

EIA and SEA tiering: the missing link?

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Introduction

Early in the development of the Strategic Environmental Assessment (SEA) concept, the idea of tiering of environmental assessment at different planning levels was put forward as a key element. Moreover, the idea of tiering can be even considered as one of the major drivers for the development of SEA (see e.g. Therivel et al. 1992, UNECE 1992, Wood & Djeddour 1992, Therivel & Partidario 1996, Sadler & Verheem 1996, Partidario 1999, Fischer 2002, Wood 2003). Many spatial decisions that have a bearing on environmental quality are taken at a higher level of decision making than the project level; as Partidario (1999, p.60) indicates “The reasons [for SEA] are various but initially related to the *timing* of project EIA, i.e. it enters the decision-making process at too late a stage to be able the final decision in a satisfactory way.” Tiering means that by preparing a sequence of environmental assessments at different planning levels and linking them, foreclosure may be prevented, postponement of detailed issues may be permitted and assessments can be better scoped. A tiered approach minimise the problem of Environmental Impact Assessment (EIA) being only a ‘snapshot in time’. Accordingly, the EU SEA-Directive (2001/42/EC) explicitly assumes tiering of SEAs and EIAs at different planning levels and the SEA- and EIA-Directive are directly linked (e.g. article 3(2) of Directive 2001/42/EC requires SEA for those plans and programs, which *set the framework* for future development consent of EIA projects).

Although tiering is an important notion to SEA and EIA in academic literature, it is hardly discussed in a critical manner (Tomlinson & Fry 2002). Surely the concept of tiering might provide a means to address the complexity of planning and decision-making, which environmental assessments must operate. However, its implicit assumption of a linear planning process does not fit well with the dynamic nature of planning and decision-making in practice. For instance, there may be still a considerable gap between a strategic plan subject to SEA and project development with EIA. In planning practice all too often project decisions and EIAs may precede strategic plans and the SEAs that should provide the framework for project decision-making. Nevertheless, it is clear that good coordination between planning levels and between SEA and EIA is needed to achieve sound (sustainable?) planning, efficient and effective decision-making. The question is: how can the link between SEA and EIA that is all too often missing made operational and what is the actual and potential role of tiering?

The concept of tiering

A major impetus for the development of SEA is the awareness that EIA at project level is intrinsically limited in complex and dynamic practice of planning and decision-making. Decisions that imply impacts on the environment are constantly made throughout the planning process, the context in which

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plans and projects are developed is often highly dynamic (changes in the environment, society, policies, regulations, scientific insights etc.) and numerous parties may be involved in the process. Moreover, multiple projects and events in an area may have synergistic interactions and may result in cumulative impacts, indirect effects and large-scale effects. Finally, a common criticism on EIA is that the essential decisions on the scope of the project are made before an environmental study has been carried out. For achieving sustainability objectives a broader perspective is needed than a project EIA generally will provide. However it should be noted that the plan and its SEA also operate within such a dynamic setting with numerous interactions with other plans, policy actions and external event.

The links between SEA and EIA are not straight forward, the difficulties commencing with the differing perspectives on SEA. The common understanding is that SEA relates to environmental assessment for “initiatives-other-than-projects” (Annendale et al. 2001). Two major views on SEA can be seen which are related to the tiering concept: first SEA as merely an extension of project EIA (application of project EIA to strategic levels), and second SEA as a means for policy development and a process for ‘trickling down’ sustainability ideas (Annendale et al. 2001). In addition to this, literature, but also in legislation (see e.g. the EU SEA Directive 2001/42/EC), distinguishes usually various strategic decision-making levels relevant to SEA – the “3 P’s” – each tier of decision-making being the result of a separate planning process (see e.g. Therivel 1998, Partidario, 1999, EC 1999, Annendale et al. 2001, UNEP 2002, Partidario & Fischer 2004):

- Policy – general course overall direction that is pursued and functions as inspiration and guidance for action and ongoing decision-making;
- Plan (with subdivision of spatial plan SEA and sectoral plan SEA) – a purposeful forward looking strategy often with coordinated priorities, options, measures for implementation;
- Program – a schedule of proposed commitments, activities, instruments (a group of projects) within a particular sector or area.

