

# LANDSCAPE LAB –project 2004-2007

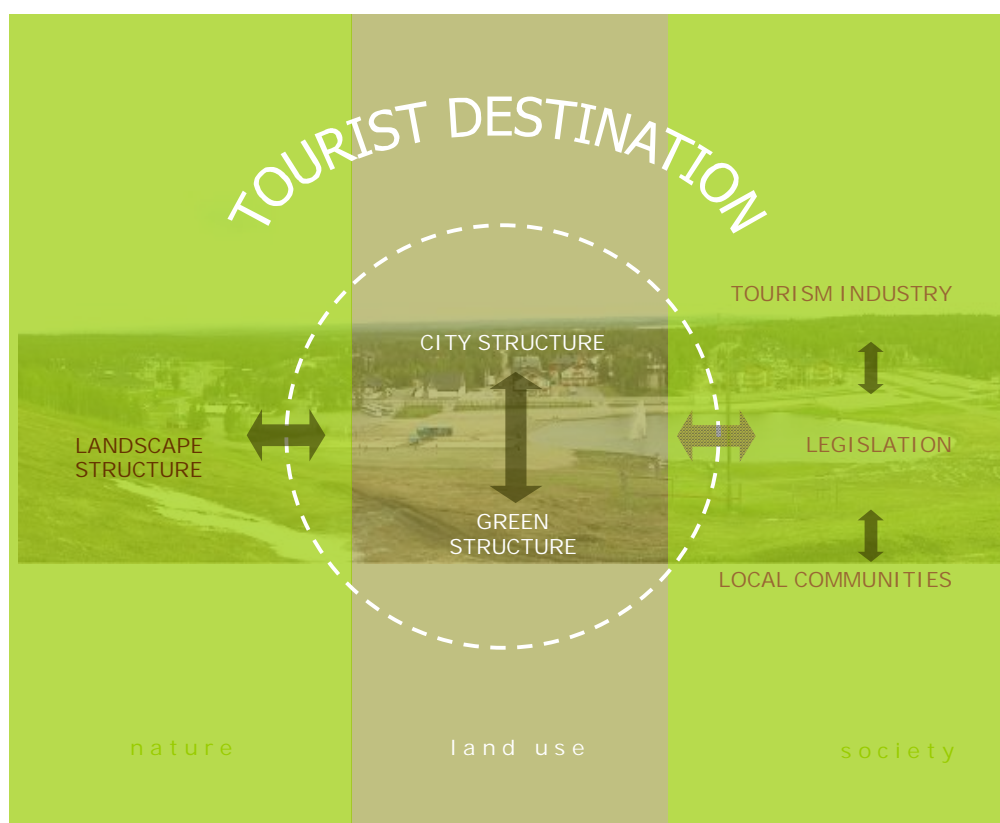
Jukka Jokimäki & Marja-Liisa Kaisanlahti-Jokimäki  
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Kuva: Ilpo Okkonen



