Chapter 31

Integrated Sustainability Assessment: an update on latest developments

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Abstract

The chapter describes the framework and approach of Integrated Sustainability Assessment (ISA) as proposed in the three-year long MATISSE project, which ended in 2008. An update on ISA and its use is offered covering the period since the project ended. The objective is to highlight that the ISA framework provides a coherent approach that is capable of structuring effective sustainability assessment processes in a wide range of contexts and supporting programmes of implementation. Its capacity to bridge between top-down and bottom-up initiatives and to work towards harmony between them is receiving increasing and wide recognition. The chapter highlights the growing role and influence of ISA in relation to global scale sustainability challenges.

31.1 Introduction

The MATISSE project – Methods and Tools for Integrated Sustainability Assessment – represented an innovative approach to developing methods for non-deterministic prospective sustainability analysis, proposing a constructive form of sustainability assessment as a complement to evaluative forms. The project was motivated by the desire concern to support the European Commission Impact Assessment (EC IA) procedure, which had been reviewed independently by consultants during its first years of operation (2003- 2008) as well as in the MATISSE project, and found then to take place "too late" in the policy development process and to have an "end of the policy pipeline" character. Concerns identical to those raised in the Matisse project were still being raised by the Commission's own Impact Assessment Board in respect of Impact Assessments made in 2012 (European Commission, 2013), corroborating the MATISSE critique and suggesting that, several years on, Commission IA could still benefit from taking up some of the MATISSE recommendations.

The contribution of the MATISSE project nevertheless has a wider significance than EC IA, and the approaches developed in the project are applicable to policy and decision making contexts across a broad spectrum from the strategic level to more mundane operational levels in both formal and informal contexts.

It was argued in the MATISSE project that to secure more sustainable development it is not sufficient to screen strategies, policies and decisions for their prospective impacts after these have been tabled. Rather, a more constructive form of sustainability assessment is needed as a complement to screening assessments to help integrate sustainability considerations into the design of strategies, policies, and decisions from the start. Furthermore, under conditions of uncertainty, the overall process of designing and implementing interventions should be seen as continuous and interactive. The process is more usefully conceptualised as one of adaptive management, in which policies and decisions take on qualities as experiments to be monitored and learned from, rather than as a process that assumes outcomes will be as they have been projected. Thus the approach that the MATISSE project developed, Integrated Sustainability Assessment (ISA), can be used to support sustainability reporting processes (i.e. as an accompaniment to implementation processes) as well as to support the design of interventions.

ISA is well documented (Weaver and Rotmans, 2006; Jäger et al., 2008; Rotmans et al., 2008) as an innovative approach to sustainability assessment that differs from more formally institutionalised assessment procedures embedded in established policy processes. ISA is more a process designed to support stakeholders as they seek ways to address problems of unsustainability in their implementation context. ISA is therefore action-focused and is potentially a complement to more formalised and institutionalised assessment procedures. The present paper, therefore, is less concerned to reflect on differences between ISA and other assessment modes, and instead seeks only to describe the overarching conceptual and methodological framework of the ISA

approach. The objective is more to show that the ISA framework offers a coherent approach to sustainability assessment that is capable of structuring and supporting effective sustainability assessment processes that can support implementation in a wide range of contexts, and that can cut across and bridge different scale levels.

The ISA framework is described briefly in section 31.2. Recent developments in how ISA is being used are outlined in section 31.3. The concluding section 31.4 comments on the role of ISA in supporting global scale sustainability as an assessment-supported bottom-up process.

31.2 The ISA framework and approach

As proposed and defined within the MATISSE project as a form of sustainability assessment fit for constructive purposes (see Figure 31.1), ISA is defined as "a cyclical, participatory process of scoping, envisioning, experimenting, and learning through which a shared interpretation of sustainability for a specific context is developed and applied in an integrated manner in order to explore solutions to persistent problems of unsustainable development." (Weaver and Rotmans, 2006; Weaver *et al.*; 2008; Weaver and Jordan, 2008).