In addition to these PPP’s, a fourth planning tier can be distinguished (see also Figure 1):

- Project level – subject to EIA – development and implementation of a specified product (e.g. construction, modification, operation of infrastructure works).

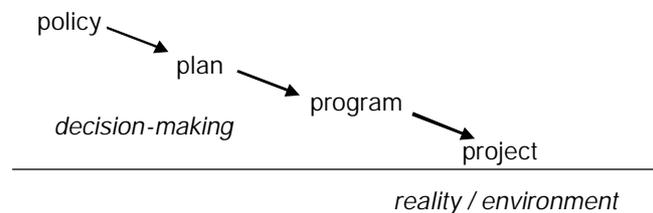


Figure 1: The theoretical concept of tiering as it usually is depicted in SEA literature (see e.g. Wood 2003)

The concept of tiering can be *defined* as: distinguishing different levels of planning – policy, plans, programs – that are prepared consecutively and influence each other (EC 1999). Tiering is about how the different levels of planning relate to each other.

In relation to this, various *types of tiering* can be distinguished depending on the dimension chosen (planning, administrative, geographical, sectoral):

- Vertical tiering, tiering between a hierarchy of levels:
 - planning levels (mentioned before): policies, plans, programs, projects (e.g. national transport and traffic plan, national program for infrastructure and transport, national road development projects);
 - administrative, government levels: supranational, national state, provincial, municipal (e.g. national spatial planning report, provincial spatial plan, municipal land-use plan);
 - geographical levels: global, continental, national, regional, local (e.g. national waste management plan, regional waste management plan, local waste management plan);

- *Horizontal tiering*, at the same (administrative) level, e.g.:
 - tiering across sectors (e.g. housing, transport, water management, waste management, spatial planning etc.);
 - tiering of certain sector plans between different government bodies at the same administrative level (e.g. coordination of policy plans and environmental assessments of adjacent municipalities);
- *Diagonal tiering*, a combination of vertical and horizontal tiering, e.g.:
 - e.g. a national spatial policy influencing local transport plans.

In short, many forms of tiering might be distinguished. However, it can be said that the dimension of time is essential to tiering; the idea is that environmental assessments at whatever level should be attuned to the preceding assessments.

In the literature (mentioned before) tiering is assumed to minimise various limitations of EIA, including:

- prevention of foreclosure of assessing important environmental issues;
- better focused environmental assessments (this relates to e.g. the scope (in issues, time, geographical area), the type of alternatives and impacts assessed, the abstract level of analysis (broad brush methods, expert opinions vs. advanced quantitative and detailed methods etc.);
- efficiency gains for (S)EA at lower levels by doing environmental assessments at higher levels (indication of major issues that need further elaboration, or not; guidelines for subsequent environmental assessments);
- better fit with the ongoing nature of decision-making and planning processes by tiering of environmental assessments;
- improvement of plans and projects developed and implemented.

Problem of the tiering concept in planning practice

Much SEA literature focuses on various possible forms of SEA tiers and definitions. However, remarkably little literature discusses critically the concept of tiering. At first sight, the concept of tiering seems to be very rational, but the implicit and rather naïve assumption behind the concept of tiering of SEAs, is that planning is a linear process. According to the rational planning background of EIA, also the concepts of SEA and tiering seem to be grounded in rational planning approach in which hierarchic mechanisms and clear means-ends relations are assumed. The underlying idea is that, first a SEA is carried out for a plan or program then an EIA for the project that is developed to implement the policies of the plan/program. The plan/program and the SEA set the framework for the project and the EIA (see also Figure 1).