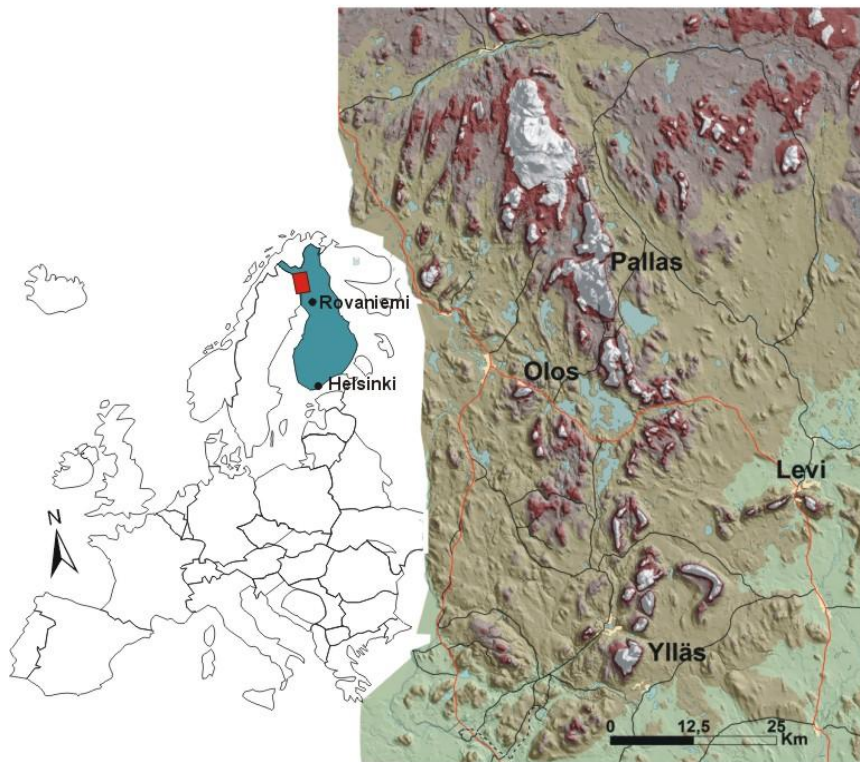
The basis for the EU LIFE Environment project 'Tourist Destinations as Landscape Laboratories - Tools for Sustainable Tourism', LANDSCAPE LAB lies in the increasing need for knowledge about the impacts of growing tourism on nature, culture and local communities. The LANDSCAPE LAB -project was coordinated by the Arctic Centre of the University of Lapland, Finland. The aim of the project was to develop and present indicators which tourism operators can use in estimating and promoting the sustainability of tourism. The project produced new knowledge on the environment-related attitudes and land use in tourist destinations.



### **The basic forces and interactions affecting on landscape and environment in the nature-based tourist destinations.**

Nature-based tourism is one of the most rapidly developing areas of the service production industry. Many activities and infrastructures related to tourism are channelled into disturbance-sensitive natural and cultural environments or their near surroundings. It has been argued that the centralisation of tourism in specific areas is beneficial to conservation. At the same time, central parts of tourist destinations have urbanised. Sustainability indicators are needed to evaluate the current state and to monitor development at tourist destinations. The tourism industry has monitored destination performance using conventional tourism indicators such as numbers and lengths of stay as well as the money tourists leave in the local economy. However, these indicators are basically economic and growth-orientated, and other types of indicators are also needed to ensure sustainable development at tourist destinations. An ecological and sociocultural indicator tool package was

constructed for the implementation area of the project. These indicators are suitable especially to northern ski resorts, but also for the similar kinds of habitats located in central Europe, e.g. for the Alps. By using these indicators, land use planners could evaluate, monitor and promote the sustainable development of the tourist destinations.



**Implementation area of the LANDSCAPE LAB –project.**

**The project´s partners in co-operation were as follows:**

- Architectural Office Arktes Oy
- Geological Survey of Finland, Northern Finland Office
- MTT Agrifood Research Finland, Plant Production Research Rovaniemi
- Metsähallitus (Finnish Forest and Park Service), Northern Lapland District for Wilderness Management
- Finnish Forest Research Institute, Kolari Research Unit Finnish Forest Research Institute, Rovaniemi Research Unit
- University of Oulu, Botanical Gardens
- Finnish Game and Fisheries Research Institute, Oulu Game and Fisheries
- Rovaniemi Municipal Federation of Education, Lapland Vocational College, Department of Natural Resources and the Environment

**The project´s partial financiers were as follows:**

- Municipality of Kittilä
- Municipality of Kollari

The project was launched in September of 2004, and it ended in October 2007. During this period of time six parallel partial tasks were carried out:

- Ecologically, Culturally and Visually Sustainable Urban Structure for Tourist Destinations (LABLAND)
- Scope and Types of Environmental Impacts (LABECO)
- Functional and Social Structures of Local Communities (LABSOC)
- Production of Plant Material for Landscape Planning, Greening and Restoration (LABPLANT)
- Administration of and Reporting on the Project
- Information Dissemination