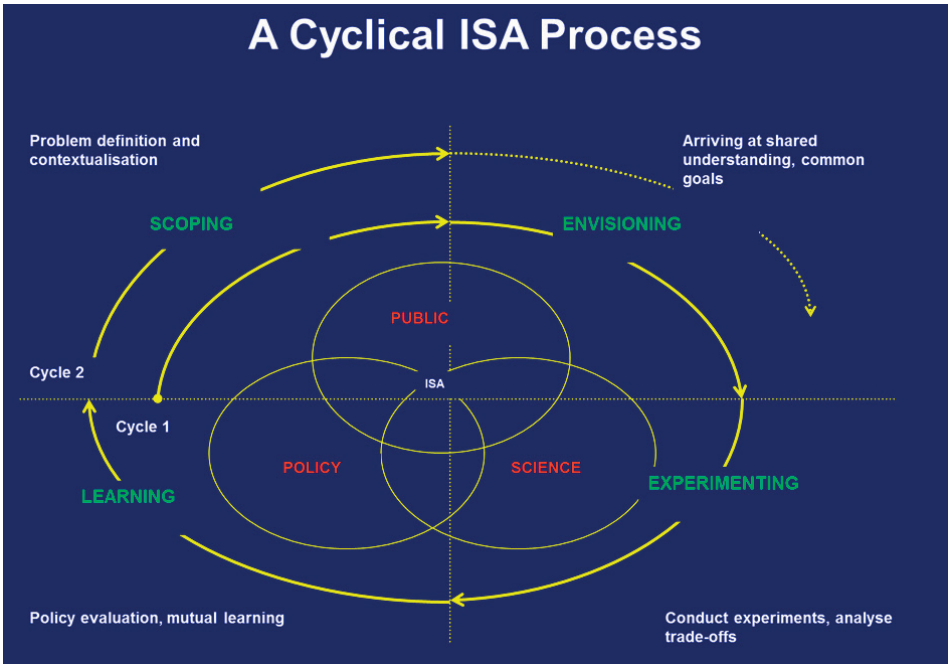

Figure 31.1 A Cyclical Integrated Sustainability Assessment Process (Source: Weaver and Rotmans 2006; Weaver et al., 2008; Weaver and Jordan, 2008)

Methodologically, ISA combines three elements: an integrated systems analysis, which seeks to secure a broad scope for the assessment; a multi-level and agent-based analytical approach, which seeks to understand multi-level processes that could lead to structural change; and a cyclical participatory process architecture, which seeks to promote social learning among stakeholders through dialogue, experimentation, and capacity building. To handle the complexity of sustainable development, ISA employs scale- and domain-transcending exceeding concepts, such as stocks, flows, and agents, and uses multiple time horizons that may extend over generations. ISA, therefore, has a cognitive dimension, a process dimension, and an analytical dimension (Weaver et al., 2008). It brings together an integrated systems analysis and a participatory process involving a selection of relevant stakeholders and actors. The integration of stakeholders selected to represent different perspectives and interests is a basic requirement of ISA to develop a rich and robust interpretation of sustainability for a specific context, including what is at "stake" and what it is that stakeholders seek to "sustain". The cognitive, analytical, and process dimensions are integrated within the assessment to deliver outcomes at the end of each stage or iteration of the ISA cycle, such as context-specific interpretations of sustainable development, visions of desirable futures, scenarios, and strategies for approaching problems and their solution. This includes the possibility of using ISA to help set voluntary limits and thresholds.

The elements and stages of the ISA cycle (scoping, visioning, experimenting, and learning) are, therefore, very different from those of traditional policy assessment as regards the purpose of stakeholder participation and the approach to engaging stakeholders in the assessment. The more open and informal the ISA process, the more likely it is that participants will be able to engage creatively with it, since this frees them from the usual institutional constraints that bind them to conventional approaches and interests. The iterative cycle is used here for heuristic purposes (see: Tuinstra et al., 2008).

ISA calls for broad participation of stakeholders in the initial scoping and envisioning stages to provide a diversity of perspectives on problem causes and solutions, and to identify niche development approaches that may be more sustainable than currently dominant approaches and that might be up-scaled (and potentially empower their associated agents and stakeholders). However, in later stages of the cycle, it calls for more limited and selective participation of those with agency. This focus on agents and agency is needed for understanding relationships among agents and modes of interaction, which are important for stimulating and steering prospective transitions. The learning stage of an ISA assessment and subsequent iterations of an ISA cycle may evolve through the reframing process as key stakeholders and those with agency redefine the issues, their own understandings of theirs and others' self-interests and roles, and the possibilities for establishing new development and policy paradigms that widen the opportunities for problem-solving.

The analytical dimensions of ISA are similarly characterised by concern for understanding multi-level processes that might lead to transition, and how these might be influenced. ISA requires modulation between scales and levels within a single sustainability assessment process. A transition approach also requires an approach to analysis and experimentation that is vision-led, pathway-driven, and process-focused. In practical terms, this requires models and approaches able to analyse and explore structural and institutional changes, multi-level change processes, supply-side constraints and demand-side management, behavioural differences *and* changes of behaviour, non-linear phenomena, and uncertainty and its different sources.