In the real world, planning practice does not conform to such neat models as has extensively been discussed in planning literature (see e.g. De Roo 2000, 2003; Linden & Voogd 2004) but rather little in EIA and SEA literature until now. In practice often projects are proposed which were not (originally) included in the relevant plans and programs. For instance, in Dutch infrastructure planning many of such 'strategic' projects have been developed – one could think of the high-speed railway from Amsterdam to Belgium or the 'Betuweroute' freight railway from Rotterdam harbour to Germany. In planning practice plans do not always precede programs and programs not projects. Also national level plans do not necessarily precede provincial government plans like a regional program does not always precede local project development. Strategic plans are replaced by new ones before the policies laid down in those plans have been realised by e.g. development of operational projects. The cumulative impacts of individual projects (and the issues raised in the accompanying EIAs) may result in the preparation of a new strategic plan and SEA addressing cumulative, indirect and/or large-scale impacts. In fact, instead of impact information that 'trickles down' like rain drops along a neat sequence of planning tiers, also information on impacts generated by various projects at operational level may 'evaporate' and 'condensate' at strategic level clarifying the need for more comprehensive

(strategic) impact assessments². For instance, the cumulative impacts generated by the development of waste management facilities (subject to operational level EIAs) may be addressed in an SEA for a waste management policy plan at national level (see Arts 1998 and Figure 2). With respect to this, not only impacts assessments ex ante (such as SEA and EIA) are relevant but also monitoring and evaluation ex post (EIA and SEA follow-up). In addition, such EIA and SEA follow-up studies may clarify the need for new plans or projects – and thus SEAs and EIAs. Tiering is not one-way traffic down the hill, but comprises two-way traffic top-down and bottom-up.

Much SEA literature seem to assume also that information can be endlessly cascaded from one assessment level to another, this is despite the fact that environmental assessment information has a *limited shelf life*. For some fast moving topics, an assessment may be out of date in a few years, while perhaps in a slowly developing region, some assessments may be valid for 5 or more years. So every subsequent assessment must first undertake an examination of the validity of the earlier assessment before building upon it. Such validity checks do not just involve, physical and biological change in the study area, but also legislative and most importantly changing societal values. Would some of today's problems exist if different values had been in place in the past? A key difficulty is the time-lag between the plan, the project and the impacts becoming evident. Prior assessments may prove to be very weak in defining this timeline such that subsequent assessments disregard the forecasts of environmental change.

