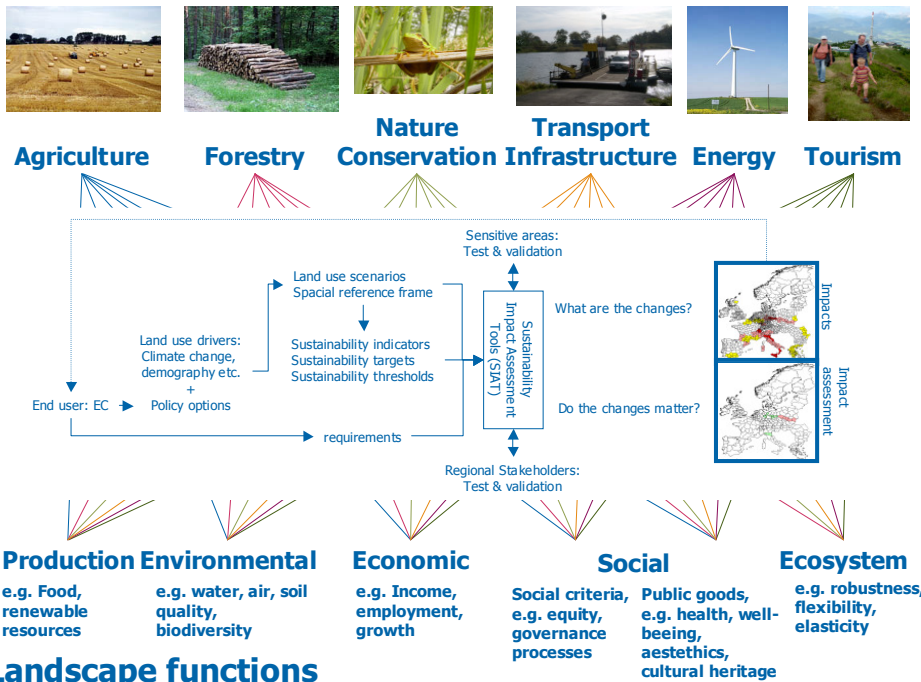


## Sustainability Impact Assessment:

### Tools for Environmental, Social and Economic Effects of Multifunctional Land Use in European Regions

SENSOR is an Integrated Project within the 6<sup>th</sup> Framework Research Programme of the European Commission. 33 research partners from 15 European countries constitute the consortium, which develops science based ex-ante Sustainability Impact Assessment Tools (SIAT) to support decision making on policies related to multifunctional land use in European regions. SENSOR directly responds to the European sustainability objectives as applied to land use and regional development.

## Land Use



## Landscape functions

## SENSOR Product

SENSOR's main product is the **Sustainability Impact Assessment Tool (SIAT)**, tailored to meet the needs of analysts and policy makers at the European level. SIAT will allow the assessment of land-use-related policy effects on sustainability by means of (1) European policy scenario analyses, (2) regional threshold assessments and (3) stakeholder targets identification. Making use of macro-econometric and sectoral land use models and impact indicators, European policy scenario analyses will forecast future land use changes, assess their multifunctional interrelations and economic, social and environmental impacts. To assess multifunctional land use effects at regional level, impact indicators will be verified on the basis of sustainability thresholds and targets derived from expert consultations and regional stakeholders, thus complementing the data-driven scenario analyses. Validation of assessment results will be conducted in case study areas of sensitive regions such as mountains, coastal zones, islands and post-industrialised areas across Europe. From the onset of the SIAT design, user requirements are explicitly taken into account.

Important features of the user oriented **Sustainability Impact Assessment Tool**:

### 1. User oriented:

- decision support system especially designed for policy makers at European level
- offering high level of applied "real" policy options and free choices when setting targets

### 2. Scenario-driven:

- Considers global economic, demographic and policy trends
- provides multidimensional perspectives for mid- & long term land use changes

### 3. Multi-scale:

- Cross-scale analysis at various NUTS and grid levels for EU 25
- based on state-of-the-art maps and statistical data at different spatial levels
- analysis of specific regions and case studies for validations and verification

## Multifunctional Land Use

The principle of multifunctional land use can guide sustainable land management and policy development since it seeks to combine a variety of social, economic and environmental functions to serve a wide range of users, while putting emphasis on spatial integration and resource efficiency. One single region and sometimes even one specific type of land use can provide goods and services for the international market while simultaneously satisfying local demands for rural populations (e.g. employment and quality of life), for urban centres (e.g. groundwater renewal, recreation) or for native species (e.g. habitats and biodiversity). Therefore, assessing the multi-functionality of land use is key for understanding the trade-offs between the social, economic and environmental dimensions of sustainability. SENSOR analyses the multifunctional interrelations of six leading rural land use sectors: agriculture, forestry, tourism, transport, energy and nature conservation at the regional level and in the light of European policy decisions, global economic and demographic trends and landscape impacts. SENSOR will allow the user to detect deficits, high-performances and conflicts regarding the multi-functional use of land.

