



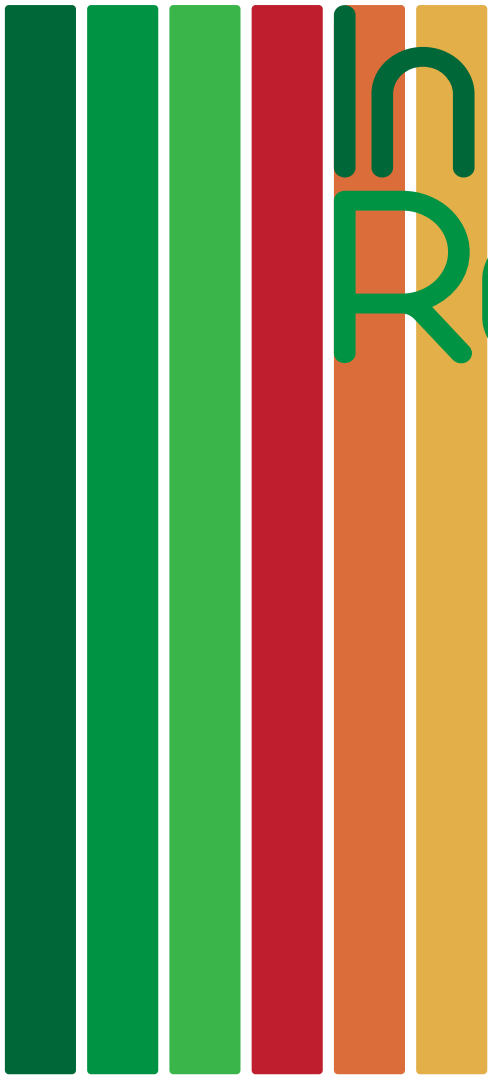
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LIAISE

Linking
Impact
Assessment
Instruments to
Sustainability
Expertise



Innovation Report

Sustainability Assessment



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IN BRIEF

EDITORIAL

Dear Reader,

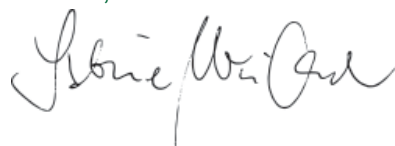
what you hold in hand is the first issue of the LIAISE innovation report. Our biannual innovation report aims to synthesize and analyse recent research and new publications in the field of Impact Assessment (IA). The aim is to provide overview information on the latest developments in IA research to IA researchers, IA practitioners and other interested persons. There is a steadily growing proliferation of academic contributions in the field of IA. This indicates that there is an evolving research community. The innovation report has a twofold purpose: on the one hand, it should allow a quick overview on recent publications. On the other hand, by taking up and reflecting streams of research, the report should contribute to the further development of IA related research communities: Researchers can position themselves against contributions of their peers, categorize, typify, quote or challenge contributions of their peers - in short: stimulate additional research. The reported research does not only draw upon the outcomes of the various LIAISE activities, but also on other projects and new publications.

The main part of the innovation report is a thematic focus, which has the form of a review article. The current issue focuses on 'Impact Assessment and Sustainable Development' and, thus, on 'Sustainability Assessment' which aims at assessing the sustainability implications of policies - a topic that has received increased attention over the last years, in particular since Sustainability Assessment (SA) is beginning to proliferate as a decision-support tool. The article revolves around questions of integration of different, often conflicting objectives in sustainable development and the role SA can play in this to rationalize the proceeding. Yet the question is also put the other way round, how different and conflicting objectives can be integrated and reconciled in a single assessment exercise and which tools for SA are suitable for that.

Furthermore, the report gathers the latest publications in the field of IA and provides brief descriptions of their content/methods with particular focus on their innovative character. Each innovation report will review five to ten new publications in the field. The idea is to provide the reader with information on current developments in IA research. In the current issue we review publications on topics as diverse as the effectiveness of impact assessment instruments, science-policy interface, and tools for adaptive policies, to name but a few.

Have a good read! If you have any comments on the current issue, or ideas for interesting topics from the field of IA for future issues, or just came across an interesting article on the subject, please contact me any time.

Cheers,



Sabine Weiland, Freie Universität Berlin
sabine.weiland@fu-berlin.de

REVIEW ARTICLE

IA and sustainable development: how to rationalize an inherently 'contested' concept?

In this issue we are reviewing a set of articles that deal with IA and sustainable development:

- Bond A, and Morrison-Saunders A, (2010) Re-evaluating sustainability assessment: aligning the vision and the practice. *Environmental Impact Assessment Review*, doi:10.1016/j.eiar.2010.01.007.
- Bond A, and Morrison-Saunders A, (2009) Sustainability appraisal: jack of all trades, master of none? *Impact Assessment and Project Appraisal* 27(4), 321–329.
- Gibson R B, (2006) Sustainability assessment: basic components of a practical approach. *Impact Assessment and Project Appraisal* 24 (3), 170–182.
- Hertin J, Jacob K, Pesch U, and Pacci C, (2009), The production and use of knowledge in regulatory impact assessment – An empirical analysis. *Forest Policy and Economics* 11, 413–421.
- Kidd S, and Fischer T B, (2007) Towards sustainability: is integrated appraisal in the right direction? *Environmental and Planning C: Government and Policy* 25, 233–249.
- de Ridder W, Turnpenny J, Nilsson M, and von Raggamby A, (2007) A framework for tool selection and use in integrated assessment for sustainable development. *Journal of Environmental Assessment Policy and Management* 9, 423–441.

