

Environmental Assessment – co-ordination with landscape planning in Germany (Prof. Dr. Catrin Schmidt)

Environmental Assessment is a procedure which ensures that the environmental implications of decisions are taken into account before the decisions are made. In principle, environmental assessment can be undertaken for individual projects such as a motorway or an airport ('Environmental Impact Assessment', EIA) or for plans and programmes ('Strategic Environmental Assessment', SEA). Examples for SEA would be assessments of a Regional plan, a Land use plan or a Development plan.

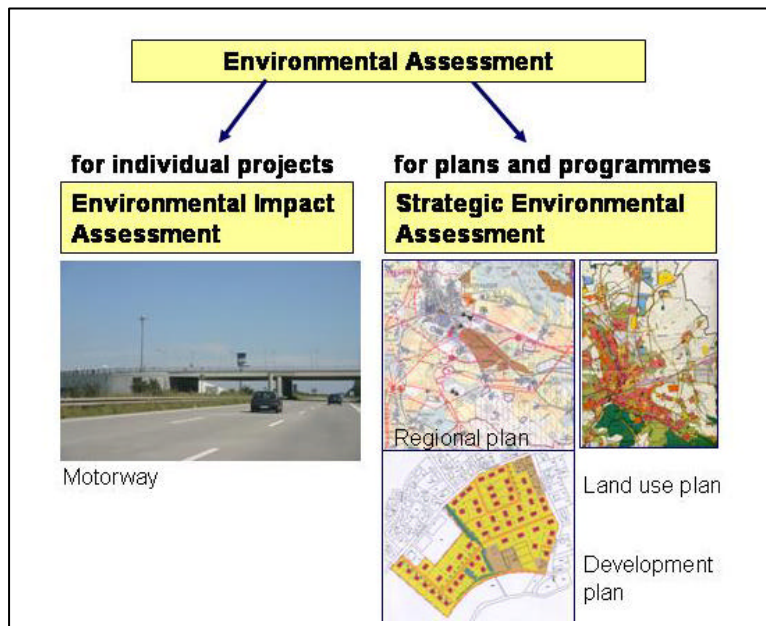


Figure 1: Overview – the environmental assessments



Figure 2: The procedure

Within both types of assessment the procedures are essentially the same: The start is made with the screening process, to decide whether an environmental assessment is required or not. The following step is called 'scoping'. The scoping process provides for the decision on the geographical scope, the content and the level of detail of the assessment and the assessment methods to be used. The earlier the public gets involved, the faster and more consensual the decision will be. At the core environmental assessment involves an analysis of the likely effects on the environment, recording those effects in a report, undertaking public consultations on the report, taking into account the comments and the report in the final decision making and informing the public about that decision afterwards.

Environmental Impact Assessment (EIA) takes place

- for public and private projects, before they are authorised, where it is believed that the projects are likely to have significant impacts on the environment. In total 135 types of projects require an EIA, for example traffic infrastructure projects – roads, waterways, railroads, but also urban planning projects,
- the instrument based on one Directive of the EU, was adopted in 1985 and strengthened by a revision in 1997,
- the German Law on the EIA was established in 1990.

Principally, within an Environmental Impact Assessment (EIA), two sides have to be assessed: on one hand the effects of the project have to be assessed. In terms of a road construction it has to be considered for example: Which noise and pollutant emissions are likely? Which fragmentation of habitats is likely? On the other hand, the relevance (importance) and sensitivity of nature and landscape in terms of the project have to be assessed. The method mostly used for environmental assessment in Germany is the “ecological risk analysis”. Environmental impacts will be assessed for the factors: soil, fauna, flora, biodiversity, population, human health, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelations between the above factors. All these factors have to be identified, described and evaluated.