Since the perspectives and values of stakeholders are critical for scoping problems of unsustainable development, for developing a sustainability vision, and for collecting a wide set of ideas about solution possibilities, ISA combines an "in context" participative process that engages stakeholders with an analysis that uses tools designed to support and integrate social learning. Rather than assume conformist and "rational" economic behaviour, the modelling tools seek, for example, to represent a range of different behaviours, including anticipatory and learning behaviours that accommodate the possibility that stakeholders' behaviours will change as an outcome, inter alia, of their interactions. This contributes to the innovative nature of ISA. Jäger et al. (2008) describe and report on agent-based models developed in the MATISSE project, for example for exploring sustainability transition in the transport sector.

31.3 Recognition for ISA and ISA uptake

ICIS was a major contributor to MATISSE. The scientific coordinator of the project, Jan Rotmans, was based at ICIS when the project proposal was developed and submitted, and several members of ICIS staff contributed to the instigation and conduct of the project, including Pim Martens. The present author – now also an ICIS staff member – was also a party to the consortium as a member of the core management team and as leader of the work strand devoted to developing the conceptual, theoretical, and methodological foundations of (ISA). The author also guided and monitored experiments with the ISA concepts and methods in a set of case studies.

Upon its completion, the independent evaluators of the MATISSE project unanimously rated the project as excellent. The MATISSE project has since been recognised as among the most successful of the Framework Programme projects in its domain. The ISA method has gone on to be used as the methodological framework for many other projects, especially projects of action research in the domain of sustainable development, such as the "In-Context" project. The project also provided the methodological underpinnings of the recently completed VISION RD4SD project that engaged those in the science policy, science funding, and science management communities alongside sustainability scientists in a process of reflection over how to

harness science efforts for sustainable development. That project and its outcomes are separately reported by the present author in this volume.

The purpose in this section, therefore, is to present an example that highlights the growing influence of ISA in terms of wider recognition and uptake of the approach. The illustration concerns recommendations to the UN and its High Level Political Forum on Sustainable Development for monitoring and reporting sustainable development progress and parallel development of the recently released Prototype Global Sustainable Development Report (PGSDR). It was chosen because it illustrates the scale- and application-spanning aspect of ISA, which provides for ISA to be useful in a wide range of sustainability assessment and sustainability governance contexts.

The context is set by the request of Governments at the Rio+20 meeting for the UN to produce a Global Sustainable Development Report (GSDR). Up to that point, there was "no global sustainable development report that comprehensively looks at global progress and future outlook in a truly integrated way"; i.e. that would take account of the range of perspectives in different scientific communities across the world (see: Foreword, United Nations, 2014). A review of sustainable development progress at the global level has since ensued as a collaborative effort involving over 2000 scientists and 50 staff from 20 UN entities from all world regions, resulting in the production of a prototype global sustainable development report.[60] The prototype report illustrates a range of potential content and discusses overall directions for the GSDR. The prototype also maps sustainable development assessments and related processes, reflecting on how best to produce the GSDR given the needs it is intended to serve.

The primary role of the GSDR is to provide input to the deliberations of the High-Level Political Forum on Sustainable Development. There are also other potential roles. According to the Foreword of the Prototype Report, the GSDR could also report on global progress toward the achievement of the sustainable development goals (SDGs), once they have been established in 2015 (see also the Chapter in this volume on design of the SDGs), could provide scientific evidence for linking global goals with the necessary means of achieving them, and could help improve the science-policy interface for sustainable development as called for by UN Member States at Rio+20 (Foreword, United Nations, 2014).

In the context of designing the process through which GSDR will be produced, the collaborating scientific experts were charged with recommending forms of sustainability assessment appropriate for the future monitoring and reporting of global sustainable development status and progress. Through this process, the experts specifically identify and nominate ISA – as developed through the MATISSE project – as a candidate

[60] A first draft of the Executive Summary of the Prototype Global Sustainable Development Report was launched at the inaugural session of the High-level Political Forum on Sustainable Development on 24 September 2013. Following review and further stakeholder consultations, the Executive summary of the Prototype Global Sustainable Development Report was released in June 2014. The full report was launched on 1 July 2014.

assessment approach for producing the Global Sustainable Development Report. Noting that sustainability assessments "differ greatly in terms of scope, scale, organization, process, participation, resources and perceived policy relevance" (United Nations, 2014), and grouping assessments into broad categories based on distinctions among them,[61] the experts drew attention in their report to some core issues informing this decision to recommend consideration of ISA.