## SENSOR Research issues

- Policy scenarios:** Compile data for the European analysis of policy performances related to land use sectors and their effects on sustainability issues. Formulate future scenarios of land use ranging from most proximate and thinkable to the two ends of positive and negative visionary developments.
- Land use models:** Link existing state-of-the-art econometric models with sectoral land use models making use of both statistical and spatially explicit data. This includes the multifunctionality analysis of social, economic and environmental issues by means of impact indicators.
- Spatial reference framework:** Integrate robust social, economic and environmental characteristics to develop regional profiles as key reference base for linking impacts and thresholds.
- Thresholds and targets:** Employ expert judgement and participatory tools to identify and evaluate regionally specific social, economic and environmental problems, thresholds and targets related to land use.
- Sensitivity analysis:** Identify characteristic sustainability issues in sensitive areas such as mountains, coastal zones, islands and post-industrialised areas.
- Data and indicator management:** Develop a GIS based, GMES/GEO compatible, quality assured and harmonised data and indicator management system for land use impact assessment, which can be employed at regional scale for EU 25.
- Sustainability Impact Assessment Tools:** Enable EU policy makers to analyse the impact of land use policy options on regional sustainability issues including cost benefit analysis and externality valuation.

## SENSOR Organisation Information

Supported by: European Commission, DG Research, Directorate I: Environment, Unit I-1: Policy aspects of research and sustainable development, Responsible Scientific Officer: Dr. Daniel Deybe  
 Duration: December 2004 - November 2008,  
 Project coordinator: ZALF - Leibniz-Centre for Agricultural Landscape Research, Müncheberg, Germany  
 Dr. Katharina Helming, Bettina König, Dr. Karen Tscherning  
 Address: Eberswalder Str. 84, D-15374 Müncheberg, Germany  
 Phone: +49 33432 82155; +49 33432 82415  
 Email: sensor@zalf.de; khelming@zalf.de  
 Web: <http://www.sensor-ip.org>



## SENSOR Partners

ZALF; Leibniz Centre for Agricultural Landscape Research; DE:: ALTERRA; Alterra Green World Research, Wageningen; NL:: BTUC; Brandenburg University of Technology Cottbus; DE:: ARC-sys; Environmental Planning Dept., ARC systems research GmbH ; AT:: U Vienna; Institute of Landscape Ecology, University Vienna; AT:: BOKU; Agric. University Vienna; AT:: WSL; Swiss Federal Institute of Forest, Snow and Landscape Research ; CH:: UBER; Dept. of Agricultural Economics and Social Sciences, Humboldt University Berlin; DE:: TUM; Chair of Forest Yield Science, Technical University Munich; DE:: NERI; National Environmental Research Institute; DK:: FLD; Danish Centre for Forest, Landscape and Planning; DK:: DIAS; Department of Agricultural Systems, Danish Inst. of Agricultural Sciences; DK:: U Tartu; Dept. of Physical Geography and Landscape Ecology, University Tartu; EE:: EFI; European Forest Institute; FI:: Cemagref; CEMAGREF Groupement de Grenoble; FR:: COE/CCIP; Centre d'Observation Economique, Paris; FR:: UWH; Institute of Environmental Sciences University of Western Hungary; HU:: SZIE/KGI; Institute of Environmental Management, University Gödöllő; HU:: IIASA; International Institute for Applied System Analysis; AT:: DEART-UNIFI; Dept. of Agriculture and Resource Economics, Florence University; IT:: JRC; Institute for Environment and Sustainability (IES), Ispra; IT:: MEPA; Plan Making and Policy Development Unit, Malta Environment and Planning Authority; MT:: LEI; Agricultural Economics Research Institute, Wageningen; NL:: WUR; Environmental Systems Analysis Group, Wageningen University ; NL:: IUNG; Institute of Soil Science and Plant Cultivation Pulawy; PL:: ILE SAS; Institute of Landscape Ecology, Slovak Academy of Sciences.; SK:: LU; University Lund, Dept. of Chemical Engineering.; SE:: FR; Social Research Unit Forest Research; UK:: MI; Macaulay Land Use Research Institute; UK:: NERC; Centre for Ecology and Hydrology, Lancaster Environment Centre; UK:: U Bath; Dept. of Economics and International Development, University of Bath; UK:: UNOTT; Centre for Environmental Management, Nottingham University; UK:: UNIABDN; Dept. of Geography and Environment, University of Aberdeen; UK