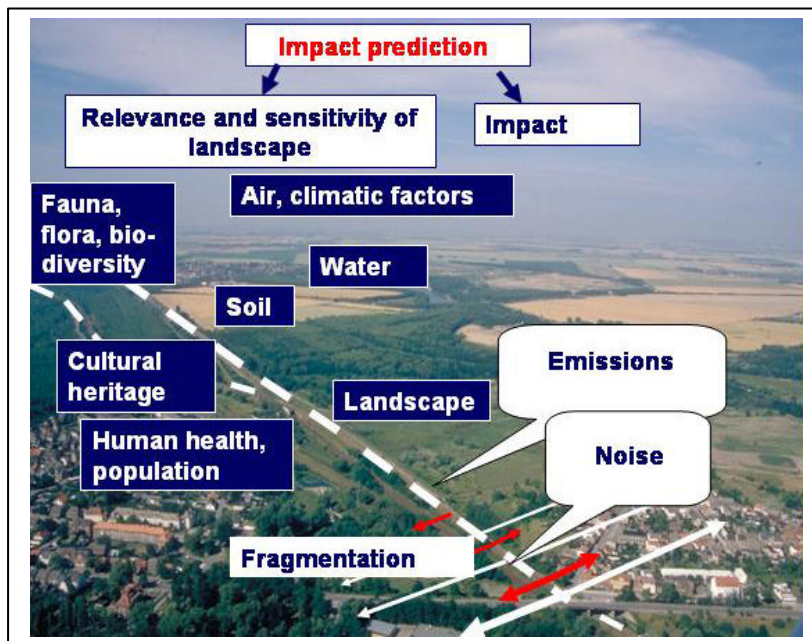


Figure 3: The Principle of the ecological risk analysis at an example – the construction of a new road

For assessment of these individual factors different methods of landscape planning are applied. These are methods commonly used in the preparation of landscape plans or landscape framework plans. By means of overlaying all aspects and maps within one spatial overlay map, areas with likely environmental conflicts can be identified.

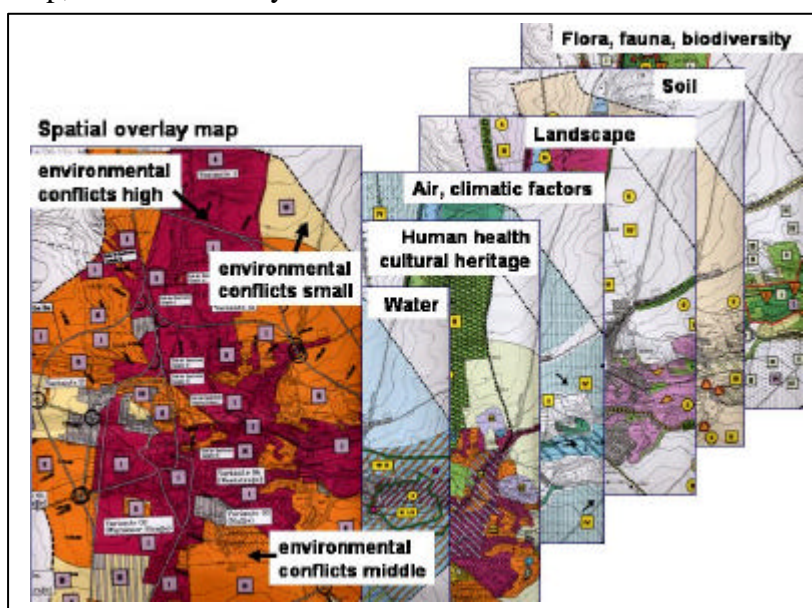


Figure 4: The spatial analysis and the spatial overlay map at an example – the construction of a new road
 For example, in fig. 5, impacts of different route alternatives on the environment are assessed in detail, also in terms of their geographical range, for example in terms of noise, which can impact settlement areas with different intensity.