Sustainable development is commonly described as an ambiguous and contested concept. Even though there may now be broad agreement on the underlying principles as set out in the Brundtland definition, important debates still continue with different stakeholders holding different ideas on how a sustainable world should look like. As Jonathon Porritt, Chairman of the UK Sustainable Development Commission, so aptly sums it up: “We now know (more or less) what we need to do to secure a sustainable world, but how the hell are we going to do it?”¹ Sustainability Assessment is a decision-making tool that may contribute to the ‘how to’ question in that it aims at anticipating the sustainability implications of proposed policies, programmes or projects. Its objective is also to enhance the rationality of decision-making by integrating the stock of available knowledge into these processes and by developing and applying appraisal methods and tools. All this is seen to lead to more informed and - as is assumed - more sustainable decisions (Bond and Morrison-Saunders 2010, p. 2).

Sustainability Assessment (SA) has its roots in earlier assessment exercises. The more traditional regulatory impact assessment which focused on regulatory cost and administrative burden has been broadened over the last decade. The trend is to include other aspects, like environmental issues, economic competitiveness, concerns of small and medium sized enterprises, as well as the implementation of sustainable development². Also, the assessment focus lies not only on costs but includes benefits of proposed policies, too. SA, in particular, is related to strategic policy development, e.g. in the form of National Sustainable Development Strategies. Most notably, it is directed at

¹ Quoted from Adger W N, and Jordan A, (eds.) (2009) *Governing Sustainability*. Oxford, Cambridge University Press.

² Jacob K, Hertin J, and Volkery A (2007), Considering environmental aspects in integrated impact assessment: lessons learned and challenges ahead. In: *Impact Assessment and Sustainable Development. European Practice and Experience*, George C, and Kirkpatrick C (eds.), 90–105, 91.

³ Quoted from Weaver P, Rotmans J, Turnpenny J, Haxeltine A, and Jordan A (2007), Methods and tools for integrated sustainability assessment (MATISSE): a new European project. In: *Impact Assessment and Sustainable Development. European Practice and Experience*, George C, and Kirkpatrick C (eds.), 149–163, 151.

the integration of different policy objectives: environmental, economic and social considerations are to be balanced in a single appraisal exercise (Kidd and Fischer 2007, p. 233). Hence, SA ultimately aims at an integrated assessment of different and conflicting development options in order to reveal synergies and trade-offs between them. What is more, SA is regarded as a social process that includes learning among the involved actors. Weaver and Rothmans, for example, define integrated sustainability assessment 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’³. Here, the assessment exercise is considered as a process through which stakeholders’ understanding and interpretation of what sustainable development means in a particular context evolves through the process.

We already see here some tensions arising from the more traditional approach towards impact assessment as a way to rationalize political decision-making, and the characteristics of sustainable development as conflict-laden social process which evolves progressively. This review article explores in which ways SA is torn between rationalization of assessment procedures, and social and participatory processes which are seemingly far less straight-forward. Following from this, the question occurs as to how SA can serve as a tool for more integrated and sustainability oriented policymaking processes.

Tools and Methods for Sustainability Assessment

The number of tools for SA is vast and there exist a large body of literature on tools and methods to be used in assessment procedures. An instructive categorisation as well as a framework for tool selection and use in integrated assessments is provided by de Ridder et al. (2007), based on the results of the project ‘SustainabilityA-Test’. The authors start with an overview of different tool types which are categorised in seven groups: (1) assessment frameworks, for example the EU Impact Assessment system, EIAs and SEAs, which are procedures to be applied in policy development processes and within which a variety of assessment tools can be applied. Hence assessments frameworks are ‘merely shells’ (p. 428) rather than tools in itself; (2) participatory tools which can be used to involve or consult stakeholders in decision-making processes; (3) scenario analysis tools which aim to help the understanding of possible future developments of complex systems; (4) multi-criteria analysis tools to support comparison of different policy options on the basis of a set of criteria; (5) tools for cost-benefit analysis and cost-effectiveness analysis; (6) accounting tools and physical analysis tools which aim to elucidate the material side in an assessment; and (7) model tools which provide simplified representations of complex phenomena in order to better understand real-world complexity.

