

Case Study: SEA in the UK Transport Sector

by Chris Fry

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My lecture today is on a sector-specific application of strategic environmental assessment, namely, the use of SEA in U.K. transport planning, and particularly I'm focusing on how we use SEA in England. I'll organize my lecture into three parts: firstly, I want to give you an introduction to strategic environmental assessment in the U.K.; secondly, give you an overview of U.K. transport planning generally and how that operates; and then pick out four key issues for strategic environmental assessment in transport in the U.K. which hopefully have also got wider applicability elsewhere.

So, firstly, then, strategic environmental assessment in the U.K. We have a temperate climate here in the U.K., not really an extreme environment, but we do have good-quality natural and built environmental areas. We have a lot of archaeology, obviously a long history going through the country as well.

We also have 56 million people in the country, and it's a relatively crowded island these days, so we have quite a high pressure for development, and that's obviously where tools such as strategic environmental assessment come into the equation to help us safeguard our environment.

So on this slide, I've captured some of the key aspects of strategic environmental assessment in the U.K. and our existing focus and our existing sort of state of the art.

So far we've been primarily interested in strategic environmental assessment for plans and programs, although there are some examples of using SEA at the policy level. Mainly I'm going to talk today about the use at the plan and program level, and this is reinforced by the European Union Directive on Strategic Environmental Assessment, which is focused purely on plans and programs.

Now, that directive will be implemented in the member states, including across England, during 2004. So in July 2004, we'll be under a new legislative regime for SEA.

The directive will cover sectors including land use transport, waste, water, agriculture, and some others. And it's important to note although this is our first really overarching piece of legislation for SEA, we have got a lot of examples of SEA and also some wider forms of assessment or

appraisal that have been happening in a number of these sectors already. So although the legislation is new, we're not starting from scratch.

I just wanted to say a little bit about SEA in the context of other decisionmaking tools and other ways that we can look at the environment and take that into account in decisions. So on this slide, I've laid out the sort of traditional hierarchy of plans, programs, and studies at the more strategic level, so that's where strategic environmental assessment fits in. And then below that, you can see project planning and environmental impact assessment being the traditional tool that we use there.

Then moving on, once you've actually designed and planned a project and you've taken the decision about going ahead with that, you move into the more detailed design and implementation phases, and other tools may come into play there. We have life-cycle assessment. We have emerging practice in that area, and related tools like whole-life costing where you're looking at the ongoing costs of maintaining an asset and taking that into account when you're deciding on how to design or implement or maintain a new piece of infrastructure.

Then, finally, sort of wrap the whole thing up into a box in terms of an environmental management system, so companies, both public sector organizations and also private companies, may have environmental management systems that help provide a framework overall for these kinds of decisions.

So that's all I wanted to say about SEA in general. I'll move on now to give you a little bit of context in terms of the U.K. and the transport planning system.

This slide, before I move on, shows Twyford Down, which is an example of an internationally important wildlife site, which was cut through by a motorway scheme that we implemented in this country in the early 1990s. Now, that was an example of a scheme which was quite controversial in environmental terms, and it's been part of the history that's led to the introduction of new tools and new approaches to bring environmental assessment more into the fore in terms of decisionmaking.

Looking at the U.K. transport planning context, for a small island we do tend to move around a lot. We've got a statistic there of 6,800 miles per person per year that we travel. And you can see there we have quite a strong bias towards road transport. Only 7 percent of personal journeys and only 10 percent of freight are moved by transport modes other than the road.

And within transport planning, we've got quite a long tradition of a strong, evidence-based form of decisionmaking, so there's quite a long tradition of a lot of detailed assessment activities and evaluation activities that support the transport planning process, although traditionally it's been dominated by forms of cost/benefit assessment, particularly focused on some of the transport efficiency, the economic efficiency angles of the way that new transport infrastructure can save people time, journey time, and, therefore, that has a monetary benefit for the economy. So, traditionally, that's been the dominant sort of form of assessment and where most of that activity has been focused. Where the environmental issues perhaps for a number of years have been a little bit on the side, we've been undertaking forms of environmental assessment, but perhaps not

very strongly at the strategic level, and perhaps not really bringing the results into the heart of the decisionmaking process.