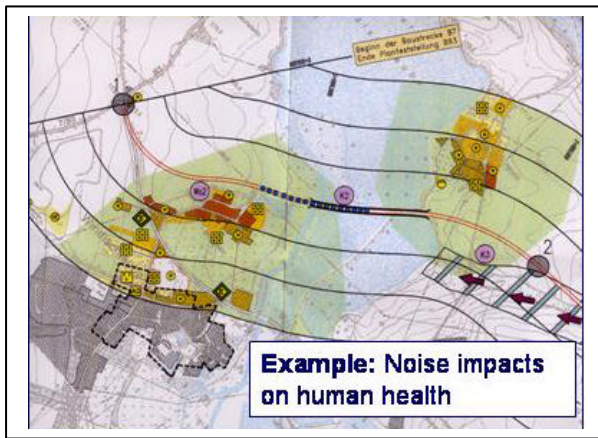


Figure 5: The detail analysis in terms of noise at an example – the construction of a new road

On this basis different route alternatives are compared - from an environmental point of view.

Impacts of	Alternative 1	Alternative 2	Alternative 3	Status - quo
Soil	■	■	■	■
Water	■	■	■	■
Air, climatic factors	■	■	■	■
Fauna, flora, bio-diversity	■	■	■	■
Landscape	■	■	■	■
Human health, population	■	■	■	■
Cultural heritage	■	■	■	■
Summary	■	■	■	■

■ environmental conflicts high

■ environmental conflicts middle

■ environmental conflicts small

Figure 6: Example for the comparison on of alternatives

The environmental considerations have to be taken into account in the project application procedure. Well balanced projects environmentally optimized, and in the long term they are also better from the economic point of view. Finally, there will be few subsequent impacts.

In Germany there are now more than 15 years of experience with Environmental Impact Assessment (EIA). Impact analysis methods have reached sophisticated levels. Good practice of EIA is when the EIA starts early, (e.g. before the decision on the location of the road is taken). It is very important that the responsible authorities and investors have a considerable awareness of environmentally sensitive alternatives as a basis for the technical planning process. However, sometimes there is the problem that an EIA starts too late - crucial decisions have already been made beforehand in plans and programmes. It is the regional plan that principally decides, for example, on locations where stone, sand or clay mining might take place, where infrastructures are to be placed, where development will be possible, etc. When the planning approval for the individual project starts, this may include an EIA, but the

Assessment already comes too late, because the principal decision can not be changed any more. This is why the EU introduced the instrument of Strategic Environmental Assessment (SEA) in 2001.

A Strategic Environmental Assessment shall be carried out for plans and programmes which are likely to have significant environmental effects. In Germany, for example, all spatial plans are included: State-wide spatial plans, Regional plans, Land use plans, Development plans und many other plans are included. SEA legislation was adopted in 2001 at EU level and it became German law (2004 for comprehensive spatial planning, 2005 for other types of spatial planning). The Strategic Environmental Assessment (SEA) is in many aspects similar to EIA, also the procedure is essentially the same. In addition to EIA the SEA requires a monitoring of the environmental impacts during the implementation of the plan or programme But there are also other important differences: Plans are always more than just one project – they prepare for many different individual projects and they set the framework for the total development – for example the regional plan.

The regional plan is the comprehensive spatial plan for one region. For example, the city of Leipzig in Saxony and its surroundings have a total size of about 4000 km² that are included in a regional plan. The task of the regional plan is to guide the development of a whole region and to find solutions for conflicting land uses. In order to fulfil this task the regional plan designates, among others, so called priority area. In a priority area a certain form of land use or function has priority over all other forms of uses and functions.