The authors then continue to develop a framework that scientifically underpins the selection of tools in integrated sustainability assessments. Decision-making processes can be divided in different phases, and the idea is that in each phase different tools can be used to analytically support policymaking. Although some variation exists, the authors identify an ideal typical course of an impact assessment that can be found in virtually all assessment frameworks. The following ‘generic

phases of integrated assessment' (p. 430) are distinguished: phase I: problem analysis; phase II: finding options; phase III: analysis of concrete policy options; phase IV: follow-up. In each of the phases, assessment tools can specifically support the respective tasks that are to be done. From this, the authors derive a tool framework that matches tools to tasks.

The aim of phase I is to shed light on the policy problem whilst accounting for different perspectives on it. To support these tasks tools are needed that steer the process of mobilising knowledge and articulating values. Therefore, participatory tools are the most important device through which stakeholders (experts, policy makers, lay persons) become involved in the framing of the problems to be addressed. Other relevant tool groups include scenarios which could provide future perspectives to problem framing and cost-benefit analysis to provide the monetary basis for problem-framing. In phase II, the focus shifts to the identification of possible options to address the problems as defined earlier. Scenario analysis tools are now in the lead to elucidate visions on sustainable futures. They also help to reveal existing dissent over values and objectives. Participatory tools may support scenario building during this phase, in particular with regard to the definition of evaluation criteria for different policy options required in the next phase. The aim of phase III is to analyse in detail possible development pathways and policy interventions. The emphasis is consequently on analytical tools such as models, cost-benefit analysis and physical analysis tools. All these information can be used in multi-criteria analyses to support comparison of different policy alternatives on the basis of agreed criteria. Again participatory tools may improve the robustness of the analytical assessment exercises. The final phase IV aims at monitoring and evaluating the results of the integrated assessment. Hence, tools for cost-benefit and cost-effectiveness analysis, accounting tools, physical analysis tools and sets of criteria have a role in ex-post assessment of the results. Another aim of the final phase is to reflect on the entire assessment process in order to improve future assessment exercises, and there is a role here for participatory tools that bring together relevant stakeholders involved in the integrated assessment to learn from the process. Overall, the aim of the paper is to provide those carrying out integrated assessments for sustainable development with a scheme that explains why certain tools are or are not useful in different parts of assessments.

Issues in Sustainability Assessment

In contrast to the rationally focused contribution to SA by de Ridder and colleagues the other publications reviewed provide more general discussions about the merits and challenges of assessment exercises in sustainable policy development. Hertin et al. (2009), for example, address the issue of rationalization and the role of knowledge in policymaking. Based on the work of Owens et al.⁴, they distinguish between a technical-rationalist and a post-positivist orientation. The technical-rationalist approach sees policy assessments as a value-free effort without any political content. It is designed to inform policy officers and help them develop a balanced proposal based on rational reasoning. As Hertin and colleagues put it, the assessment exercise 'enables the political debate to be liberated from interest-based and value-led knowledge claims' (p. 414). The post-positivist orientation, in contrast, comprises a number of alternative approaches to the rationalist model. First, it challenges the claim that facts and values

⁴ Owens S, Raynor T, Bina O, (2004) New agendas for appraisal: reflections on theory, practice and research. *Environment and Planning A* 36, 1943–1959.

can be distinguished - which has been disputed at length from a social-constructivist perspective. It is argued that the translation of political argument into technical terms and, thus, the translation of values into knowledge claims as put forward in rationalist accounts cannot be maintained. Second, the critique is directed at the scientisation of politics which carries with it the danger of reinforcing prevailing interest, value and power structures. Overall the post-positivist critique holds that the technical-rational model of policymaking and policy appraisal fails to acknowledge the core of politics and is therefore unable to produce legitimate decisions.

The technical-rationalist orientation has for long been - and in a way still is - the dominant approach to impact appraisals but has in recent years become subject to mounting critiques by proponents of a post-positivist approach. The rise of sustainability appraisals and the broadening of issues to be included in assessment exercises has certainly spurred these critiques. In their paper, Hertin et al. explore the tensions between rationalist assessment exercises and political decision-making processes. Policy documents in most OECD countries demand an information-based and 'neutral' assessment of likely impacts of proposed policies and programmes. The authors argue that the practice of policy appraisal however reveals a very different picture. In contrast to the mainstream Impact Assessment literature which, in explaining these differences, focuses on barriers to more effective appraisals and provides advice how to improve existing institutions, they describe the current practice in relation to the key assumptions of the technical-rational model. These are summarized as five 'illusions of rational policy analysis' (p. 418), namely the illusion of linearity, the illusion of neutral and objective analysis, the illusion of a unitary decision-maker, the illusion of analytical closure, and the illusion that relevant knowledge is held by experts. From this, Hertin et al. do not conclude that rational policy analysis has no role in policymaking processes nor that it is a barrier to their functioning as support for the formulation of integrated and sustainable policies. They wish to emphasize the key message of the post-positivist critique: to make us aware of the provisional nature of quasi-scientific policy appraisals and the necessity to use scientific knowledge reflexively in the policy domain.