So, in response to this history, we've actually had a new focus for transport planning in the U.K. from about 1998, so we're about five years into that now. And the government tried to place transport really in a wider context, so introducing five objectives for transport, so that's all the way from the policy level all the way down to implementing individual transport schemes. And those five objectives are shown here. We've got one to do with the environment, one to do with safety, one to do with the economy, there's also accessibility, and also integration to make sure that land use and transport particularly are integrated. And, in practice, this has led to a more integrated approach to transport planning and greater recognition of the role of the different modes of transport, so this slide quite simply showing sort of integrated transport planning in a visual way. We've got the trains, we've got the road, we've got the buses, we've got the bicycles, and we've also got in the top left of that slide a greater focus on managing the network in an effective way.

So to implement this new integrated transport regime, we've also redefined the transport planning processes and introduced various new forms of studies and plans that need to be completed before we go on to actually implement an individual transport scheme such as a new road. I'm not going to talk to this diagram in detail. This is a simplified version, so it's a reasonably complex web of planning tiers and different forms of plans all the way down to the projects. But I just wanted to pick out that through the middle of that diagram you can see various forms of studies, like the multimodal studies that are highlighted in the middle, and really that middle tier of decisionmaking, that's where strategic environmental assessment comes in. So with a greater emphasis on that strategic tier, that's where SEA's got more of a part to play.

Now, for all of those studies and plans, and also all the way down to the project level, another thing that we've brought in during the last five years is a new approach to appraisal. So alongside introducing those five objectives, we've actually got a new appraisal framework which allows us to look at every case in terms of how well it achieves those objectives.

So, in a way, this is some form of overarching integrated appraisal framework that's wider than SEA as it might traditionally be applied. And it applies at the plan level, the study level, and also down to the projects, and it relies heavily on supporting studies. So that's the framework, the new approach to appraisal, but the cost/benefit assessment, a detailed study may be carried out there that feeds results upwards, and similarly in environmental assessment.

So the second slide here on the new approach to appraisal really just stresses that we have various different parts of the appraisal process. We need to focus on local and regional problems and objectives. We need to look at objectives. We also need to look at the amelioration of problems. We are looking to conduct supporting analyses, and they're listed there.

And then the fourth point we're actually focusing the results of the appraisal by producing the appraisal summary table, and that's shown on this next slide where you can see here the appraisal summary table. This is an example of a summary table that's not been completed, but each one of the studies that goes through and perhaps different variations of options for different transport

schemes within a study would have an appraisal summary table completed. And this allows a decisionmaker to see the results of that in a common framework. And I'll talk a little bit more about the appraisal summary table a bit later on in the presentation.

Okay. I'd now like to move on to talk about our experiences from the transport sector in applying the new approach to appraisal and also in how we're now trying to improve that further and meet the requirements of the SEA directive that I've described. And I've focused in on four key issues, and I hope that these will be of wider relevance to different sectors and different situations where you may be developing and applying SEA.

The first issue I want to talk about is regarding the way that SEA is commenced and whether there is an attempt to provide an objectives-led process or whether it's more of a baseline-led process. And I'll go on and explain a little bit more about that.

So this slide is really summing this up. When I talk about an objectives-led process, really I'm talking about setting some high-level objectives for the environment, perhaps, you know, to reduce noise through the implementation of this plan or program. And so when SEA is conducted in an objectives-led approach, then it will be a case of looking at these objectives, defining these objectives up front, and then considering how various options to implement the plan would perform against those objectives.

Now, the way that that happens in practice would tend to be more qualitative and more of a judgment-based approach to completing SEA. And there are many examples of SEAs that are done like that, and in our U.K. transport situation, some of the regional planning, which is sort of one of the highest plan-making tiers, that would be conducted in that fashion.