The experts note that reviews of sustainable development progress provide evidence that "impressive gains in some areas over recent decades have come at the expense of worsening trends in other areas" (United Nations, 2014, p.103). They conclude from this that integrated assessment is needed to monitor inter-linkages between issues and themes.[62] They note also that views differ across governments, civil society groups, academia, and the public on the progress made, remaining gaps, and ways forward toward sustainable development. They point out that policy recommendations derived from short-run and narrower approaches are often contradictory to those predicated on longer-run, broader considerations. From this they conclude that there is a need for the scale and time frames for assessment to be appropriate in relation to the issues of concern.[63]

They also point out that *scientific* assessments of progress can sometimes lead to rather different results compared to *institutional* assessments, where progress is measured against agreed goals or commitments. While acknowledging that scientific and institutional assessments are both important, the experts draw attention to differences in their nature; specifically, that "a traditional monitoring report focused on progress toward SDGs might not by itself strengthen the science-policy interface, let alone strengthen the science-policy-society interface, which also requires involvement of stakeholders." The experts, therefore, argue the case for a participatory assessment process with stakeholder involvement. Furthermore, they state that bottom-up processes are useful for identifying new and emerging issues. Issues identified through such processes have been found to differ significantly from those highlighted top-down, for example by experts, which suggests that to achieve greater balance in the Global Report it is useful to allow for a wide range of participation through multiple channels.[64]

[61] Three broad groups are distinguished: intergovernmental scientific assessments; scientific-technocratic assessments; and scientific research collaborations.

[62] They comment that "separate assessments and goals exist already for all the thematic areas currently on the agenda of the Open Working Group on SDGs", but that what is currently lacking is an integrated assessment for identifying alternative future pathways that resolve trade-off and build synergies between policy actions. This argues for a pro-active, constructive, goal-seeking, and prescriptive assessment process based upon scenarios and integrated assessment.

[63] "A global scale and the time frame of the next two generations until 2050 – together with intermediate milestones – has proven to be a reasonable choice for addressing – in an inter-generationally equitable way – many of the issues on the sustainable development agenda, such as eliminating poverty and hunger; enabling livelihoods; feeding, nurturing, housing, and educating everyone; securing peace, security and freedom; and preserving the Earth's life support systems" (United Nations, 2014, p.103).

[64] The experts point out that many countries and some regions have established processes to prepare sustainable development reports, many of which are supported by local scientific communities and feature

Following up on these observations and lines of argument, the experts advise considering the implementation of modern ISA as an appropriate assessment process for supporting the development of the GSDR. They complement this recommendation with the definition, description, and explanation of ISA, outlining its character as "a cyclical, participatory process of scoping, envisioning, experimenting and learning" as was defined set out by the MATISSE project. The recommendation quotes the same words and phrases to describe ISA as were first elaborated in the MATISSE project and cites the core references concerning the theoretical, conceptual, and methodological origins and development of ISA.

31.4 Conclusion

Increasingly, ISA is being recognised as useful in supporting bottom-up approaches to addressing problems of unsustainable development, for example by providing frameworks for action research on the part of sustainability scientists, frameworks for community and citizen-led initiatives in citizen science, and frameworks for sustainability governance of adaptation and similar initiatives. The features embedded in the framework and processes of ISA are increasingly becoming recognised as those likely to be needed for orienting and coordinating myriads of bottom-up initiatives so that these are supportive and respectful generally of top-down sustainability goals and sustainability constraints while releasing and harnessing local innovative potentials in developing context-sensitive solutions to issues that engage local stakeholders. As the PGSDR recommendation reflects, the prospects for sustainable development at a global scale depend crucially on a myriad of bottom-up initiatives that are oriented toward and steered by top-down sustainability concerns as well as by local sustainability conditions and criteria. It is also important for there to be "early-warning" systems in place to alert international organisations and bodies, such as those of the United Nations, to emerging threats and problems, and that an information system is established that provides for multi-directional flows of intelligence. It is in its capacity to bridge between top-down and bottom-up interventions and to work towards harmony between them that ISA holds potential to make a unique contribution.

local priorities. Hence, the expert group recommends a bottom-up approach to enable the global Report to benefit from "such rich and dispersed local policy-relevant knowledge", albeit with the caveat that protocols might be needed for evaluating non-conventional sources of scientific knowledge.

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