Bond and Morrison-Saunders (2010), in their contribution, focus on Sustainability Assessment and discuss some key areas of debate relevant to SA practice. One debate addressed is the understanding of sustainable development. Framings of sustainability are contested - as is epitomized in the debate on weak and strong sustainability, among others - and therefore the expectations of the goals of SA are likely to vary considerably. Like this, debates over the meaning and values of sustainability extend to SA. As the achievement of sustainable policies relies on reconciling different stakeholder views and opinions, some critics argue that taking into account a broad set of values may result in neglect of traditionally undervalued ecological issues. Whereas Environmental Impact Assessments and Strategic Environmental Assessments maintain environmental values, SA tends to jeopardize the advocacy role for the environment by broadening the assessment to incorporate other, economic and social values. These kinds of conflicts are becoming even more complex when considering not only intragenerational, but intergenerational sustainability as well. The time horizon is addressed by the authors as another issue in sustainability debate. Which timescales do we mean when thinking of intergenerational equity which is to be considered in sustainability assessments of today's policies? It is clear that difficulties of SAs based on intergenerational timescales are associated with

predictions on these timescales, and the question is how the future can appropriately be taken into account in appraisal exercises - there is an inherent tendency towards reductionism. In practice, however, long-term perspectives frequently appear to be driven by the decision-making context rather than the timescales of generations. The authors conclude that these controversies in SA are intractable. Rather than seeing decision-making as a rational exercise, they suggest to take advantage of SA as 'a vehicle for deliberation' (p. 5). 'As SA begins to develop and becomes more widespread', they argue, 'there is a window of opportunity to redefine SA as a facilitator of deliberation, and to move away from an embedded pragmatist discourse to a new deliberative sustainability discourse' (p. 5). Consequently, the authors consider stakeholder participation and dialogue in SA as the most important precondition of successful sustainability appraisal. This promises to reduce conflict in the interpretation of SA outcomes and may also result in greater acceptance of the results by stakeholders and citizens.

Defining the bottom-line: how flexible can Sustainability Assessment be?

In another article, Bond and Morrison-Saunders (2009) further develop their line of argument on limited rationality in SA processes. Again, they start from the finding that plurality of understandings of sustainable development poses problems to achieve sustainable outcomes because the goals of SA are seen differently. What actually is a 'sustainable' outcome? Broadly speaking, an option upon which a decision is to be made can be called sustainable if it grows or develops any of the goals of sustainable development, namely environmental protection, economic development, and human wellbeing, or if it does at least not worsen the existing situation. This is the bottom-line of any sustainability appraisal. However, given the broad scope of sustainable development, this approach is so flexible that virtually any measure which promises some improvement or at least preserves status quo could be called 'sustainable' in some sense. Hence, the flexibility of the sustainability concept, which on the one hand opens up opportunities for deliberation, can on the other hand turn in the opposite direction: it can be manipulated by actors for their own purposes. Rather than facilitating an objective consideration of sustainability outcomes, SA may be exploited by actors favouring their particular values and objectives.

To a certain extent, the argument runs parallel with what is currently discussed in the context of Environmental Impact Assessment (EIA). Despite its rationalist roots, authors increasingly argue that EIA has a number of roles that go beyond merely providing information to inform better decisions. Bartlett and Kurian⁵, for example, detail a number of alternative models explaining the role of EIA in policymaking, among others the symbolic politics model, the political economy model, the pluralist politics model and the institutionalist model. In all of them, decision-making is seen to follow different logics that have little to do with the rationale of the predominant information processing model. Bond and Morrison-Saunders, in the same vein, adopt a social constructivist perspective and discuss SA as a vehicle for social discourse that defines sustainability in a context. In their own words, they 'regard SA as having purposes and approaches which are not agreed' (p. 322). The existence of different discourses in sustainability appraisals is a critical issue when it comes to SA practice.

⁵ Bartlett R V, and Kurian P A, (1999) The theory of environmental impact assessment: implicit models of policy making. *Policy & Politics* 27 (4), 415–433.

Empirically the authors focus on SAs in England which have been legally required for a couple of years; hence its practice is already relatively well researched. Thérivel and colleagues⁶, for example, found in an analysis of SA in spatial planning that the plans were expected to have beneficial socioeconomic effects but only few positive, or even negative environmental outcomes. In interviews with planning officers responsible for these spatial plans, the officers reported that the bias resulted from the government policy to deliver specific housing and employment levels which pushed social and economic issues forward in the appraisals. Hence, SA exercises in spatial planning are driven by agendas favouring particular discourses other than sustainable development as an encompassing and integrated objective.

