

Sustainability Impact Assessment Tools (SIAT) for European analysis

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Embedded into its Sustainable Development Strategy, the European Commission designed an Impact Assessment procedure to better target policy making to sustainable development objectives (EC, 2005). For quantitative, transparent and comprehensive impact assessment, new model approaches are required, which simulate policy instruments pertaining to sustainability impacts. Integrating environmental, social and economic impacts claim spatially explicit assessment methods. Hence, integrated trade-off analysis embeds multi-sector perspectives, combines indicator of physical with socio-economic knowledge at different scales and re-aggregates indicators for clearly identifiable result overviews.

The EU Integrated Project SENSOR develops ex-ante Sustainability Impact Assessment Tools (SIAT) for land use in European regions, which involves (a) indicator-based driving force and impact analysis of policy scenarios; (b) region-specific risk and threshold assessment based on

spatial reference systems, (c) case-study-based sensitive area studies including local participatory processes and (d) indicator aggregation to land use-functions indicating regional provision of good and services.

SIAT enables simulating policies by means of 60 sustainability indicators identifying region-explicit impacts across the six sectors agriculture, forestry, energy, transport, tourism and nature protection with coverage of EU 26. The tool is defined as a transparent quick-scan and knowledge-based meta-model that offers a large number and high level of applied “real” EU policy options (target years 2015, 2025); ranging from non-monetary (e.g. soil directive) to monetary instruments as taxes and subsidies. Response protocols (mathematical functions) are pre-assessed from an interacting macroeconomic- and sectoral model framework that are integrated to a meta-model for rapid response time. The correlation between policy variables via land-use (interim results) to indicator variables is computed for a specific standard range for each region. Impact values can be estimated by means of quantitative vector / matrix forms as well as knowledge rules in the mode of qualitative indicators. Both are applied for clustered regions that reflect the same biophysical and socio-economic structural site conditions with a similar multi-criteria profile (NUTS 2/3). Transparency of knowledge is guaranteed by directly accessible ‘fact sheets’ for all implicit knowledge and explicit back tracing of the knowledge is used during calculations.

This paper reports on the first SIAT prototype that makes decision makers understand what factors drive the effects and risks of land use-relevant policies. Multiple policy options can be evaluated comparatively with scenario analysis in the frame of EU sustainability impact assessment guidelines.

References: European Commission (2005): Impact Assessment Guidelines SEC(2005)791.

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