



S U M C U L A

Sustainable Management of Cultural Landscapes

Editors: Bosse Lagerqvist, Sándor Némethy, Tamás Kőmíves, Giuseppe Lo Papa and László Szemethy

HOW TO SAVE OUR PLANET BY REINVENTING THE WHEEL

A cultural landscape is a geographic area, with all its cultural and natural resources, the wildlife and domestic animals, natural and artificial ecosystems, the built and intangible heritage therein, continuously shaped by historic and present day evolutionary processes including the adverse or beneficial impacts of human activities, social relations and evolving cultures, which mirror the evolutionary trends of human society. The conservation of cultural landscapes is a very complex and truly multidisciplinary issue, which involves environmental science, agriculture, climatology, geology and pedology, chemistry, social aspects of agricultural production, heritage science, economics and issues of European integration. Therefore, the limits of exploitation should be carefully evaluated and determined without compromising the economic sustainability of the area. We need to reinvent the wheel: reaching back to ecological production and re-establishing a holistic approach on a new level.



EURECYS European Ecocycles Society

Acknowledgements:



Funded by the
Erasmus+ Programme
of the European Union

This reference book has been produced within the framework of Erasmus+ Strategic Partnership project SUMCULA (Sustainable Management of Cultural Landscapes) project number: 2017-1-SE01-KA203-034570



Swedish Council for
Higher Education

The editors and the whole SUMCULA project team would like to express their gratitude to the Swedish Council for Higher Education for their support, professional advices, and project management

Contents

Part I. Introduction: The new concept and classification of cultural landscapes

1. Definition
2. Interdisciplinary approach to cultural landscapes
3. Classification according to the UNESCO World Heritage Committee
4. Cultural landscapes from a geographical perspective
5. The diversity of cultural landscapes: principles of landscape ecology
6. Land use and landscape history
7. Land use and changing cultural landscapes – the need for an evolutionary approach
8. Linking Nature and Culture: World Heritage Cultural Landscapes
9. Understanding and interpreting cultural heritage – scholarly and scientific approaches in landscape management
10. The European Landscape Convention
11. Other international organisations for landscape conservation

Part II. Earth System Science – from biogeochemical cycles to ecosystem services

1. Definition of Earth System Science
2. The spheres of Earth – the elements of Earth System
 - a. Atmosphere
 - b. Geosphere
 - i. Lithosphere
 - ii. Pedosphere
 - c. Hydrosphere
 - d. Cryosphere
 - e. Biosphere
 - f. Anthroposphere
3. The Bretherton Diagram
4. The main cycle processes
 - a. Rock cycle
 - b. Hydrologic cycle and global water balance
 - c. Biogeochemical cycles
 - d. Life as a geological force
5. Interactions between the different spheres of Earth: climate change and climate control
6. Linking natural and anthropogenic processes
7. Ecosystems and ecosystem services: the new concept of carrying capacity
8. Energy flows and transformations in terrestrial ecosystems
9. Energy flows and transformations in marine ecosystems
10. Climate change – history, processes, dynamics and use of paleoclimatic proxies to interpret recent development trends – modelling climate change
11. Ecosystems and ecosystem services
12. The Millenium Ecosystem Assessment updated
13. Natural, agricultural/rural and urban ecosystems
14. Resilience of ecosystems and ecotones
15. Applied Earth System Science in regional planning

Part III. The role of cultural heritage in the management of cultural landscapes

1. The whole landscape as cultural heritage
2. Built environments: the complex arena for human activities with tangible and intangible properties
 - a. Buildings, constructions, conurbations, cities, landscapes
 - b. Integrated conservation – participatory mechanisms and long term land-use planning
 - c. Adaptive re-use and the option for continued use – sustainable construction materials and crafts skills
 - d. Archaeological sites and sustainable tourism
 - e. Global – Local: the destination industry, (cultural) ecosystem services, local traditions, and preventive heritage management
3. The heritage afloat
 - a. Ships, shipyards, and coastal communities
 - b. Inland waterways – modification of landscapes
4. Integrated conservation and environmental impact assessment

Part IV. Multifunctional agriculture and conservation of cultural landscapes

1. The structure and branches of agricultural production
2. Scales of agricultural production systems
3. Soil conservation in agriculture
4. Organic farming
5. Viticulture and oenology – a special branch
6. Permaculture
7. Urban agriculture
8. Food security and local production
9. Agro-ecosystems and their interaction with natural ecosystems, the role of ecotones
10. The multifunctional agriculture
11. World Heritage Viticultural Landscapes – the legacy of the VITOUR project
12. The Azienda Agricola Model – a holistic approach
13. Agriculture and bioenergy production
14. Bioenergy feedstock production and its impact on cultural landscapes