In their article, Bond and Morrison-Saunders (2009) continue to examine how SA might be manipulated to advance particular discourses. First, the assessment tools itself, e.g. the indicators chosen to determine the current state of sustainability objectives, can be influenced with consequences for the outcomes resulting from the decision process. The authors cite several studies which reveal how the choice of sustainability indicators favours or reproduces specific dominant - anthropogenic, pro-development, etc. - discourses. It is shown how some key actors develop SA frameworks that favour their own discourses without incorporating a broad range of stakeholders and worldviews. Second, the interpretation of the results can also be manipulated in favour of particular policy objectives. The decision process frequently involves a ranking exercise of different policy options which, as the authors argue, is not the same as to identify the sustainable development outcomes of particular options. Thus the question remains what the base-line is against which the individual options are tested. The fact that one alternative performs better than the other does not necessarily mean that the alternative is sustainable. In fact, evaluations of English SA practice have shown the general weakness of deriving 'good' alternatives for assessment exercises. Overall, the authors express their concern that 'SA has within it so much flexibility, covering an area which is so complex, that the results produced could be argued to be meaningless by those not sharing the same discourse' (p. 327).

Rules for integrated sustainability appraisal

In view of considerable flexibility of the sustainable development concept - which can be both, an opportunity and a threat - the question arises how to attain substantial outcomes in sustainability appraisals. In an early article on SA, Gibson (2006) presents a comprehensive list of sustainability requirements that should inform SA practice. Thereby, he effectively defines the bottom-line for SA for which we were looking in the previous section. The set of basic sustainability requirements is drawn from the rough consensus that emerged from the past twenty or so years of sustainability debate - including, among others, that sustainability considerations should be comprehensive; minimisation of negative effects is not enough, rather positive steps towards greater sustainability are needed; precaution is important in face of complex and uncertain developments. The following 'core generic criteria for sustainability assessments' are defined (p. 174): socio-ecological system integrity, livelihood sufficiency and opportunity, intragenerational equity, intergenerational equity, resource maintenance and efficiency, social-ecological civility and democratic governance, precaution and adaptation, immediate and long-term integration. For each of these

⁶ Thérivel R, Christian G, Craig C, Grinham R, Mackins D, Smith J, Sneller T, Turner R, Walker D, and Yamane M, (2009) Sustainability-focused impact assessment: English experiences. *Impact Assessment and Project Appraisal* 27 (2), 155–168.

criteria for SA, the author identifies key actions, to move towards greater sustainability.

This list is certainly not surprising since it is derived from the usual sustainability categories. Also, Gibson explains that there is no reason to insist on this particular formulation. Instead, the criteria could be reworded, reordered, or reconstructed in many different ways. Logically, however, this formulation is very convincing: the integration requirement demands that the first six criteria be pursued in mutually compatible ways, whereas the precaution and adaptation criterion runs across all criteria. In order to ensure that all criteria are followed carefully and no criterion is compromised, Gibson then suggests to set up trade-off rules. This reflects the every-day practice of political decision-making where so-called positive-sum games are rather the exception, whilst compromises and trade-offs occur on a regular basis. Arguably, many of the issues in SA discussed so far in this review article revolve around integration of different, often conflicting objectives, and around trade-off dilemmas in the decisions to be made.

In principle, we can distinguish two different approaches to dealing with trade-offs: rules and processes. On the one hand, rules for SA may clarify the application of the outlined sustainability criteria by setting out guidelines for decisions about what sorts of trade-offs may or may not be acceptable. These rules can be differentiated with respect to specific levels and areas of application (general, sector, region etc.). Obviously, an essential general rule is that trade-off decisions must not compromise the fundamental objective of net sustainability gain. Other rules could include that compromises and trade-offs must be clearly identified; that major compromises will be permitted only after approval by all relevant stakeholders; and that significant adverse effects in any core requirement cannot be justified by compensations of other kinds. On the other hand, there might not be substantive rules for every single trade-off decision. For these cases, process rules are needed to ensure that the difficult choices are approached in a way that is acceptable. This might include, for example, the requirement that deliberations are transparent and open to interested actors. In some sense, tools for SA, such as scenario analysis, risk assessment, participatory tools etc., can also be regarded as process rules. Expertise and techniques for SA are certainly helpful for making complex decisions. It should not be overlooked, however, that trade-off decisions are inherently value-laden.

Gibson presents the outlined genetic criteria and trade-off rules as a basic framework for SA. In addition, he points to the necessity in a particular assessment exercise to add in the key considerations that are specific to the case. These may be derived from all kinds of sources - from policy or other written documents that set out key issues and priorities relevant for the assessment, to stakeholder fora which shed light on the concerns of the affected people. This aims to elaborate the case- and context-specific decision criteria for the assessment. Eventually, the objective would be to design assessment regimes that can be used to carry out individual sustainability appraisals.

Sustainability Assessment and good governance: exploring the tensions

In their article, Kidd and Fischer (2007) also address the issue of integration in SA. The authors discuss the tension forces between two objectives which they regard as the main driving forces behind the present rise of integrated sustainability appraisal: the promotion of sustainable development and the promotion of good governance. Obviously, integration is crucial to the achievement of sustainable development and as such a key concern in the development of methodologies to balance ecological, economic, and social dimensions of policies. The debate on good governance in turn has influenced the call for integrated appraisal in various respects: Rising expectations regarding transparency and accountability in public decision-making have led to formalisation of scrutiny procedures, including those for policy and project appraisal. Other governance considerations, such as emphasis on broader stakeholder participation and a discursive approach to public policy development stimulated interest in integrated appraisal as well.

