

Developing New Tools for Integrated Sustainability Assessment WP 9



Methods and Tools for Integrated Sustainability Assessment

Overview

This WP is working on the next generation of ISA-tools and methods - based on analysis of the critical gaps in the current ISA-tool kit (WP2). The focus of this work is on quantitative ISA-models in relation to ISA-participatory methods. The evolution of integrated assessment models in recent years and the starting point for this WP is marked by a shift from 1) supply- to demand-driven, in the sense that stakeholders are involved in a certain stage of model development; 2) a partial systems approach to socio-economic-ecological systems to an integrated systems approach and from deterministic to heuristic and stochastic approaches; 3) from predictive tools to explorative tools, indicating the increased awareness among builders of the complexity and uncertainty surrounding IA-models; 4) from monolithic tools developed by individual researchers to modular-based tools developed by networks of research institutes, where the complexity of IA-models requires a collaborative effort rather than isolated individual attempts. A special emphasis will lie on the development of more innovative, challenging and surprising scenarios.

Objectives

The overall objective is to develop building blocks for the new generation of ISA-modelling tools. The intention is to build "Triple-I models" (*Innovative, Integrated and Interactive*):

Innovative because the paradigmatic basis of these models will be different - following an evolutionary paradigm, and more oriented towards the dynamic behaviour of actors, explicitly incorporated into ISA-models;

Integrated because of the integration of different strands of knowledge at different spatial and functional scale levels, and because of the integration of socio-economic and ecological knowledge;

Interactive because the influence and role of stakeholders become more and more important. This influence manifests itself in both the conceptual and implementation phase of an ISA-model, but also in the usage of the model, realising that multiple stakeholders perceive a problem from different perspectives, and therefore act differently, which should be reflected in an ISA-model.

Activities

The development of "Triple-I models" will be focused on five central themes of ISA: transitions, social-cultural dimensions, scaling, uncertainty and stakeholder involvement. These have been arranged as four highly inter-linked tasks that together will provide a coordinated modelling input to the case studies.

Developing ISA-models The first challenge is to represent transitional patterns in socio-economic systems in a more adequate manner in ISA-models. A full representation of social-cultural-economic-technological-environmental systems is still impossible.

About the MATISSE project

MATISSE aims to achieve a step-wise advance in Integrated Sustainability Assessment (ISA) of EU policies. The core activity of MATISSE is to improve the tools available for conducting Integrated Sustainability Assessments. The case studies provide the real-world contexts within which the ISA methodology and tools can be assessed. Stakeholders have a central role within ISA.

What is ISA?

Integrated Sustainability Assessment (ISA) is a cyclical, participatory process of scoping, envisioning, experimenting, and learning through which a shared interpretation of sustainability for a specific context is developed and applied in an integrated manner, in order to explore solutions to persistent problems of unsustainable development.

Other Briefing Sheets

- Conceptual framework for ISA
- Current Use of ISA Policies and Tools
- Dematerialisation Case Study
- Water Case Study
- Environmental Technologies Case Study
- Using and Improving Existing ISA Tools
- Agriculture, Forestry, Land Use Case Study
- Dissemination

It is proposed to develop relatively simple ISA-models (prototypes) that are able to describe transition patterns. The application areas that will be addressed here will be linked to the four MATISSE case studies: transition patterns in rural areas (case study WP4); transition patterns in the dematerialization of Europe's economic system (case study WP5); water transition management (case study WP6); and technological transition patterns (case study WP7).

Developing ISA-models for quantitatively assessing socio-cultural change The second challenge concerns the incorporation of social and cultural change into ISA-models. Previous efforts in ISA-modelling have tended to collapse culture and society into economy. In the next generation of ISA-models cultural and social forces will play a vital role.

Relating a typology of uncertainty to ISA-models As regards uncertainties the proposed approach is to use a typology of uncertainties, based on the distinction between two sources of uncertainty: uncertainty as a result of variability and due to lack of knowledge. This task aims to relate a typology of uncertainty to ISA models in order to make the different sources and types of uncertainty explicit and to develop management strategies on how to handle these uncertainties.

Developing different kinds of stakeholder-oriented ISA-models A final challenge concerns the involvement of stakeholders in the process of model development and model usage. In this process of interaction we can distinguish three types of stakeholders: (i) stakeholders as advisors; (ii) stakeholders as users; (iii) stakeholder as actors. We propose to develop examples of each of the three stakeholder-oriented ISA-models. This task focuses in particular on developing different kinds of stakeholder-oriented ISA with stakeholders as users and actors.

Products

- ISA-models and ISA-scenarios that capture transition patterns representing the complex interactions between socio-economic and environmental systems in several MATISSE case studies
- ISA-models for quantitatively assessing socio-cultural change processes within several MATISSE case studies
- Stakeholder-oriented ISA-models, in particular with stakeholders as users and actors (agent-based models) in several MATISSE case studies
- ISA-models with explicit articulation of types and sources of uncertainty in relation to strategies how to management these uncertainties

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MATISSE

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