Introduction to Procedures and Methods for SEA

by Thomas Fischer

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I'm going to talk to you today about procedures and methods in Strategic Environmental Assessment application. I will start talking about why we need them and what we have learned so far from the application. I will then go on to talk about commonly used procedures and methods. I will explain under what conditions certain procedures and methods are used and should be applied. I am talking about factors for selecting most appropriate procedures and methods. I will then go on to brief you on methodologies for linking Strategic Environmental Assessment to the broader sustainable development agenda and, in this context, I will also stress the benefits attached with this, and, finally, I will give you some key learning points and messages.

So, to my first point, why we need SEA procedures. I summarized this into four points.

First of all, the SEA process helps decisionmakers to incorporate environmental and other sustainability objectives in the formulation of policies, plans and programs. Secondly, it helps decisionmakers to gather and analyze the information necessary for sound decisionmaking, and that also includes the input of relevant stakeholders. Thirdly, SEA procedures help decisionmakers to evaluate the likely significant environmental and health effects of strategic options and proposed actions. And, finally, they set conditions for environmentally sound implementation of strategic decisions.

So what should an SEA process look like? First of all, the SEA process should enhance the systematic approach to policy, plan and program making, ultimately making those more rigorous and transparent. Secondly, it should improve good governance, build public trust and confidence in decisionmaking.
Thirdly, the SEA process should help to achieve the procedural component of decisionmaking for environmentally sound and also sustainable development. And, finally, it should provide something like an audit trail of the selections made in the process.

Having talked about SEA processes, I'll now go on to talk a bit about SEA methods, and I will start again with the question, "Why do we need them?"

We need SEA methods, first of all, to add scientific rigor to the Strategic Environmental Assessment. We need them to simplify complex issues at strategic decisionmaking levels, and as you all know, and as you will hear in the other presentations, this is very different from the project level, indeed. At the project level, you usually have a rather straightforward situation. That's different than strategic levels of decisionmaking.

SEA methods are also needed to support evaluation of the environmental effects of a reasonable range of alternatives of the proposed initiatives. That means the proposed policies, plans and programs.

SEA methods are also needed to facilitate consultation and participation. And, finally, we need SEA methods as well to help make SEA cost-effective.

So what have we learned so far in terms of both procedures and methods? Both procedures and methods should be fit for purpose. That is very important. We need to apply them according to the specific situations we are dealing with. Procedures and methods should then be sustainability oriented. And in this context, and there's also an important aspect, and that is called integration.

Now, integration has become one of the buzz words in the Strategic Environmental Assessment debate over the past few years, and for that reason I will briefly summarize the different forms of integration that are important in the context of Strategic Environmental Assessment application.

First of all, there's substantive integration, and that simply means the integration of environmental, social and economic aspects in decisionmaking.

Secondly, we have administrative integration, and that includes the integration of different decisionmaking levels; that is, the national, for example, the regional and the local level of decisionmaking.

Thirdly, and that is important for a holistic application of Strategic Environmental Assessment, we have systematic application. Now, that means that we need an integration of policies, plans and programs. We need a proper tiering process, and only then can SEA be effective. There is sectorial integration, and that's the integration, for example, of land-use planning and transport planning. Participative integration is important. Participation is part of any SEA process, and participative integration means that the outcomes of this participation are actually considered in the final decision.

We have methodological integration, and that is still very difficult to achieve because we are dealing with different spheres if we are talking about economic, social and environmental aspects, and so, so far, and we lack appropriate methods in order to integrate these different aspects.

There's technical integration, and that particularly includes, for example, indicators. How do you achieve a set of indicators that reflects a common baseline and common values for such different things as economic, social and environmental aspects?

We have procedural integration, and that is the integration of the SEA procedure and the policy, plan and program procedure itself.

And, finally, we do have decisionmaking integration, and that's the integration of the findings of the Strategic Environmental Assessment in the decisionmaking process itself.

Having talked quite extensively about integration now, I will go on with my list on what procedures and methods should look like. They should also be transparent, they should be cost-effective, relevant and, finally, they should be practical.

I will now go on to talk about commonly used procedures. We distinguish between two main procedural approaches in current practice to Strategic Environmental Assessment.

