

Development of methodologies and indicators to assess sustainability in tourism and agriculture sectors

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The PhD project is about methodologies and indicators to assess sustainability, especially relating to tourism and agriculture. Spatial planning processes need to be supported by instruments able to evaluate current situation and to measure long term effects of the policies for development that are implemented. The use of indicators for measuring sustainability of tourism addresses some important needs: (1) quantitative evaluation of current state of environmental, social and economic conditions in the destination; (2) the definition of measurable targets; (3) the possibility of comparing results through space (comparison with other destinations) and time (measure of evolution through time of local situation - measure of achieved results); (4) communication of results to relevant actors (political decision makers, local stakeholders).

The analysis of sustainability of tourism activities is performed from three different perspectives; to address the aim of an integrated evaluation of tourism sector in the area, three methodological models were developed:

- Tourism Carrying Capacity (TCC). The methodology aims to integrate physical carrying capacity assessment with the evaluation of managing capacity of environmental and public services.
- Ecological Footprint of tourism (EFT). Development of a model to assess EF of tourists according to the kind of accommodation they choose for their holiday and adaptation of biocapacity assessment method to Italian areas.
- Sustainable Performance Index (SPI). Development of a new index, the Sustainable Performance Index (SPI), to evaluate social, environmental and economic development opportunities given by sustainable tourism activities in marginal areas.

Furthermore, the role of participatory processes and stakeholder involvement for local planning is investigated (starting from the experience of the implementation of European Charter for Sustainable Tourism in Protected Areas in two areas of Lombardy Region).

Considering that, to ensure a sustainable local development tourism cannot be the only economic activity of the area, the research is extended to the evaluation of the possible role of forest biomass uses (e.g. energy production and furniture production) to help a sustainable forest management, i.e. to optimize the use of natural resources, to avoid urbanization of the areas and to ensure the maintenance of tourist tracks. The activities in this field are:

- The development of a set of indicators to assess the feasibility and sustainability of energy production from wood biomass, underlying critical issues and potential areas of optimization providing a Decision Support System (DSS) for decision makers.
- Sustainability assessment of wood supply chain optimization through the integration of forest management, furniture production and energy production from residues and by-products. Final aim is the optimization of resource efficiency (material and energy flows) of the wood processing industry, through the development of a model that allows decision makers to evaluate different industrial symbiosis initiatives and to find improvements in the structure of an existing system, from an economic and environmental point of view.

Finally, the research analyzes the relationship between science and decision making (i.e. policy making and business choices) and the role of indicators for the translation of results into a usable format for key stakeholders.