

## **Methods and tools for integration of landscape level ecological impacts in environmental assessment**

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In infrastructure planning and design there is a need for methods for integrated assessment of impacts of infrastructure on landscape level. Infrastructure cause a wide range of such impacts, not at least on biodiversity. These impacts affect the ecological processes on a landscape scale, since they contribute to loss and fragmentation of natural habitat. Thus, prediction of ecological impacts aiming to minimize these adverse impacts on biodiversity is necessary. Methods for describing and evaluating ecological values of landscapes are urged for including the formulation of targets and the prediction and assessment of impacts on biodiversity on a landscape scale. Such methods should facilitate the integration of multiple criteria and qualities of the landscapes and link them to existing planning frameworks in infrastructure planning, among others environmental impact assessment (EIA) and strategic environmental assessment (SEA). The aim of this project is to develop methods and tools for the integration of biodiversity objectives in infrastructure planning. Particular focus will be on tools for landscape assessment which are linked with targets for biodiversity values in landscapes and compatible with environmental impact assessment at the project and strategic levels. Strategies and methods for landscape ecological assessment will be developed based on the experiences from various examples through the advancement and application of GIS-based habitat models. The habitat models will be developed using geological, hydrologic, vegetation, infrastructure and other development data as independent variables and selected ecological profiles as dependent variables. The outcome will be models of habitat networks that include habitat suitability and connectivity that can be synthesized and visualized in maps and used in strategies for landscape ecological assessment in planning and environmental assessment. The project will result in tools compatible with integrated assessment on landscape level, which support localisation decisions with multiple objectives within the infrastructure sector.