First of all, we have defined procedures, and those procedures follow closely Environmental Impact Assessment procedures, project Environmental Impact Assessment or EIA, that is. We usually find those procedures, those defined procedures in plan and program situations.

Secondly, we have adaptable, flexible and integrated procedures, and those are usually found in policy situations. Now, those procedures are a bit more difficult to handle because, as I just said, they are flexible and adaptable, so they are not as easily applied as project EIA-based procedures.

On this slide, you see an EIA-based procedure, a defined procedure, and this includes several stages; that is, screening, and screening is used for the decision, do we need to conduct an SEA in the first place?

Scoping. That's about the scope of the Strategic Environmental Assessment. What are going to be the issues that are going to be included in the SEA?

We have SEA report preparation. We have a review stage of the SEA report. We have informed decisonmaking, and remember what I just said about integration of decisionmaking, so that's very important here in the SEA process.

We have approval of the plan and program. We have follow-up and monitoring, and that's very important because we want to learn from what we have done in the past, and we want to monitor, were our predictions correct? Do we actually observe the impacts, in reality, that we have predicted?

And then, importantly, and that's indicated here on the left-hand side of this figure, we have consultations and public participation. And consultations and public participation can accompany the whole process. However, it is vital to have consultation and public participation at the scoping and review stages in this process.

I now present you a few examples, practical examples, of EIA-based procedures, and you find those in a range of countries. For example, in the European Union, the Strategic Environmental

Assessment directive that will formalize SEA application in European Union member states, starting the 21st of July 2004, this has very much an EIA-based approach.

Programmatic and Environmental Assessment, as applied in the USA since the first introduction of Environmental Assessment based on NEPA, the National Environmental Policy Act, follows an EIA-based approach.

We have Strategic Environmental Impact Assessment they call it in the Netherlands, and that is based on the national EIA, the Project EIA Act, that is.

In Germany, we have EIA-based Impact Assessment in certain states--Germany is a federal state, similar to the United States--and in certain states we have Impact Assessment in landscape plans. In Germany, you have a system where landscape plans and programs accompany any spatial and land use plans, and those do consider in certain states Impact Assessment as well.

And then we have the World Bank, and in the World Bank we have, for example, Sectoral Environmental Assessment and Regional Environmental Assessment.

Now, the next slide shows you a few examples of adaptable, flexible and integrated approaches. I list here four examples, and that includes the Netherlands. The Netherlands is a country where you find both EIA-based procedures and adaptable procedures. And in the Netherlands, adaptable procedures are applied in the form of an environment test. They call that "Etest," and that's to certain government policies.

We have Denmark, where SEA is applied to government bills, and there has also been the guidance on that released by the government in the 1990s.

We have the U.K., with Environmental Appraisal and Sustainability Appraisal of land use plans, and that is a **[inaudible--not in slide--point-to-point?--JS]** point flexibility.

And we also have, for example, Canada, where a Policy Impact Assessment is applied.

After having talked about appropriate processes and given you examples of different procedures in different countries worldwide, I now go on to talk about appropriate methods and selecting appropriate methods in the Strategic Environmental Assessment process.

There is one thing that I would like to add before I start talking about these methods, and some of you might think, "This looks familiar. I've seen that before." And in project EIA application, that might well be the case, but be aware those methods need to be applied according to the context, and that means that it is very likely that in a strategic context, you need to apply a certain method differently from the project context.

So I will start with indicators, and there are different types of indicators. Indicators are used in monitoring. Indicators are also used in the scoping process when you want to decide what are the issues that I need to consider in my Strategic Environmental Assessment. There are state

indicators, and that is simply monitoring, for example, certain types of emissions, not doing anything about it, just looking at how they develop over time.

There are pressure indicators. And what you do with pressure indicators is, you have, for example, a set of objectives and then you monitor whether you actually achieved those objectives or whether you're on target or whether you are not. And if you are not, probably you should do something about it. So that's what pressure indicators are about.

And then, finally, you have response indicators, and that means you monitor certain development. And in case something doesn't happen as you want it to happen, you have an automatic response mechanism in the process that will correct your action as it is going.

Very frequently applied, and almost in every Strategic Environmental Assessment really, are checklists. Checklists can include civil factors or more elaborate questions. Then, you have matrices, and matrices are actually very popular in the United Kingdom in Environmental and Sustainability Appraisal, and I've included an example here on this slide.