The basic activities of the tasks were as follows:

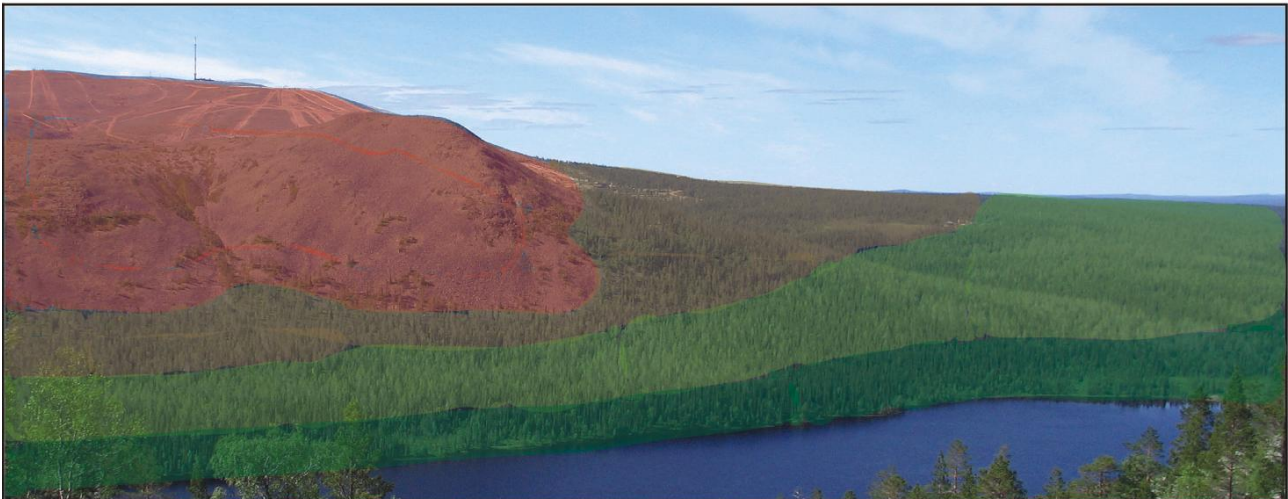
- Landscape-level analyses of geology, landscape structure, land use history, soundscapes and symbolic meanings of landscapes (LABLAND)
- Inventory of breeding birds, mapping of disturbance-sensitive bird species and indicator testing (LABECO)
- Inventory of basic facts about the local communities, livelihoods and land use; analysis of participation possibilities (LABSOC)
- Selection and production of hardy plants, development of propagation methods (LABPLANT)
- Guiding and education

LABLAND –task used maps, master plans and photos as well field inventories related to geology, landscape structure, green area hierarchy and soundscapes. LABECO –task used wildlife triangle survey and Golden Eagle nest site databases as well as the data owned by the Finnish Forest and Park Service (Metsähallitus) to study the effects of tourism on nature. In addition, breeding land bird point count surveys, snow track surveys and artificial nest predation experiments were conducted. Interviews were the main data collection method in the LABSOC –task. In the LABPLANT –task, plants were propagated from seeds, softwood and hardwood cuttings and *in vitro* by micropropagation.

LANDSCAPE LAB –produced new information about the effects of tourism on the nature and landscape characteristics, nature-based recreational activities, environmental attitudes and land use. The project has given guidelines for land use management and planning.



According to the results of LABLAND –task, land use planning of tourist destinations should be interactive and based on knowledge of landscape factors. Landscape structure implies how susceptible a landscape zone is to the effects of different land use types. Analysis of green area structure and hierarchy is a relevant tool when studying the effects of different growth strategies. Geographical information systems (GIS) are usable in the management of multiple data sets in land use planning of tourist destinations.



