

SEA Case Study: A Transport Plan in Germany

by Thomas Fischer

Mr. Thomas Fischer is a Senior Lecturer of environmental planning at the University of Liverpool. He holds a PhD in SEA from the University of Manchester and an MA degree in Geography from the Free University of Berlin. Thomas has several years of practical work experience in environmental planning, management and assessment, public administration, and research in several European countries and Canada. He is Chair of the SEA section of the International Association for Impact Assessment (IAIA) and is also an associate research member of the Viessmann Research Center on Modern Europe at Wilfrid Laurier University, Canada. Thomas has been involved in SEA training activities in Europe, Central and South America and Asia. He has published widely on SEA, including book 'SEA in transport and land use planning'.

I'm going to talk about Strategic Environmental Assessment application to a transport plan in Germany. First of all, to give you an idea of the area for which the transport plan is prepared, here you see the map of Germany, and it's the transport plan prepared at the county level, and the county is called Oder-Spree, and it is located east of Berlin. It's the red area on the map here.

Now, what is it I'm going to talk about? Well, first, I'm going to set the context. I'm going to talk a bit about the location, and I'm also going to talk about the tiered transport planning system in Germany. I will talk about the action, the plan preparation itself. I will tell you what was done. I will give you quite a good idea of the methods and techniques that were implied. I will present some key results and, finally, some key messages to the context of the chosen case.

Well, I chose the case, in the first place, in order to support the development of an understanding for the importance of tiering in Strategic Environmental Assessment. The chosen case is a very typical transport program at the county level in Germany. Germany has a well-developed transport planning system. This is why it is a very good example for showing how tiering works in practice.

Currently, there are no formal SEA requirements for the chosen case. There are, however, formal requirements to consider the environment based on the Land Roads. That is the planning act done in the State of Brandenburg. That is the state where the case is located.

However, there will be formal SEA requirements in Germany after the implementation of the SEA directive in July 2004. Formalized SEA will be based on the example that I am presenting, so it's interesting to see what things they'll need to change and what things can stay as they are.

The context of the case. While here you see the location, you see the State of Brandenburg and what you also see is you see different regions within this state. Those regions themselves are subdivided into counties, and what you see in black here, that's the County Oder-Spree, and that's the area I'm talking about in my example.

This slide shows you the context of the transport planning system in Germany. It shows you the structure, the tiering structure, from federal through state, regional, subregional to local levels of

decisionmaking, and it shows you the sequence from policies, plans, programs to fund the projects.

What you can see on this slide is that the program level is actually quite well developed. At the federal level, for example, you have the federal transport infrastructure plan which, in effect is a program, if you apply a systematic approach to defining this particular plan. You have state transport programs. You have county transport programs, and this is the category into which my case falls here today. And this is indicated here in blue. This is the level we are dealing with. And, finally, you also have local transport programs.

If you look at all of the other levels, you do have projects being prepared at every level of decisionmaking. When it comes to policies, usually that's quite fragmented. It's fragmented at the national level, which means there's no one transport policy of many different transport policies. The same is the case for the state level. At the subregional level, at the moment there are no indications that there are any policies at all. However, at the local level, again, you do find integrated transport plans. The same is the case for the plan level. There are only very few corridor or area studies it could be called.

So you see that there is experience at all levels of decisionmaking, but the extent to which SEA is applied at different levels varies, but it is very well developed at the level that I am talking about, the program level.

The action. Well, the transport program, what are its objectives? Well, the main objective is to develop a hierarchy of roads with minimum travel speeds for different functional corrections. And you see the hierarchy of roads in the Federal Republic of Germany, and you can also see minimum speeds that are to be achieved on these different types of roads. This is the basis for the transport program that I'm talking about.

You will also average distance to road type. So the average distance to a local road is very small. To a major motorway, the average distance should be between 100 and 200 kilometers, as you can see on this slide.

Objective two of the transport program concerns accessibility, and what that means is that there should be certain travel times, in minutes, from any point to a certain hierarchy of centers, centers that supply high-quality and quantity of facilities. These should be reached from any point in space within less than 60 minutes. Medium quality and quantity of facilities, that is 30 minutes, and standard facilities, 20 minutes. So, from any point in the state of Brandenburg, a person should be able to reach a center, a town, for example, the standard facilities in less than or up to 20 minutes.

Accessibility is also about the quality of the road connections between different centers of different hierarchical order. So, if you have centers of high quality and quantity of facilities, those should be connected usually with motorways or highways. Those of standard facilities, well, you can have smaller roads to connect them.