And what you can see is that we have different criteria that are the basis for your assessment, and they are criteria that relate to the global sustainability, to natural resources and to local environmental quality. That's on the X-axis. And what you have on the Y-axis here are different policies, and these are policies that you would find in the land use plan in the U.K. And those policies are compared with the different criteria, and then it is decided whether these are consistent or whether these are not. So that's a very neat example for the application of the matrix in Strategic Environmental Assessment.

You have networks, and this figure here shows you a very simplified example of network. So you start with a certain development, and then if you want to consider different aspects integratively, such as social, cultural, economic, and environmental, you go down from there, from the development, through the different aspects, to then the impacts that are likely to follow of these different aspects. So what you get here is something like an impact tree.

You have surveys. Surveys are very helpful, and if you are interested in finding unidentified effects or impacts, you have consultation and public participation. It's part of the SEA procedure itself, and also it is a method. So it is very important at the core of Strategic Environmental Assessment.

You have also statistical analysis. Whenever you have quantifiable data, it might be advisable to do statistical analysis.

Then, you have overlay mapping, and overlay mapping you usually apply, for example, in transport planning and plan SEA situations. And I've included an example here. It shows you a range of aspects that you might want to consider in your plan SEA, and that is habitats, water, areas of cultural interests, and then the final map shows you an area or areas of least conflict.

And what you do is you overlay the different maps, and you want to find the corridor in this example here where you have the least conflict with the different aspects, with the different

alignment agents between Points A and B, and the fourth map on this slide shows you what the corridor of least conflict would look like.

Now, in order for you to decide on most appropriate form of methods and techniques in SEA, there is some help at hand because the use of methods and techniques depends on range of aspects. Most importantly, these include:

First of all, the Sector Strategic Environmental Assessment is applied to, very obviously, and you are given a range of examples in the case study presentations.

Secondly, it is the stage in the assessment process, and my slide here shows you some currently frequently applied methods and techniques at different stages of decisionmaking: screen, scoping, impact assessment, review, decisionmaking itself, and follow-up.

For example, for screening, usually indicators are very helpful to decide do you want to conduct an SEA or not.

For scoping, you have a range of possibilities. This also includes indicators, checklists, for example, based on legislation, matrices, you can run surveys, you can participate the public to decide what your SEA should include, and you can also consult experts.

Impact Assessments. There it depends a lot, as I said, on the sector, and as I will say in a moment, also on the tier you're dealing with, and you apply basically a whole range of different methods and techniques. And these are really just examples that I've presented here. So these are matrices, service, also public participation and consultation, networks, statistical analysis and overlay maps.

For review, of particular importance are consultation and public participation.

Decisionmaking. Decisionmakers are usually helped by clear and short information. So checklists, matrices, and overlay maps can be very helpful here.

And then finally for follow-up monitoring, indicators and surveys are usually used at this stage of the SEA process.

Finally, I just mentioned that briefly, and the specific decisionmaking tier is an important reason for you to apply certain methods. And what that might mean you can see here on my graph. It shows you, on the Y-axis, quantity of information, and on the X-axis, I show you the decisionmaking tier. And I have mapped the scope of alternatives, and the scope of alternatives decreases from policy down to project level of decisionmaking, but, on the other hand, concrete site-specific issues, they are increasing from policies to project levels of decisionmaking.

Now, I show you some examples here of what that might mean for policy, plan and program situations. This is based on a comprehensive research project that was done at the end of the 1990s in three countries--the U.K., the Netherlands and Germany--and it shows you findings based on about 80 different Strategic Environmental Assessments in these countries. And what

you can see is that, in a policy SEA situation, certain methods are applied; in a plan situation, certain methods are applied; and in a program SEA situation, certain methods are applied.

In policy SEA, very typically you have tsunami modeling and simulation analysis. And in transport planning in these three countries, you don't find that at any other level of decisionmaking. At the plan level, typically, overlay mapping is applied. This is something you try neither at the policy, nor at the program SEA level.

And then if you look at program SEA, particularly multi-criteria analysis and cost-benefit analysis are applied.

There are some other methods that are listed here, and those are also typical, but they may also be applied in situations at other tiers of decisionmaking. You have, for example, workshops. In these three countries, preferably workshops were used at the policy SEA level. You can also do workshops at the plan and program SEA level.