Kidd and Fischer continue to discuss the relative weight being given to sustainability and governance concerns in the development of assessment methodologies and the implications this has for the SA process and its outcomes. They argue that although, in principle, both concerns should be mutually supportive, this might not be the case in practice. For example, it seems feasible to have an entirely open and participative assessment exercise which helps explore different policy options in a given field without explicitly addressing sustainability issues or ensuring that environmental considerations are taken into due account. Based on a review of the current empirical literature on integrated appraisals across the globe, they locate the possible tensions between sustainability and governance issues in the following dimensions: technical, participatory, quantitative and qualitative. These dimensions can be understood to lie on two axes (technical - participatory, quantitative - qualitative), which are vertically aligned. The resulting diagram is a four-field-matrix that maps different approaches to integrated assessment. From this the authors derive four ideal types: a technical and quantitative approach that is present in modernist rational planning traditions; a technical (expert-based) and qualitative approach which relies on expert opinions in appraisal exercises; a participatory and qualitative approach which reflects a communicative planning paradigm; and a participatory (expert-facilitated) and quantitative approach as present in participative modelling exercises. Hence, integrated appraisal approaches and methodologies do vary considerably.

The authors raise some concerns that an overly reliance on participatory and qualitative approaches may result in shortcomings of integrated assessments to providing a sound evidence base for decision-making. Participatory approaches - the reasoning goes - may clandestinely introduce a bias in appraisal exercises in that dominant, e.g. economic perspectives are promoted at the expense of other, social and environmental considerations. This argument is similar to the one made by Bond and Morrison-Saunders (2009) who cautioned against the potential dangers of SA as providing new means of reproducing the views of dominant groups. Kidd and Fischer substantiate their supposition by studying the Regional Sustainable Development Framework in the North West of England. Within this framework

integrated appraisal processes were introduced and tested that strongly relied on participatory and qualitative methodology. What came out of this study was that the applied methodology for SA revealed several limitations, among others an oversimplification and lack of grounding in reality, and an absence of formal considerations of alternatives - all leading to a lack of coherence, from a sustainability perspective, in the resulting Regional Sustainable Development Framework. The authors conclude that the applied toolkit for integrated appraisal can be seen to be performing well in terms of governance considerations, whilst sustainability considerations did not equally come to the fore.

Whereas, in general, the methodologies for integrated appraisal can have pitfalls from both a sustainability and a governance perspective, and therefore should be adjusted accordingly, the case of the North Western English appraisal exercise revealed a limited consideration of sustainability issues resulting from overly reliance on participatory and qualitative tools. The authors want to caution against a one-sided emphasis on governance issues that may compromise the rigour of integrated appraisal methodologies and result in a neglect of concern for sustainability, particularly regarding environmental objectives. To conclude, Kidd and Fischer suggest that greater clarity is needed in defining the purposes of integrated appraisal, in particular regarding the role of sustainability. At present, it is entirely conceivable for integrated appraisal and sustainability assessment to mean very different things. The question therefore is how to ensure that different objectives are integrated and balanced in an appropriate manner. Again, this raises the issue of defining a bottom-line, a set of substantial and process rules for SA, as Gibson (2006) suggested. Kidd and Fischer on their part see the way forward in advocating appraisal methodologies which combine participatory and qualitative with more technical, expert-based and quantitative aspects in order to promote a more robust basis for decision-making.

Conclusion: Sustainability Assessment as objective and process

What can we learn from this review of articles on Sustainability Assessment? How can SA serve as a tool for more integrated and sustainability oriented policymaking? In our *tour d'horizon* we explored the field of SA ranging from a rationalist and instrumental notion of sustainability appraisals which aim at enabling informed decision-making, to more process-oriented accounts which emphasize plurality and conflicts between different values and interests and, hence, the political nature of assessment exercises. Like this, SA is seen rather as 'facilitator' or 'vehicle' for deliberation between political actors and involved stakeholders (Bond and Morrison-Saunders 2010, p. 5). However, the broad and flexible nature of the sustainability concept, which opens up opportunities for deliberation, may also turn into a threat since it can be manipulated by actors for their own purposes. We therefore discussed from different angles the question as to how standards for sustainability appraisals can be defined, in terms of both substantial rules for decisions on conflicting objectives and values, and procedural rules for dealing with these conflicts. Again, this brings in the question of how to enable sound decision-making for sustainability oriented policies - which in turn leads us back to the call for rationalization and for providing a robust evidence base for political decisions.

Obviously, SA can be regarded as both, an objective and a process.