Zone	Tops	Upper-slopes	Lower-slopes	Low land areas
Description	Highest fell and hill tops, usually treeless and/or covered with bouldery fields	Upper parts of the fell and hill slopes with thin till surface or bouldery fields	Gentle, till covered lower slopes of the fells and hills	Moisture, lowish areas with thick peat cover, and shore zones near lakes and rivers
Growth conditions	Infertile and dry	Infertile, lush in places (groves in gorges)	From low in nutrients to nutritious	Nutritious and lush
Tolerance of changes	Weak	Weak	Moderate / good	Good / moderate / weak
Hydrology	Water divide	Catchment area	Catchment area	Collector area
Recommendable land use	Green belt: hiking and sport	Green belt: hiking and sport, protection area	Tourist centres and holiday villages	Old villages and culture environments

**Landscape zones (described as different colours) and their basic characteristics, tolerance to the changes and ecologically, visually and culturally sustainable land use** (Background photo: K. Lehtinen).

The objective of **LABECO** –task was to find bio-indicators suitable for monitoring the environmental effects for tourist destinations.

	<b>Indicator</b>	<b>Specific measure</b>
<b>Landscape indicators</b>	Tolerance level of landscape for the change	Landscape structure
	Quality of green areas	Green area hierarchy
	Visual diversity	Landscape nodes
	Attraction values of the landscape	Number of tourists
	Customer satisfaction	Customer satisfaction index
<b>Geological and hydrogeological indicators</b>	Geological diversity	Survival of local soil and bedrock monuments
	Sustainable use of extractable soil	Use of extractable soil recourses
	Hydrology I	Amount and quality of ground and surface water
	Hydrology II	Eutrophication of waters
	Hydrology III	Amount of run-off water
	Hydrology IV	Hydrogeological changes
	Susceptibility of terrain	Survival of bedrock and soil resources
	Erosion of trails	Erosion of trails
<b>Ecological indicators</b>	Survival of wilderness species	Proportion wilderness birds of the community
	Urbanization of nature	Proportion of urban birds of the community
	Urbanization of species	Number of magpies and crows
	Occurrence of disturbance-sensitive species	Territory occupancy and breeding success of the Golden Eagle
	Breeding success of birds	Artificial nest losses
	Wear of trails	Width and depth of trails
	Wear of alpine heaths I	Total cover of mosses and lichens
	Wear alpine heaths II	Cover of crowberry
	Comfortableness of the environment	Amount of litter in rest points
	Participation	Communication about the land use planning and changes
<b>Social indicators</b>	Interactive planning and collaborative learning	Participation of local actors on public hearings/meetings, e.g. master plan meetings
	Acceptability of tourism	How local people see the tourism
	Land and resource use of locals	Opportunity to continue traditional land use

### Sustainable development indicators for the tourist destinations.

Disturbance-sensitive species avoided ski resorts. For example, the nearest Golden Eagles were breeding about 10 km away from the destinations. Human-associated species benefited, whereas wilderness birds suffered from ski resorts. The mountain hare and the red fox benefited from tourism-related constructions. The abundance of magpies and crows were high in ski resorts, and probably for that reason, nesting success of ground-breeding birds was low in ski resorts. Alpine heaths and mountain birch groves were sensitive for trampling. à Kotka (kuva J. Luhta).