The second category we have is evidence-based SEA, and really I think here we're talking about focusing on various problems. So we're defining the different problems that a plan or a program is trying to solve and combining that with perhaps some of the objectives that you're trying to fulfill in terms of the environment. And you bring those together in a sort of an evidence-based approach where within the SEA you try and gather enough evidence to look at the environmental impacts and also with reference to the objectives.

So what we're saying here is that generally there will be a little bit more attention to actually developing mitigation measures, looking at cumulative impacts. There will be more in-depth work to provide that evidence, but it isn't quite as extreme as the third category, which is a baseline-led approach. And here an SEA with a baseline-led approach may start with trying to really understand the baseline environment. What are the environmental conditions before the plan is in place, and how might they change naturally without the plan intervening? And then from which you can then build up a detailed picture of what the impacts might be of the plan or program.

Now, that approach is perhaps followed more often in project level environmental impact assessment, where you may have quite a small study area, so you can actually look in quite a lot of detail at the baseline environment. But in an SEA situation, you may be tending more towards an evidence-based or an objectives-led approach, or a combination of these.

So to refer now to the appraisal summary table that I've already mentioned, which is part of the new approach to appraisal for transport in the U.K., we really have a combination of an objectives-led approach--as you can see in the appraisal summary table here, we've got the five overarching objectives, and then we've got some sub-objectives underneath those. Within environment, you can see the top category. You have greenhouse gas emissions and air and noise and so on, those environmental topics.

But the new approach to appraisal isn't purely about testing or giving judgment against how those objectives are met. It is also interested in looking at the problems, so looking at it from the other end, the transport problems that you may have in an area, and actually developing your SEA to focus particularly on those. So that's what I mean when I say it's a sort of a combination of the objectives-led and evidence-based approach.

The second issue that I wanted to pick up which is important to SEA and has been particularly important in trying to apply SEA in these strategic forms of appraisal in the U.K. scene is looking at the range of options that need to be considered by the SEA. Now, in the case of transport, we can see that an SEA needs to be able to compare different transport modes, and I've listed those different modes on the slide there.

So how does SEA actually react to that? Well, for example, we may--for a traditional sort of road scheme or perhaps a bus scheme within an urban environment, you may not need to worry too much about the effects on rivering processes and the morphology of a river. But actually when you may be introducing or wanting to compare an option that's based on perhaps a bus versus options that are based on waterways and waterway traffic and perhaps public transport, ferry shuttles and that sort of thing, you may actually need to make sure that those impacts have been looked at as well. So at one level, it's just a case of making sure you've got the right range of environmental topics being considered to cope with those different range of options.

The second dimension to looking at the range of options that SEA needs to cope with for transport is actually being able to consider non-infrastructure measures, so it's hard enough to compare different types of modes, a road versus a rail versus a new airport, but it's also important that demand management measures, perhaps, actually introducing road charging and things like that, that doesn't necessarily have a physical land take or manifestation, but will have an environmental impact because it may affect traffic movements elsewhere around the network. And so an SEA needs to try and cope with some of these types of measures as well that I've listed here.

And the third issue I'd like to touch on is regarding the methods that we use for SEA and some of the limitations to those methods. And to some extent, it's linked to the previous point about the comparison of different options.

Basically, when we've got an SEA situation, if we compare that with how we would normally deal with an individual project using environmental impact assessment, there are some quite considerable differences. So I've summarized those in this slide here. A couple that I would pick on.

Obviously, with SEA, we're trying to develop methods which will look over a much longer time horizon. We may be dealing with a plan that has a life of 20 or 30 or 40 years; whereas, a project may be implemented within two or three.

Cumulative effects, that's another key area where the methods for SEA need to explicitly address things like cumulative effects or the addition of different effects across the plan area; whereas, traditionally, a project level EIA has not been able to address those in any detail.