The challenge is to bring both aspects together: to make use of the knowledge provided by sustainability appraisals without falling prey to naïve expectations on its ability to enable 'objective' and value-free political decisions. Conversely, the discursive nature of policy-formation does not necessarily mean that we need to compromise the basic goal of evidence-based policymaking. Rather we should be aware that knowledge produced in SA exercises is relative and bounded by normative assumptions. SA is an activity where knowledge and politics are inextricably linked. In conclusion - and in line with arguments made by Hertin et al. (2009) and Bond and Morrison-Saunders (2010) - we would therefore like to advocate to better utilize the potentials of the discursive and political functions of SA. The reflexive use of scientific knowledge from SAs in the policy domain is key to attain more integrated and sustainable policies.

IN BRIEF

Cashmore M, Bond A, and Sadler B, (2009) The effectiveness of impact assessment instruments. *Special issue of Impact Assessment and Project Appraisal* 27 (2), 91–168.

Impact assessment and the application of IA instruments are important parts of contemporary political decision-making as they help to achieve various policy integration goals, such as mainstreaming of environmental or gender concerns. Even as the application of IA instruments is constantly growing, often there is still a lack of complete understanding of the effectiveness of impact assessment, for both practitioners and scholars. The special issue of *Impact Assessment and Project Appraisal* is focusing on that issue by examining the current knowledge and effectiveness of IA instruments, including evaluations of effectiveness of processes, practice and performance at both macro and micro levels. Furthermore, the widespread introduction of strategic environmental assessment (SEA), regulatory impact assessment (RIA) and social impact assessment (SIA) as well as application of IA instruments to new policy arenas and the trends towards more sustainable-centred approaches are examined. The six articles in this special issue refer to these major developments.

O'Faircheallaigh stresses the point that judging social IA depends on how the purposes of IA are understood, as they are defined differently by various groups. His empirical focus is on the case of large-scale resource development on Aboriginal land in Australia. In his paper, he examines how ownership of IA instruments, in particular social IA, can provide a mechanism for the emancipation of societal sectors that have been systematically persecuted and deliberately marginalized. Stoeglehner et al. as well consider the importance of fostering ownership by stakeholders for the effective implementation of IA. In their paper they claim that professionals within strategic environmental assessment (SEA) need to consider democratic effectiveness as well as environmental effectiveness in both 'direct' and 'indirect' outputs. The authors stress the point that planners of IA have a major influence in the implementation process of SEA legislations and guidelines and thus are key players in achieving effectiveness for which their 'ownership' of SEA is crucial. Elling discusses in his paper the notion of effectiveness by using a critical theory approach of rationality. He states that effectiveness and rationality are often used synonymously in theory and discussions on environmental assessment practice. Elling discusses also so-called post-rational approaches on environmental assessment and suggests that IA processes should focus on the truthfulness of processes leading to policy action. Jha-Thakur et al. in their paper explore to which extent SEA can facilitate (transformative) learning at an organisational and individual level and thus achieve effectiveness and continually improve policy-learning. In the paper of van Buuren and Nootboom it is argued that effectiveness of SEA depends on the alignments and embedding in the planning process. The authors employ case studies from Dutch planning practice in order to explore features of effective IA. Finally, Thérivel et al. evaluate the use of an integrated or sustainability-centred IA model and consider whether SEA of local-level spatial plans in England is leading to high level of environmental protection. They come to the conclusion that significant changes in SEA and the plan-making process are needed to make SEA effective.

These six papers are intended to provide substantial input to the study of effectiveness in impact assessment and also to stimulate a

critical debate. For that reason, a diverse range of contributions for publications can be found in this special issue which both individually and collectively enlarge the understanding of relevant issues in IA.

Van Ittersum, M K, and Brouwer F, (eds) (2009) Integrated assessment of agricultural and environmental policies – concepts and tools. Special issue of *Environmental Science and Policy* 12 (5) 543–630.

As agriculture operates at the interface between the socio-economic and natural environment, it has increasingly been regarded within the context of sustainability. One method to address the complex issues and multiple functions of agriculture is Integrated Assessment and Modeling, an approach that integrates knowledge across disciplines and scales. However, most models developed within IA so far are targeted at specific issues rather than being more generic and flexible in order to be applicable to a range of problems. Recently a framework for agricultural system, called SEAMLESS-IF, has been developed which allows for assessments across a range of scales. It is component-based, builds on the concept of system analyses and attempts to allow flexible (re-)use and linkage of models, database(s) and tools. The paper aims to describe the progress in IA achieved with the methodology developed for SEAMLESS-IF, while especially focusing on its flexibility to perform IA. The authors use two example applications - impacts on European agriculture of changes in world trade regulations, and regional impacts of the EU Nitrates Directive in combination with agro-management changes - to illustrate relevant capabilities of SEAMLESS-IF and discuss achievement and limitations as well as challenges and priorities for future work.

Potts T, (2010) The natural advantage of regions: linking sustainability, innovation, and regional development in Australia, *Journal of Cleaner Production* 18, 713–725.