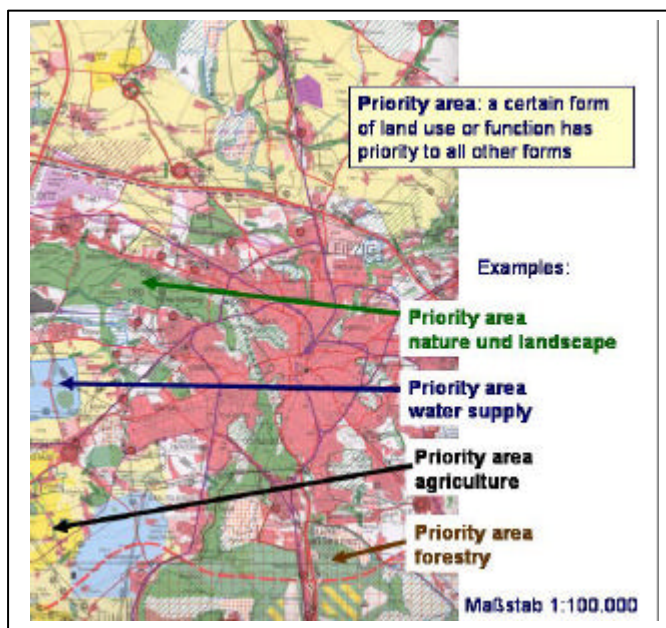


Figure 7: Priority areas in a section of the Regional plan Westsaxony (RPV Westsachsen 2001)

One of the central guidance for priority designations in regional plans is provided by landscape planning. On the level of regional planning such guidance is provide by the so called landscape framework plan. Such plans give guidance, for example, on the location of valuable areas for fauna and flora. Those areas are proposals for priority areas for nature and landscape to be designated in the regional plan. Landscape framework plans also give proposals for future landscape development of the region (from an environmental point of view). The regional planning considers ecological aspects – like the landscape framework plan – and social and economical aspects.

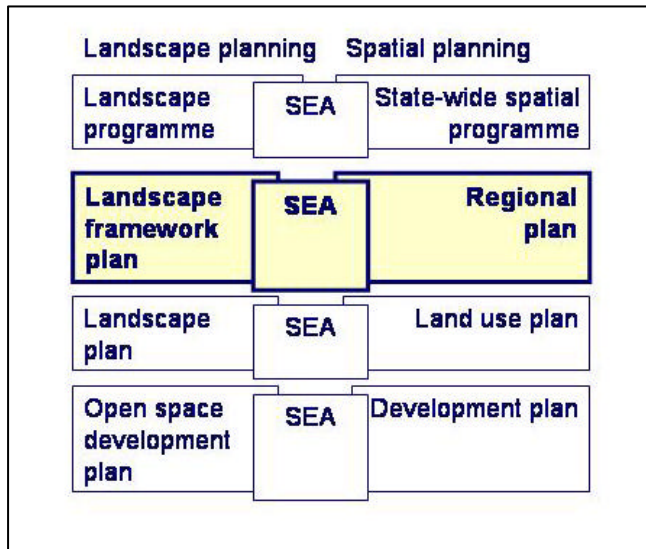


Figure 8: Landscape planning, Strategic Environmental Assessment and Spatial planning

Landscape planning is a development instrument. However a Strategic Environmental Assessment (SEA) is the module that assesses the environmental impacts of concrete designations of regional plans. It is neither economically nor ecologically reasonable if settlements develop without environmental guidance. In many cases urban development may be optimised by designing compact forms, by concentrating urban areas along axis, etc. In the case of Leipzig there are trains that run along settlement axis. In the areas between the axes green corridors may be provided that give structure to the total area and provide for an ecological balance (principle of decentralised concentration). This is why the regional planning designates on one hand central areas and axes. Central areas are designated areas for concentrated settlement development. On the other hand, regional planning designates regional green corridors for landscape, where settlements will not be allowed. The landscape framework plan provides the basis for such decisions. The SEA contributes environmental considerations.