This map shows you functional road connections within the hierarchy of spatial and transport structures. The underlying idea of this hierarchy is the concept of decentralized concentration. This is also called polycentric spatial structure. So you have a spatial structure where you have bigger cities that are centers of the higher order, and that goes through medium-size cities to towns and smaller towns that are then of a lower order, and those are to be connected with roads that have different functions, that have different minimum speeds, and that is shown here on this map. You have the hierarchy of centers, and you have an equivalent hierarchy of roads. You have certain functional connections, and you have certain minimum speeds that you should be able to achieve on these roads.

Well, what was done? Well, the idea is to improve accessibility. The map that you see now shows your driving distances to major centers. And you remember these two centers, for example, would be centers of a higher order, and I showed you before that those should be accessible for any person living in the State of Brandenburg in less than or up to 60 minutes. So it shows you travel times to these centers from different points in space.

Now, based on this hierarchy of roads, and based on driving time distances, cost-benefit analysis was applied in order to identify those roads that result in the highest benefits, new roads that result in the highest benefits, so to get a basis for planning and for improving the road system, the county road system in the county or the state.

What this cost-benefit analysis considers: construction costs, travel time costs because that's the basis for the whole exercise. It also considers potential accident costs, costs that are related to noise, and costs that are potentially related to emissions.

The following map shows you the different new planned roads projects. It shows you what is considered essential in order to achieve a working and effective hierarchy of centers that are effectively collected with each other. Those new collections that are colored on this map, these are those that are then included in the transport program, and you also have some just indicated sort of slightly black, and those are those where the analysis of the spatial structure found that there should be another road connection, but that's only a long-term consideration. These won't be considered in the current transport program. Transport programs like that are prepared, there's no defined time horizon, but usually they are prepared around every 10 years. So this is an indication of what projects will be considered mainly in the next transport program.

And what was done, the next slide shows you cost-benefit ratios of different county roads improvement projects. You see different bars here, and all of those bars that are above the red line, this would mean, yes, it is beneficial to build a road. For those that are below the line, it would indicate, no, it is not beneficial enough. So the cost-benefit ratio would be too low.

Key results of this cost-benefit analysis in the transport program do not only include economic factors and social factors, but also environmental factors. And I present you with two examples here:

One is NOx emissions, gaseous emissions, and it serves as an indicator within the cost-benefit analysis, and you see here different levels of NOx emissions. And high emissions, what they do is they actually reduce the benefits in the overall cost-benefit ratio.

The same is the case, what is shown here for noise emissions. High noise emissions would reduce the benefits of a certain road, particularly if those roads are closely located to residential areas.

Now, what are the key messages of the project and of the assessment that I just presented? First of all, it is important to say that the assessment actually achieved the purpose for which it was designed because it did meet the objectives of program assessments for county roads. It certainly is a very technical approach, and the process itself is rather undeveloped.

However, at the program level, if you remember the presentation that was given on processes and methods in Strategic Environmental Assessment, you remember that the planner may actually act more as a technician rather than anything else, so that is okay. However, the shortcoming is, for example, that no public participation took place here, but I will say a few more words on this a bit later.

This particular case--and this is very typical--for the program level uses cost-benefit analysis to decide on project priorities. The chosen case also shows you that tiering between different administrative levels of roads is fairly well achieved.

However, the problem is it is not really achieved between different functional tiers. And what that means is, for example, currently, only roads are considered. So no comparison with rail takes place, and since transport policy is fragmented, it does not take place at the right level of decisionmaking either.

And this leads to the next point, an overall strategy is lacking, meaning policy or vision. Also, intermodal assessment in the form of plan or corridor assessments is lacking.

Now, in the future, particularly following the requirements of the European Union SEA directive, formalized SEA will have to include the broader consultation and participation process at the different SEA stages. The process itself will need to be developed a bit further, and also there will need to be a separate assessment report, something that hasn't been done currently. Currently, it's all integrated in one major report.

My final key message is that key SEA systems can be adapted to the specific administrative circumstances of a particular case. However, the problem is, if any of the three systematic tiers--and that is policies, plans or programs--is lacking, it will be difficult to develop efficient and effective SEA systems, and that was shown by the case. While it is a rather well-developed program assessment, due to the lack of policy and the vision at the systematic level beforehand, it is very difficult to see how SEA can be effective because, for example, intermodal alternatives weren't considered, neither in this case nor previously.