In order to meet the challenges from the economic downturn and to simultaneously address the issue of climate change, policy formulation is increasingly trying to 'green' the economies and decouple environmental impacts from development processes. The concepts of sustainable development as well as ecological modernization and industrial ecology have fostered the evolution of sustainable businesses, which are more and more knowledge-based and concentrate on environmentally orientated innovations, services and products. This shift towards a knowledge focus and the recognition of sustainability has also been an important element of regional policy, as regions and localities often have important key roles in sustainability transitions. In two regional case studies, the paper investigates the opportunities for sustainable development of small and medium businesses (SMEs) in the two Australian regions of Central Coast and Blue Mountains - both near Sydney - in respect to the new concept of the 'Natural Advantage'. Natural Advantage is a process to integrate innovations and sustainability policies and actions at a regional scale. As a result of the case studies the author slightly revises the model by removing the temporal aspect; furthermore he identifies several aspects that foster the evolution of sustainable business, e.g. strengthening sustainable business networks, developing local accreditation schemes or supporting environmental education.

Runhaar H, and van Nieuwaal K, (2010) Understanding the use of science in decision-making on cockle fisheries and gas mining in the Dutch Wadden Sea: Putting the science–policy interface in a wider perspective, *Environmental Science & Policy*, doi:10.1016/j.envsci.2010.03.001.

Often scientists try to support or influence decisionmaking on natural resources by providing knowledge on the ecological effects of exploitation of natural resources. However, the utilization of such knowledge is not self-evident, as it is often ignored or strategically and selectively used by decision-makers and stakeholders. Dynamics of science utilization are often researched by analyzing the policy-science interface, thereby often focusing on the role of scientist and their interactions with decision-makers only. Instead, this paper argues that other actors also influence science utilization and, therefore, a wider perspective on the science-policy interface is needed. The case of decision-making on mechanical cockle-fisheries and gas mining in the Dutch Wadden Sea serves as an example to underpin the authors' hypothesis. Until 2000, knowledge on the ecological effects of cockle fisheries and gas mining had hardly any influence on decision-making, whereas between 2000 and 2004 the opposite was true. The authors explain the change in science utilization by stressing, among other things, the point that at first only traditional knowledge providers and decision-makers were involved, whereas after 2000 other actors came on the scene and played an important role as knowledge brokers and intermediaries between scientists, decision-makers and stakeholders - with the latter becoming ever more involved. Consequently, the research focus as well, which was rather isolated in the beginning, later broadened and also involved a range of different actors.

Swanson D, Barg S, Tyler S, Venema H, Tomar S, Bhadwal S, Nair S, Roy D, and Drexhage J, (2010) Seven tools for creating adaptive policies, *Technological Forecasting and Societal Change*, doi:10.1016/j.techfore.2010.04.005.

Public policies are very important for reaching a sustainable future. In this paper, the authors study how to design public policy to be more adaptive, even to unanticipated conditions, to reduce the risks of policy failure as circumstances change. The authors research the issue of adaptive policymaking in several case studies on public policies in water resource management and agriculture in Canada and India. As a result they formulate seven tools which policymakers should use for creating adaptive policies in face of uncertainty: (1) integrated and forward-looking analyses, (2) built-in policy adjustment, (3) formal policy review and continuous learning, (4) multi-stakeholder deliberation, (5) enabling self-organization and social networking, (6) decentralization of decision-making, and (7) promoting variation. Whereas the former tools (roughly 1–4) are directed at anticipation of policy implications and planning of uncertainty, the latter (roughly 3–7) go beyond that in that they 'facilitate autonomous action for deep uncertainty' (p. 5). The authors provide an informative overview on the different adaptive tools and argue that with the help of these, public policy will increasingly be able to navigate toward successful outcomes in settings that cannot be anticipated in advance.

Winfield M, Gibson RB, Markvart T, Gaudreau K, and Taylor J, (2010) Implications of sustainability assessment for electricity system design: The case of the Ontario Power Authority's integrated power system plan, *Energy Policy* (in press)

Electric power system planning, an issue with major importance when it comes to achieving the vision of a sustainable future, has frequently been subject of SAs. This paper examines the experiences with SA in the case of an integrated power system plan developed by the Ontario Power Authority. The applied sustainability assessment framework consists of eight generic criteria, as well as six generic trade-off rules, which were adopted and used by the Authorities as core requirements for evaluating progress towards sustainability in the proposed plan. A team based at two Ontario Universities - the authors of this paper - criticized evident deficiencies of the official approach, e.g. that the framework was not applied appropriately. For this reason, they developed an alternative approach for system plan options using a more detailed sustainability assessment framework, which was specified for the use in electricity system planning and development. The analysis points at four key areas of weaknesses in the Authority's plan and goes on to reveal three major, interrelated advantages of the second approach: coverage of key requirements for progress towards sustainability while ensuring careful attention to the established concerns of the sector and the particular context; emphasis on identifying plan options that avoid major trade-offs among the sustainability criteria; and recognition of interactions and consequent favoring of options that offer multiple, mutually reinforcing and lasting benefits.



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