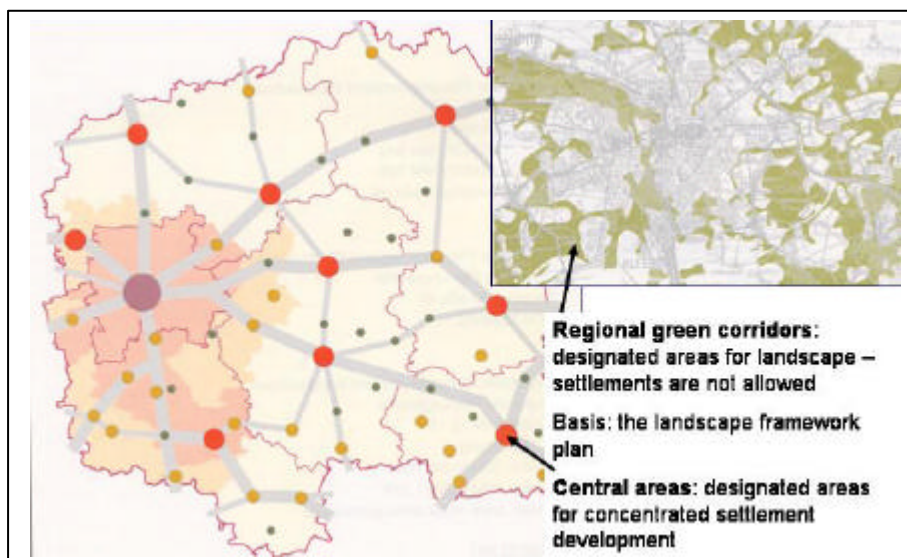


Figure 9: Central areas in the Regional plan Westsaxony (RPV Westsachsen 2001)

The Strategic Environmental Assessment can also contribute to find the best location for new industrial sites. In the region of Leipzig there are theoretically a large number of areas suitable for industries. The regional planning assesses these areas in terms of their suitability for industrial uses – when they are, for example, close enough to a motorway, an airport or a railway station. Strategic Environmental Assessment assesses which environmental risks are likely to be related to individual sites. For example, an area is not suitable, if it is located next to a flooding area and if buildings could be damaged with the next flood. Another area may not be suitable because it is rich in biodiversity. A third one may not be suitable because it is relevant in terms of cultural heritage. A major part of the information needed for such guidance is provided by the landscape framework planning.

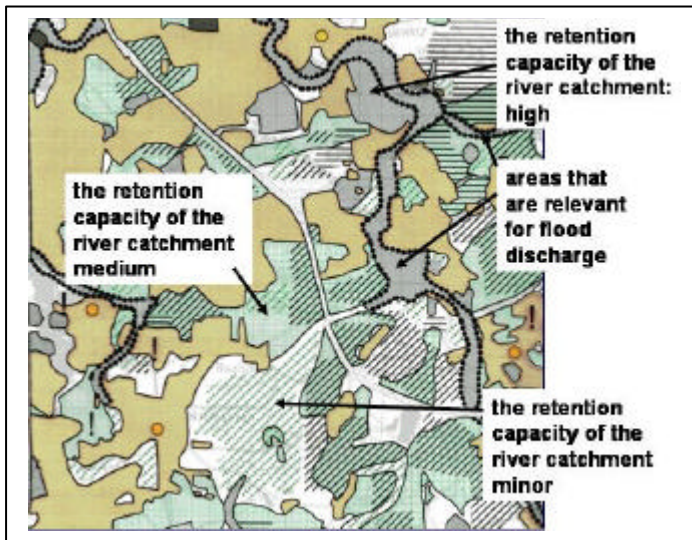


Figure 10: A section of the water concept of the landscape framework plan of Leipzig

When considering all environmental aspects within a SEA the extent of the likely environmental conflicts may be identified. Based on this information the regional planning is able to consider alternatives. It should decide on areas with the best suitability and the least environmental conflicts.

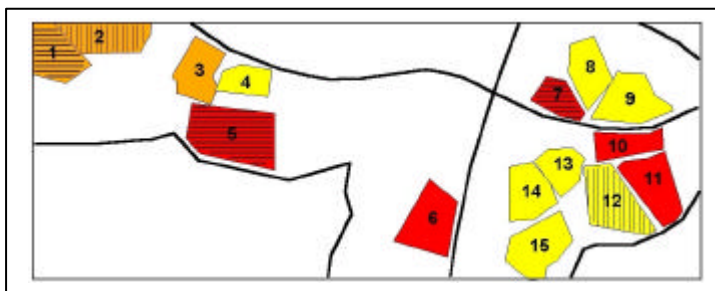


Figure 11: The extent of the likely environmental conflicts (red- high, orange- medium, yellow- minor)

However regional plans do not only designate areas for industrial use or settlement development – they also designate other areas, like areas for mineral extraction or the use of wind energy. The method applied within the SEA is the same – there are alternatives and the suitability of different site options are considered in order to optimise the site location and thus to improve the planning

Plans are more than just the sum of their single components. Therefore SEA considers not only the likely impacts of single projects (as EIA does), but also the likely cumulative impacts of a whole region.