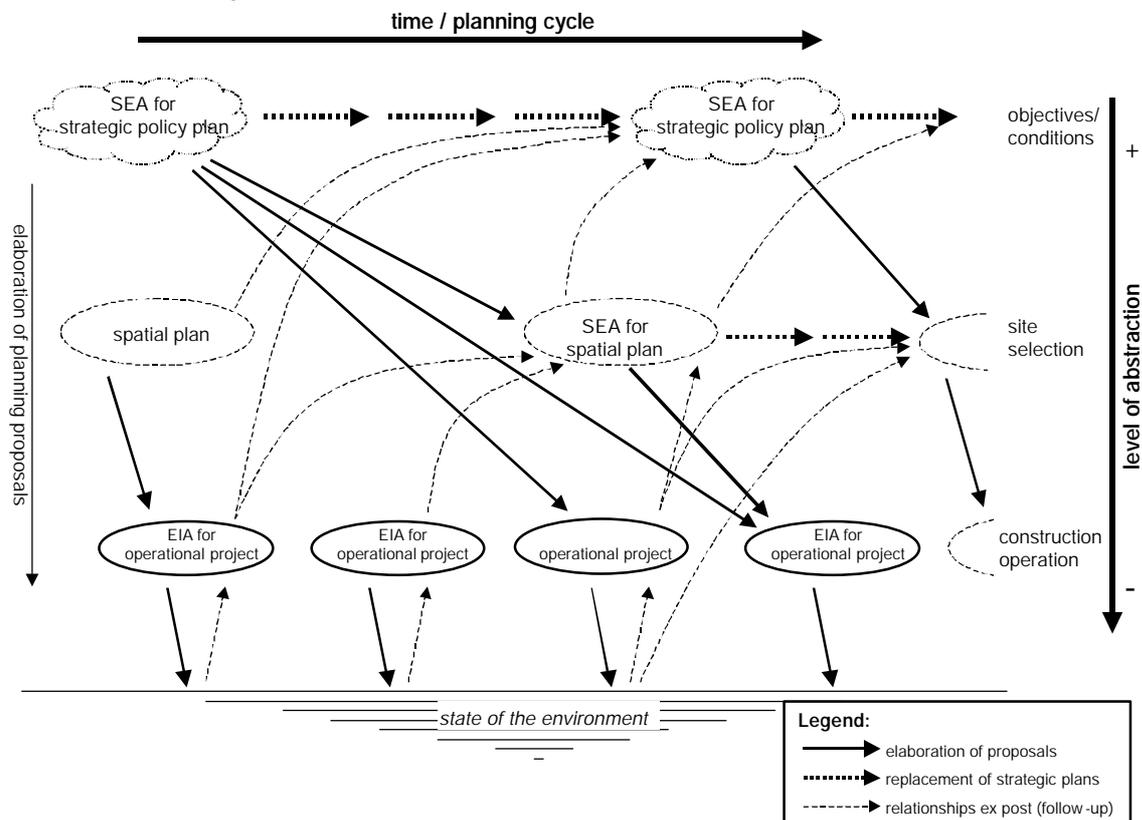


Figure 2: 'Trickling down and evaporating up', the various relationships between different planning levels, decisions and environmental assessments that can be seen in planning practice (after Arts 1998).

² An analogy: for strategic plans the image of a cloud may be used (Arts 1998, see also Figure 2). Like clouds, strategic plans often have a rather ethereal quality. Nevertheless, they are real in that they can influence the social and biogeophysical reality. Strategic plans cast their shadow upon reality like clouds do. Analogously, projects can be seen as the result – precipitation, raindrops – of the clouds that actually change reality. Trickle down, they cause concrete effects. You cannot 'feel' the cloud, but you surely become wet from the rain falling from it. Moreover, strategic plans, like clouds, may pass over the physical environment they oversee. New clouds may be formed and old ones may evaporate over time – thereby losing their relevance for the environment below. Also, the 'project drops' do not circulate back into the 'strategic plan cloud' but are implemented downwards. However, when many such droplets – operational and spatial decisions – have fallen, they may cause the formation of a new 'strategic plan cloud' when the humidity – their combined impact – has become so high that they condensate – i.e., there is need for a new plan.

Moreover it has to be borne in mind that SEAs and EIAs are carried out in rather *different planning arenas*. Policy SEAs are prepared in a political context in which discussions are usually about normative, subjective arguments instead of (only) objective facts. This policy process is rather fluid, not linear, contains usually many feedback loops and may be subject to sudden changes. A policy plan and/or program is usually developed in a cyclic and iterative process. EIAs are prepared for project development in which quantitative data and analysis are important as well as optimising the development proposal by designing the construction and the mitigation measures. When comparing both, EIA can be considered to be more product-oriented (focus on preparing an EIS and developing a project) and SEA to be more process-oriented (focus on promoting a careful, well-balanced planning process).

Another limiting factor for tiering is the fact that competencies and influencing power of government bodies is limited (see e.g. Bache & Flinders 2004). The shift from government to governance is in most western countries clearly visible. For instance, in the Netherlands strategic plans are mainly self-binding for government. Plans and the accompanying SEAs usually do not have direct juridical consequences for private persons or companies, in contrast to for instance environmental permits at operational level. This limits the potential for preventing foreclosure by tiering. Related to this, the distribution of responsibilities and tasks over different levels of government is usually argued by using the *subsidiarity principle*, which means that the decision-making authority should reside at the level most appropriate to the problem being addressed.³ Unfortunately, this is not an unambiguous criterion, as discussions in and about the European Union clearly illustrate (e.g. see Toulemonde 1996, McCormick 1997). Does the subsidiarity principle have any meaning for tiering?

Then there is also the issue of those projects needed in the “national good” but for which significant locally adverse outcomes result – the nimby phenomenon (‘not in my backyard’). How should SEA handle the relative environmental issues, for example how should trade-offs be presented between local and regional impacts, do they demand the same approach towards significance?