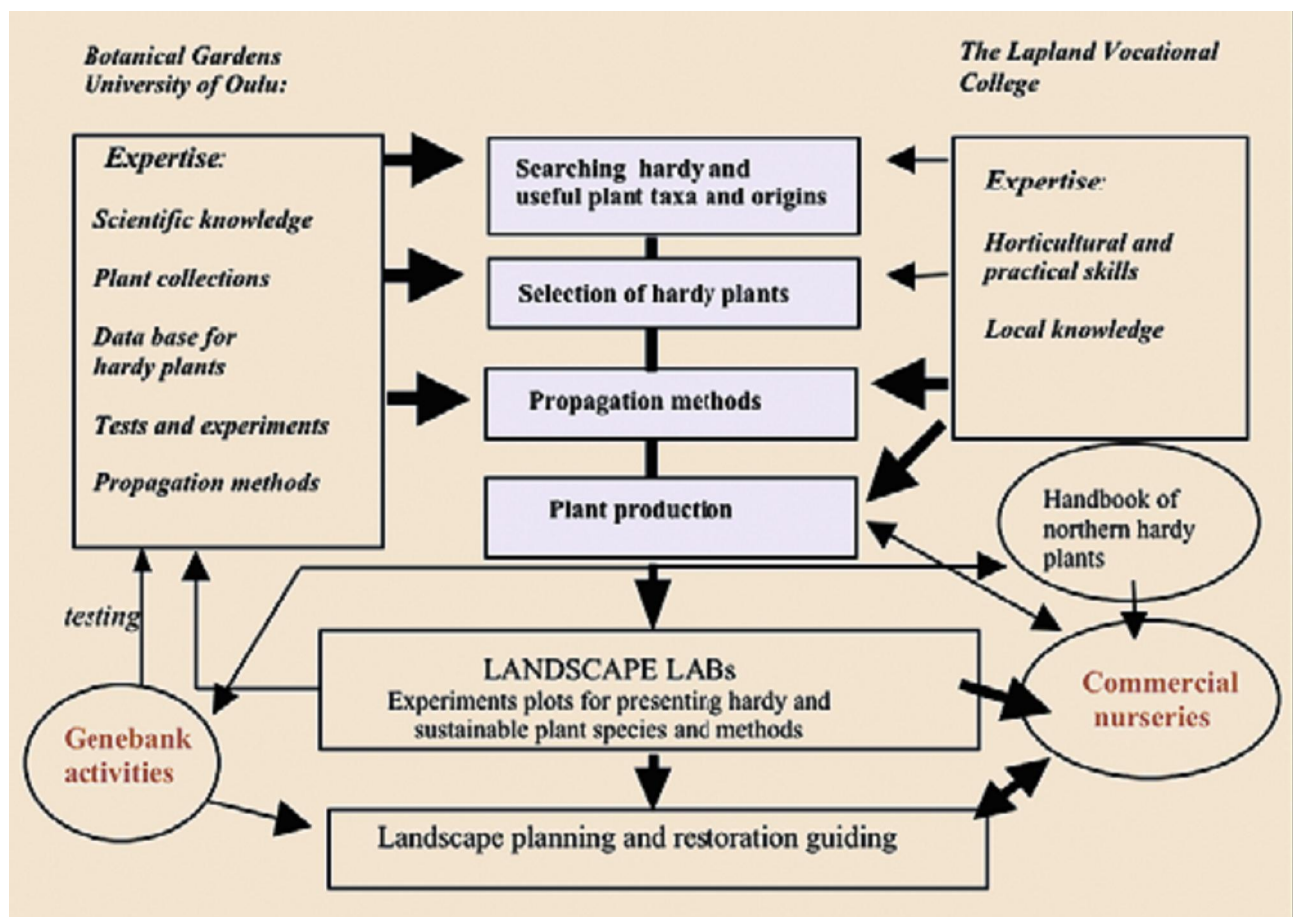


According to the LABSOC –task, tourism increase job opportunities. However, local people are also concerned about the growth plans of the tourist destinations. Second-home owners, who spent significant part of the year in the resorts, also want to participate the development processes of the ski resorts. Seasonal workers constitute a challenging group for planners as they are potential new residents in the region, but currently their views about the area planning are not taken account. Focus group interview seem to be a good participation tool.

