

Topics for Master Thesis REAP/Urban Planning/Civil Engineering:

Environmental Assessment and Resource Efficient Land Use

If you are interested in one of these topics, please refer to:

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Thematic Focus

Continuously growing land use demands for housing and infrastructural development constitute a core problem area of spatial planning and sustainable spatial development. The resulting loss of ecosystem services through soil sealing as well as follow-up costs for technical and social infrastructure related to new site developments have led to an increasing focus on brownfield redevelopment and reduced land consumption in policy and planning debates. Against this background, debates about adequate instruments for ensuring resource efficient land use have seen an increasing significance over the last years. Along with an integration into the legal instruments of regional and local land use planning as well as informatory, cooperation-oriented and incentive-based instruments, the consideration of land as a resource in environmental assessment procedures such as Environmental Impact Assessment (EIA; project related), and Strategic Environmental Assessment (SEA; plan and programme related), is currently being discussed. Following the 2014 amendment of the EU EIA Directive (2014/52/EU), to be transposed into national law by 2017, the environmental factor 'land' is expected to explicitly become subject to Environmental Assessment.

Research demands related to this field of interest include:

1. Strategic objectives of spatial planning with regard to resource efficient land use and brownfield redevelopment, and their consideration in Strategic Environmental Assessment (SEA)

In assessing the expected environmental impact of plans and programmes, SEA is guided by objectives issued on higher planning scales as well as by legally established objectives and thresholds and their concretization in guidelines, handbooks etc. However, SEA regularly requires a further operationalization of these strategic objectives, such as the „efficient use of land“ (as codified by the German Building Code, § 1a BauGB). This thesis should therefore explore which strategic objectives are applied within the scope of environmental assessment procedures – depending on the planning scale and the respective degree of concretization –, in what way these objectives have been implemented, and to what extent methodical uncertainties exist. On that base, suggestions on how to address objectives of resource efficient land use and brownfield redevelopment in the framework of SEA should be derived.

2. Dealing with conflicting goals: Resource efficient land use and brownfield redevelopment vs climate protection and adaptation in regional and local land use planning?

Both the reduction of land consumption and strengthening of brownfield redevelopment of cities and municipalities and the development and implementation of climate protection and adaptation strategies constitute major challenges of spatial planning. These goals can mutually support each other, e.g. when green

belts and areas of cold air production are kept free from building activities. They can, however, also interfere with each other, e.g. in densification potentially reinforcing the urban heat island effect. This thesis should therefore analyse (recurring) conflict situations, systematize which objectives and instruments of regional and local land use planning these conflicts are related to, and reveal potential solutions and instrument- as well as process-related modifications.

3. Methodical challenges and current practice of EIA and SEA – focus areas:

- a. Options of tiering and suitable assessment methods**
- b. Interdependencies between environmental factors**
- c. Consultation, public engagement and the use of its results**
- d. The role of assessing alternatives**
- e. Options of quality management/certification**
- f. Options of designing an environmental assessment portal**

Besides the integration of resource efficient land use and brownfield redevelopment into (Strategic) Environmental Assessment, the revised EIA Directive seizes a range of further aspects and methodical deficiencies of current assessment practice. In particular, adaptation demand exists with regard to tiering, i.e. the degree of concretization depending on the planning scale, and to the consideration of interdependencies between different environmental factors in assessing planning alternatives. Further current fields of interest include the practice of consultation and public engagement and the use of its results, options of determining standards, minimum requirements and quality criteria for environmental assessment, as well as a central provision of environmental reports, e.g. via online portals. The further elaboration of these aspects requires an analysis of the current practice of environmental assessment, the indicators and methods applied, and a resulting derivation of applicable recommendations. These questions should be addressed by theses with different core foci that tackle major procedural steps of environmental assessment.

All topics should be addressed exemplarily and, as appropriate, comparatively, based on a municipal or regional case study or a planning/assessment procedure. All topics may be worked on in either English or German.

Major References:

Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment. URL: <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32014L0052&from=DE> (26.01.2016)

Fischer, T. B. (2007): The theory and practice of strategic environmental assessment: towards a more systematic approach. Routledge.

Jones, C.; Baker, M.; Carter, J.; Jay, S.; Short, M.; Wood, C. (2005): Strategic Environmental Assessment and Land Use Planning. An International Evaluation. Earthscan.

Kuhlmann, M.; Lintzmeyer, F.; Wilts, H. (2014): Umweltverträglichkeitsprüfung und Strategische Umweltprüfung als Instrumente des Ressourcenschutzes. In: *UVP-report* 28 (3+4), 186–194.

UBA (2014): Flächenrecycling und Innenentwicklung. URL: <http://www.umweltbundesamt.de/themen/boden-landwirtschaft/flaechensparen-boeden-landschaften-erhalten/flaechenrecycling-innenentwicklung> (26.01.2016)