Finally, there is the concern that broadly the same answer should be delivered at the SEA as at the EIA level. The SEA/EIA system would come in for tremendous criticism if the SEA promotes a particular strategy only for the EIA to find that the projects generated deliver unacceptable environmental impacts. The EIA should always refine rather than confound the SEA. However, how can this be ensured with the emphasis upon an objectives-led approach towards SEA in which vague objectives set the arena in which significant environmental impacts are to be assessed. This contrasts to the evidence-based approaches to SEA in which the traditions of seeking significant impacts are paramount. Further the differences in predictive techniques also mean that the results of the assessment often do not scale from one level of assessment to another. For example, an SEA may indicate that some loss of ancient woodland is probable but it could not estimate the extent. The EIA should be able to give the area. What we do not want to see is for the SEA to miss an impact of major importance that would threaten the viability of the project especially if that project is crucial to the delivery of the plan’s strategy. So we should not have a SEA saying no impact on biodiversity if the project would pass through a Natura 2000 site.

By doing SEA and EIA both worlds are not yet connected well, which however is essential for achieving sustainable planning. Regarding this, a complicated factor is that in planning practice many projects are not developed as a result of a strategic plan but parallel or even before such a strategic plan is drawn up (see before). However it is clear that the issue of with problem definition and objective setting in practice is essential. How to define plans and projects in a dynamic planning context? (see Figure 2). Essential issues to address seem to be: problem definition, definition of objectives, exploration of potential solutions, stakeholder analysis, definition of relevant study area.

³ For instance, in the Treaty on the European Union, Article 3b, it is described as: “In areas which are not under its exclusive power, the Community shall act in conformity with the principle of subsidiarity, only if and in so far as the objectives of the proposed action cannot be sufficiently achieved by the member states and can therefore, by reason of the scale and efforts of the proposed action be better achieved by the Community”.

Issues that need to be addressed

It can be concluded, that by doing SEA and EIA at the various planning levels it is not ensured that these levels will be connected. However it is clear that prevention of foreclosure is essential to useful environmental assessments. If tiering is not ‘automatically’ safeguarding this other avenues have to be explored. Essential issues to address before starting an EIA therefore include: problem definition, definition of objectives, exploration of potential solutions, stakeholder analysis, and definition of the relevant study area (see Figure 3). Currently SEA and EIA are evolving in two rather separate worlds and it is essential if assessment practice is to remain valid, efficient and effective in contributing towards sustainable development, that we regard them both as one continuous process, which can also embody Hollings (1978) principles of adaptive environmental assessment.

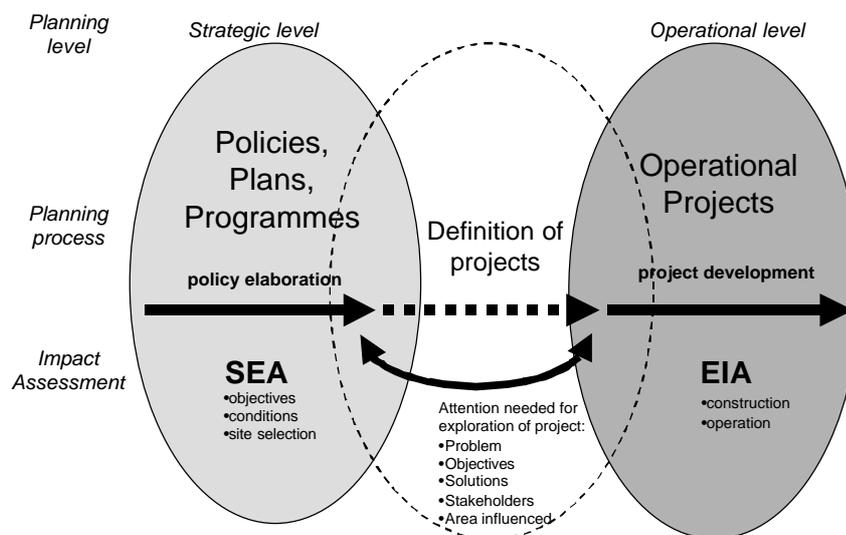


Figure 3: Project definition as the link between strategic level (plans and SEAs) and operational level (operational projects and EIA) (after Arts & Van Lamoen, forthcoming).