<b>Participatory technique</b>	<b>Description</b>	<b>Strengths</b>	<b>Weaknesses</b>
Media	Public announcements, press releases	Efficient distribution of information	Not involving participants; information could be biased
Public hearings/meetings	Often information meetings or formal hearings lacking substantive interaction	Part of formal participation; opportunity for public to speak	Tends to collect extremes: "loudest" tend to be heard; representativeness questionable
Workshops (Brainstorming) *	More interactive encounters with stakeholders using exercises to enhance interaction and creative thinking	More interactive than formal hearings	Representativeness and effectiveness depend on design of the workshop
Review and comments on draft documents	Opportunity for external agencies, groups and public to review draft documents and offer comments before plans and decisions are finalized	Part of formal participation, suitable for well-organized groups	Not interactive, not good for individuals or non-organized groups
Surveys, brochures, interviews, social value surveys**	Mail-box surveys, interviews, brochures designed to inform interested parties and/or to generate responses, perceptions and ideas	Can provide two-way flow of information, interviews can be interactive, reach large public	Often not interactive, response rate can be low, expensive
Advisory committees	Small appointed group with representatives of different interests; can advise planners and decisions makers	Can provide continuity in participation process; participants can provide technical and value-based info	Representativeness questionable; require commitment of participants
Focus groups	Onetime meetings of diverse "cross-section" group to get their reactions to ideas, actions and dialogue among participants	Can reach a variety of interests and can focus on issues; tend to be interactive	Question of representativeness
Electronic networks	Use of internet to foster communication and dialogue	Complement other methods	Lack of computers
Conflict resolution techniques	Negotiation, alternative dispute resolution techniques to achieve acceptable solutions instead of litigation and appeals	Can save time and money; can develop win-win solutions	Often occur late in process after ineffective participation; tend to focus on compromise not consensus
Stakeholder collaboration	Long-term relationship with interest groups to collaborate in plans and their implementation	Built social capital and partnerships, builds consensus, creates innovative solutions to problems	Need to be started early in process; often lengthy process requiring openness and learning by participants

\* see Mäntysalo & Nyman 2002; \*\* ks. Pelkonen & Tyrväinen 2005; modified from Randolp 2004.

According to the results of the LABPLANT –task, the methods used and the plant species in landscaping or restoration should be selected on the basis of local growing conditions, planned use of the area and the amount of trampling the area is subjected to. At northern areas, local wild plants sources and hardy ornamental plant origins should be used for propagation. Local plant producers with local plant sources should be favored.



**This schematic presents the expertises of the participating institutes, the different stages of the work and the results of the LABPLANT subproject.**

LANDSCAPE LAB –project has produced new information about the effects of ski resorts on nature and local communities and developed ecological and sociological indicators. In addition, the project has developed suitable methods for greening and restoration. These methods and indicators promote the sustainable development of the tourist destinations and therefore assist to save attractiveness of the resort as well as development of the local economy. The tree guiding books produced in the LANDSCAPE LAB –project give new information about the sustainable development of ski resorts and help the planning and management of these areas.



By considering also ecological, sociological and cultural sustainability topics in addition to economic sustainability, the land use planning of the ski resort could be ecoefficiency. Because the tourists are more and more familiar about the environmental questions, tourist destinations should paid more attention to sustainable development questions. The current state of the environment should be evaluated, and the change should be monitored by using suitable indicators, so that the attractiveness of the area could be maintained. If the value of landscape and nature decrease, tourists may seek other places for their holidays. That could have dramatic influence for peripheral ski resorts and local economy. The results of the LANDSCAPE LAB –project are usable for northern ski resorts, but also for mountainous areas in central Europe.

**The main deliverables of the LANDSCAPE LAB –project were:**

- Basic inventories of local communities, livelihoods and land use
- Landscape-structure based green area network
- Recommendations related to the landscape-based land use planning, land management and building materials
- A guidebook *Landscape-orientated land use planning in nature-based tourist destinations*
- A guidebook *Sustainability indicators for tourist destinations*
- A guidebook *Hardy plants of northern tourist destinations*
- Demonstration areas of hardy plant species
- Several scientific articles and reports
- International tourism conference, and Conference Abstract Book and Proceedings
- *Tourism arrives to the village* exhibition
- Educational courses
- [www.arcticcentre.org/landscapelab](http://www.arcticcentre.org/landscapelab) (that include all the main publications produced by the LANDSCAPE LAB)

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à Levi keskus; Kittilä (kuva:  
Suunnittelukeskus Oy).