And then, finally, at the bottom, the public involvement, it may be quite difficult to get involvement in talking about a plan or a program because members of the public and other interested parties may only really get involved when it becomes clear what the individual projects are going to be and where they're going to be located and whether they're going to be close to where they're living, et cetera. So it's more of a challenge and different approaches are needed there.

So talking a little bit more about the limitations to methods and, again, tying it back to the way that we cope with this in U.K. transport planning, we're actually evolving towards monetarization of various environmental impacts, although within the appraisal summary table that I was showing you, so far the standard unit for the environmental impacts tends to be a quantitative unit or a qualitative score, rather than any monetarization at present. We are actually looking to introduce monetary values for greenhouse gas emissions.

Now, that's okay because that's a relatively uniform impact so it doesn't matter where you are. The amount of carbon emitted by a particular flow of traffic will be generally about the same wherever you are. But when we move on to other topics, such as local air quality and noise, you've also got to take into account the sensitivity of the receiving environment and the communities that might be affected. So that's more of a challenge, and that gets even harder when we talk about biodiversity, perhaps landscape, perhaps heritage. These kinds of topics are even more difficult to quantify let alone monetarize.

Then, finally, looking at the issue of community severance, this is one of the important social dimensions of transport. One of the adverse effects that can happen is perhaps a road will be put through a village and split that in half so that day-to-day movements, pedestrian movements, may become much more difficult. But, again, this is a very difficult issue to get to grips with at the strategic level, and we don't currently have the methods in place to do that.

And the fourth issue, very important issue in terms of making SEA beneficial and also efficient within the context it's working, is how to integrate SEA with other processes and particularly with project level EIA. In the U.K., we have an aim to speed up the delivery of transport projects, and this leads us to try to streamline the processes. So we want to introduce SEA and strengthen that, but at the same time, we don't want to end up with a very inefficient system that means that we end up paralyzing the whole decisionmaking process. So this is vertical integration, if you like, looking across the different tiers of decisionmaking from the strategic down to the project level. This is something that's quite a challenge for us at the moment. We

need to try and get to grips with how SEA can in practice help to unlock some of the efficiencies with environmental impact assessment.

Moving on to the next slide, some of the challenges we have, the barriers really to an efficient vertical integration between SEA and EIA, we've got to realize what different organizations may be involved in--one of them defining the plan, and in the U.K. that tends to be a public sector activity, but other organizations, maybe some of the private companies--we have private rail companies--may be implementing the project, so actually making sure that the environmental assessment work that was done at the strategic level is used efficiently to be a head start for the project EIA is quite difficult across those boundaries. Also, we have a long lead-in time, so is the result of your SEA still valid if it was done 10 or 15 years ago and you're only just now beginning to look to implement the project?

Obviously, the environment itself can change over time, and so can the different stakeholders and different parties that want to be involved in that decision. So these are some of the issues that need to be thought about further.

Okay. So, finally, to summarize and to bring all that back together, what we're finding then in terms of the first issue, the use of objectives, or evidence or baseline-led approaches in the transport scene in England, we're finding that an objectives-led approach is workable, but what we need to do is be very clear about defining those objectives for the environment early on in the SEA process and being very clear about those.

Secondly, regarding the choice of options, I think that the lesson here is that we are needing to appreciate a very wide range of options that may be solutions for the plan or program level. So it's a case of taking a very wide approach and not closing off those options too early on in SEA.

Looking at the limitations to methods, again, there aren't going to be answers to all of these limitations immediately. But if you have a robust SEA process overall, then where you're coming up against a barrier, a limited knowledge or understanding of a particularly environmental issue, you can cope with that level of uncertainty as long as it's made clear within the assessment and so the decisionmakers are aware of the uncertainty.

And then, finally, there is a lot of emphasis on integrating SEA. As I've described, we already have the new approach to appraisal, and we're bringing the requirements of a more robust form of SEA on the back of that. So we need to integrate that, and also integrate carefully with environmental impact assessment. So there's a lesson there in terms of not wanting to launch additional processes without carefully thinking through how SEA fits in with that wider context.