Tiering is asking for rationalisation and avoidance of duplication in the production of knowledge. However, this may conflict with the actual decision making processes in practice that are sometimes far from being rational. Tiering implies making choices. Choices on which information from earlier analysis can be, or should be, used; choices on who should be involved in this decision process; choices on This may raise a number of questions that are worthwhile to consider in more detail:

- How well are projects linked to the preceding plans?
- How to deal with issues of subsidiarity and competency of authorities?
- Does the formal planning framework of a sector in a jurisdiction allow for tiering of environmental assessments?
- How to deal with differences in scope between plans and projects?
- How to deal with the time-lag issues?
- How to deal with the limited ‘shelf life’ of plans and SEAs?
- How to link SEAs and EIAs carefully? (scoping: prevention of gaps as well as unnecessary overlaps)
- How to allocate issues to an appropriate tier of the planning process?
- How to define the appropriate amount of information on environmental impact and performance (prevention of superficial assessments, not too comprehensive, unwieldy assessment)?
- How to ensure that problems are not simply passed to others to deal with later on when they are critical to the plan?
- What is the role of SEA and EIA follow-up in the tiering process? (tiering and feedback and feed forward)

- What is the predictability of results in and of tiering? (e.g. when will an EIA become trivial after a SEA)
- How to minimise the risk of failing to establish the overall impact and the risk of failing of transparency and accountability?

Terms of reference for papers

This workshop will discuss notions of tiering, case studies and practical elaborations and implications, with the aim being to discuss ideas and exchange practical experiences to identify common issues and principles, lessons and useful future directions. The following themes merit attention:

- Applicability, usefulness of tiering in planning practice:
What are the strengths, advantages and opportunities of tiering in SEA and EIA? What are weaknesses, limitations and pitfalls of tiering in practice?
- Multi-level governance and consequences for tiering:
How can tiering help to deal with planning and decision-making at various levels of government and across various sectors of society? What are the consequences of the different competencies of various governments in tiering?
- Participation and tiering:
How to deal with different stakeholders and interests in tiering? Can tiering help to solve conflicts among stakeholders, how can this be done, and how to solve conflicts in tiering, e.g. how can multi-level conflicting perspectives be dealt with?
- Tiering and quality control in SEA and EIA:
How can tiering help to enhance the quality of environmental assessments throughout the planning process? How to ensure quality of subsequent environmental assessments in tiering (minimising potential drawbacks of tiering such as issues “falling through the cracks”)? What are useful tools of quality control in tiering? (e.g., public scrutiny, independent review committees, review by other (higher order) government agencies, monitoring and evaluation of the planning process, etc)
- Tiering and scoping of SEA and EIA:
When tiering environmental assessments throughout the planning process, how to define an adequate scope? (relevant issues, alternatives, effects, level of detail, methods) How is this related to the definitions of plans and projects? (problem to be addressed, objectives set, options/solutions developed) How to prevent redundancy, overlap, repetitious work? How to prevent gaps between assessments? How to coordinate (tune) qualitative, broad brush overall assessments with specific, detailed, quantitative assessments? (causality issues)
- Role of SEA follow-up and EIA follow-up in tiering:
How can tiering be used to track usefulness and adequate implementation of mitigation measures? How can tiering be used for monitoring and evaluation of predicted impacts in earlier stages? How can tiering of environmental assessments help to deal efficiently with gaps in knowledge and uncertainties? How can follow-up help in handing over the baton to later tiers and provide feedback to previous ones?
- Role of dynamic planning context in tiering
How to do useful – effective and efficient – tiering in a dynamic planning context? How to deal with time lag issues? What is the shelf-life of SEAs and EIAs?
- Good (or bad!) cases of tiering in planning practice:
What are do’s and don’ts in tiering? What are common principles? What are useful future directions?

