Towards sustainable urban land use— a methodological design for implementing socio-ecological targets into the strategic planning of cities in Germany

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1. Background

Quantitative Target: Reduction of land consumption to 30 hectare/day until 2020

Qualification Target: Infill- and Greenfield development in a ratio of 3 : 1
1. Background

**Population Development**

![Population development in Germany graph](Source: Federal Statistical Office 2006)

**Patterns of sprawl**

![Patterns of sprawl diagram](Source: Siedentop & Fina 2008)
The Research-Project FIN.30 ("Flächen intelligent nutzen")

- **Goals of FIN.30:**
  - Preserve actionability of cities despite of monetary deficits during the provision of building land
  - Reclaim steering ability of the communal development
  - Adjust future settlement development to the goals of sustainability (ecologic, social, economic)

- **Parts:**
  1. Multicriteria Decision Support System (MCA-DSS)
  2. Cost-oriented allocation tool to foster for a re-development of residential areas inside the cities

- **Scale:**
  - Strategic level of preparatory land use planning (1:15,000; 15-20 years)

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FIN.30: Targets of the MCA-DSS

- **Conceptual**
  - Planning-oriented operationalization of "sustainability"
  - Qualitative assessment of sites versus quantitative political targets
  - Transparency on the use of natural resources, of infrastructure and economic reasonable site-development

- **Methodology**
  - Reasonable number of indicators for each dimension
  - Based on communal data to enhance acceptability and comprehensibility
  - Individual indicator-weighting decision relevance & adaptation to local specifications

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FIN.30: Conceptual framework

Input
- Potential housing sites (according to land use plan)
- Cadastre data
- ATKIS
- Digital Elevation Model I5
- Soil map 1: 50,000
- Register of protected areas
- Flood-prone areas
- Noise screening data
- Cadastre data of contamination
- Land use mapping ("Realnutzungskartenung")
- Population statistics
- Data of capacity and location of social & technical infrastructure
- Communal accounts

Filter
- Stakeholder-workshops (3x p.a.)
- Expert-workshops (2x p.a.)

Output
- Planning-oriented MCA
- Indicator-framework incorporating and aggregating qualitative and quantitative indicators
- Multicriteria Decision Support System (MCA-DSS)

FIN.30: Structure of the MCA

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Decision making: The MCA-DSS of FIN.30

3. Results

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<thead>
<tr>
<th>Indikatoren</th>
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Conclusion

- Elaboration of a praticable MCA-DSS containing decision-relevant indicators
- Integration of all dimensions of sustainability
- Integration of qualitative and quantitative indicators to one final statement
- Multidimensional assessment of the contribution of both of infill- and greenfield development to a sustainable settlement-development
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