Impact matrices are also something that you can use in policy and program SEA situations, and the same is the case here for checklists.

And this slide presented here, that visualizes what I mean with very different situations and applications at the three main tiers of decisionmaking. You have difficult policy situations where you have a whole range of very different alternatives and options that you might compare.

A plan situation is usually something more spatial and you usually try to find, for example, in transport infrastructure, improved infrastructure connections, between different points in space, and that's indicated here by ABC.

And then in program situations--and this refers to transport planning--what you do get is application of cost-benefit and multi-criteria analysis, and there you get a ranking of potential projects, a ranking according to their costs and benefits. I know that in China cost-benefit analysis is somewhat differently applied from the countries that I am talking here. The countries that I'm talking about, they really use real costs in monetary terms, and benefits in monetary terms as well. So that's very important at this point here, and you do find that, for example, in national transport programs in Germany and the U.K.

Now, the tier of decisionmaking does not only have implications for the methods that you use, but it might also have implications for the way you, as a planner, should act in different situations. And this is indicated by the graph here. And this is a three-dimensional graph, and it maps conflicts, degree of communication and knowledge and technical context.

So what you find is that the planner or the person applying the SEA may need to act as a mediator in policy situations because the degree of conflict is quite high, and the level of knowledge is low, so you should act as a mediator in these situations, getting in opinions from different sides, from different stakeholders and act as a mediator.

You should act as an applicant in plan situations, and as a technician in program situations. In program situations, the problem is that you might face "not in my backyard" phenomenon. So, in the interest of the common good, you should rather act as a technician because what you have is you have quite a good technical knowledge of the possible impacts that might occur.

Now, how about linking Strategic Environmental Assessment to the broader sustainable development agenda? SEA is well suited to do that because it is an instrument aiming at giving environmental aspects due consideration in decisionmaking for sustainable development.

However, I mentioned that, at the beginning, the methodological integration of Environmental, Social and Economic Assessment itself unfortunately is still rather weak because the integration of methods is difficult, and that's mainly due to different dimensions that you're dealing with, different scales and also different values.

However, the integration of procedures itself, that is actually comparatively straightforward because what you have is you can use screening, scoping, impact assessment, review, decisionmaking, monitoring and follow-up as a framework in which you integrate all of the different procedures.

What can SEA do, and how can SEA help you to link it to the broader sustainable development agenda?

First of all, it enables you to do more inclusive and informed decisions. It can support effective and efficient governance, and that increasingly is becoming a very important point, and particularly in fragmented societies. SEA can support more optimal project formulation by addressing issues and potential impacts fairly early in the decisionmaking hierarchy.

SEA can simplify a project officer's work by structuring the process, by informing the project officer about what might occur. SEA may support better implementation of all thematic policies and, importantly, it may reduce duplication of effort by making the whole decisionmaking hierarchy more rational.

Now, what kinds of methods and techniques do we have to link SEA to the broader sustainable development agenda?

We do have quantitative methods, and some of them are really rather methodologies, and I list a few that are currently in use. Those include cost-benefit analysis, and I mentioned those in program situations, for example, in transport planning, the same with multi-criteria analysis. We have computer modeling, and we do have geographic information systems, and you can use those, for example, in overlay mapping.

Qualitative methods and methodologies, and that's again just a selection of different methods, but those are methods that are applied quite frequently: our checklists, matrices, workshops, and Delphi surveys. Delphi surveys include surveys of experts, and they are very helpful if you're a bit unsure about what it is you want to address, how it is you want to address it.

I now come to my last point, and that's the key learning point is the message.

What have we learned? Procedures and methods are needed to help achieve the main aim of SEA, and that is to support environmentally sound decisionmaking for sustainable development.

Secondly, we have learned that both SEA procedures and methods need to be fit for purpose. They should be sustainability oriented; they should be integrated, transparent, cost-effective, relevant and practical.

There are currently two main approaches to SEA. First of all, we have define EIA-based SEA processes in plan and program situations, and then we have adaptable, flexible and integrated SEA procedures in policy situations.

You have a range of methods available for use in Strategic Environmental Assessment, and these should be chosen according to the sector, the decisionmaking tier, and the procedural stage you are dealing with.

And, finally, the sustainability and governance agendas ask for SEA to be applied in an integrated manner.