mainstreaming Environment into National Development Planning*. UNDP-UNEP Poverty-Environment Facility. [Online]. <http://www.unpei.org>

UNEP/DEIA. (1996). Rump, P. *State of the Environment Reporting: Source Book of Methods and Approaches - UNEP/DEIA/TR.96-1*. Division of Environment Information and Assessment, United Nations Environment Programme. Nairobi, Kenya

UNECE. (2007). *Environmental Monitoring: Making monitoring and assessment an effective tool on environmental policy*. Prepared by the UNECE Secretariat for the Economic and Social Council Committee on Environmental Policy, ECE/CEP/2007/7.