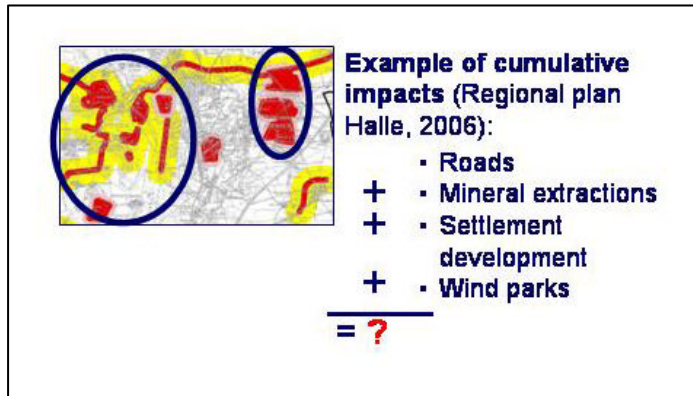


Figure 12: Example of cumulative impacts (RPG Halle 2006)

For example in Figure 12, there are not only designations for roads, but also for mining extractions, settlement developments and wind farms. In total all of these designations would lead to large areas where the natural soil would be lost to pavement and buildings. This would have considerable impacts on the water balance, and also on the landscape character. As a result the SEA may propose to reduce the number and extent of development. It may also suggest to extend forests, and woodland in order to maintain natural soil biologically active, and to achieve a stable water balance. It would also suggest measures to enhance landscape character.

Finally the environmental impacts associated with the implementation of plans and programmes shall be monitored. The objective of monitoring is to identify unforeseen adverse effects, and to undertake appropriate remedial action. Examples for monitoring indicators on the regional level are

- Development of the urban areas,
- Development of selected species and biotope types.

Summary

Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA) form a system of environmental assessment. As strategic plans lead to more concrete projects, environmental assessment becomes more detailed with every level it includes. Planning for mineral extraction may serve as example: On the level of regional planning the crucial decision to take is on locations for future mineral extraction sites. It is the SEA that provides the information for such location decisions. On the level of a planning approval crucial decisions are how individual mining operations may take place. And in this case it is the EIA that provides the relevant information.

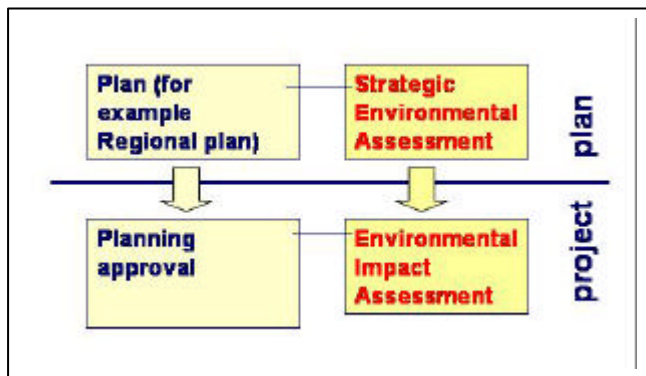


Figure 13: Overview SEA and EIA

In conclusion, EIA contributes to a more environmentally sound, a more sustainable – a better planning. And landscape planning builds the basis for it.

Plans:

RPG Halle (2006): Regionale Planungsgemeinschaft Halle - Environmental report and Regional plan in the region of Halle. Halle. 2006

RPV Westsachsen (2001): Regionaler Planungsverband Westsachsen – Regional plan Westsaxony. Leipzig. 2001