References

- Annendale, D. J. Bauley, E. Ouano, W. Evans, P. King (2001), The potential role of strategic environmental assessment in the activities of multi-lateral development banks, *Environmental Impact Assessment Review*, Vol.21, pp.407-429.
- Arts, J. (1998), *EIA Follow-Up: On the Role of Ex Post Evaluation in Environmental Impact Assessment*, Geo Press, Groningen.

- Arts, J. & F. Van Lamoen (forthcoming), Before EIA: defining the scope of infrastructure in the Netherlands, *Journal of Environmental Assessment and Project Management*, Vol.7 (accepted for publication early 2005).
- Bache, I. & M. Flinders (Eds.) (2004), *Multi-level Governance*, Oxford University Press, Oxford.
- EC, European Commission (1999), *Manual on Strategic Environmental Assessment of Transport Infrastructure Plans*, drafted by DHV Environment and Infrastructure, DG VII Transport Brussels.
- EU, European Union (2001), *Directive 2001/42/EC of the European parliament and of the Council, of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment*, L197, pp.30-37.
- De Roo, G. (2000), Environmental conflicts in compact cities: complexity, decision-making, and policy approaches, *Environment and Planning B: Planning and Design*, Vol.27, pp.151-162.
- De Roo, G. (2003), *Dutch Environmental Planning: Too Good to be True*, Ashgate, Aldershot.
- Fischer, T.B. (2002), *Strategic Environmental Assessment in Transport and Land Use Planning*, Earthscan, London.
- Holling, C. (ed.), *Adaptive Environmental Impact Assessment and Management*, John Wiley, Chichester, UK
- Linden, G. & H. Voogd (Eds.)(2004), *Environmental and Infrastructure Planning*, Geo Press, Groningen
- MacCormick, N. (1997), Democracy, Subsidiarity and Citizenship in the European Commonwealth, *Law and Philosophy*, Vol.16, pp.331-356.
- Partidário, M.R. (1999), Strategic Environmental Assessment – principles and potential, in: J. Petts (ed.), *Handbook on Environmental Impact Assessment*, Volume 1, Blackwell Science, Oxford, pp.60-73.
- Partidário, M.R. & T.B. Fischer (2004), “Follow-up in current SEA understanding”, in: A. Morrison-Saunders & J. Arts (eds.) *Assessing Impact, Handbook of EIA and SEA Follow-up*, Earthscan, London, pp.224-247.
- Sadler, B. & R. Verheem (1996), *Strategic Environmental Assessment, status, challenges and future directions*, EIA series 53, Ministry VROM, The Hague.
- Therivel, R. (1998), Strategic environmental assessment in the transport sector, in: D. Banister (ed.): *Transport policy and the environment*, E. and F.N. Spon, London, pp.50-71.
- Therivel, R. & M.R. Partidário (eds.) (1996), *Practice of Strategic Environmental Assessment*, Earthscan Publications, London.
- Therivel, R., E. Wilson, S. Thompson, D. Heartly & D. Pritchard (1992), *Strategic Environmental Assessment*, Earthscan, London.
- Toulemonde, J. (1996), Can We Evaluate Subsidiarity? Elements of Answers from the European Practice, *International Review of Administrative Sciences*, Vol.62, pp.49-62.
- Tomlinson, P. and C. Fry (2002), *Improving EIA Effectiveness through SEA*, paper presented to IAIA '02 conference, Hague.
- UNECE, United Nations Economic Commission for Europe (1992), *Application of Environmental Impact Assessment Principles to Policies, Plans and Programmes*, Environmental Series no.5, United Nations, Geneva.
- Wood, C. & M. Djeddour (1992), “Strategic Environmental Assessment: EA of Policies, plans and programmes”, *Impact Assessment Bulletin*, vol.10(1), pp.: 3-21.
- Wood, C. (2003), *Environmental Impact Assessment – a Comparative Overview*, Prentice Hall, Pearson Education, Harlow, UK.