Part V. Energy production and use: impact on cultural landscapes. Ecological, social, cultural, and economic implications

1. Energy demand worldwide: fossil vs renewable energy production and consumption
2. Global direct primary energy consumption: top-impact countries
3. Public health problems and fossil energy use
4. Environmental impact of fossil energy production and use: climate change and other adverse environmental effects
5. Renewable energy sources
 - a. Water (hydroelectric)
 - b. Geothermal
 - c. Wind

- d. Biomass
- e. Solar power
- 6. Renewable energy and circular economy. Economic viability of renewable energy systems: timeline and return of investments
- 7. Trans-European Networks for Energy
 - a. Electricity corridors
 - b. Gas corridors
 - c. Oil corridor
 - d. Priority thematic areas
 - i. Smart grids deployment
 - ii. Electricity highways
 - iii. Cross-border carbon dioxide network
 - e. The climate neutrality objective of the European Green Deal
- 8. European Energy Network: for renewable energy
- 9. Renewable energy production and landscape conservation
 - a. Sustainability, conservation, and remediation issues
 - b. Hydroelectric power vs biodiversity
 - c. Biomass production vs sustainable agriculture or agroforestry systems
 - d. The role of forest/agroforest/arable land ecotones in landscape conservation
 - e. Elimination of landfills to protect the groundwater and soil
 - f. The food – bioenergy-feedstock conflict

Part VI. Water resources management and landscape conservation

- 1. Introduction: Water as a resource and landscape forming power
- 2. Classification of water resources
 - a. Marine
 - b. Lakes
 - c. Watercourses
 - d. Groundwater
 - e. Artesian water
- 3. Classification of aquatic ecosystems and ecosystem services
- 4. Marine
 - a. Neritic Zone.
 - b. Oceanic Zone.
 - c. Supralittoral Zone
 - d. Intertidal/Littoral Zone
 - e. Sublittoral Zone
 - f. Salt marshes,
 - g. Mangrove forests
 - h. Coral reefs
- 5. Freshwater
 - a. Lentic (lake ecosystems)
 - i. Ponds
 - b. Lotic (river ecosystems)
 - i. rivers
 - ii. streams

- c. Bogs
- d. Wetlands
- 6. Integrated Watershed Management (IWM) – watershed-landscapes
- 7. From Integrated Water Resource Management to the Water-Food-Energy and Ecosystem Conservation concept
- 8. Water as a Source of Conflict and Cooperation
- 9. Water scarcity and water poverty levels – crisis in developing countries
- 10. Climate change, demographic development and water resources
- 11. Flood and drought management

Part VII. Waste management and recycling society - a landscape conservation issue

- 1. Definition of waste from a historic perspective
- 2. Categories of waste
 - a. Domestic
 - i. Biodegradable
 - ii. Non-biodegradable
 - iii. Reusable
 - iv. Non-reusable
 - 1. suitable for incineration
 - 2. not suitable for incineration
 - b. Industrial
 - i. Non hazardous
 - 1. Biodegradable
 - 2. Non-biodegradable
 - ii. Hazardous
 - c. Agricultural
 - i. Biodegradable
 - ii. Non-biodegradable
 - iii. Reusable
 - iv. Non-reusable
 - 1. suitable for incineration
 - 2. not suitable for incineration
 - d. Hazardous
 - i. Industrial
 - ii. Medical
- 3. Recultivation of landfills – landscape restoration
- 4. Waste – rubbish or resource? – social and economic implications
- 5. Solid waste problems in developing countries
- 6. Waste management in sustainable circular economies: the energy – product/service – zero waste concept – the role of Life Cycle Assessment

Part VIII. Stakeholder management in different cultural settings and social marketing

- 1. Introduction – definition of stakeholders and the principles of stakeholder management
- 2. Approach to stakeholders
- 3. Classification of stakeholders and stakeholder groups:
 - a. The relevant authorities of the state

- b. Regional authorities (including all public services managed by these authorities e.g. local transport, waste management, waterworks, etc.)
 - c. Local authorities (including all public services managed by these authorities)
 - d. The general public, individuals, permanent and temporary inhabitants
 - e. Communities and community groups
 - f. Churches and religious organisations
 - g. Research institutions
 - h. Health care services
 - i. Energy producers and providers
 - j. Non-agricultural manufacturing businesses
 - k. Agricultural and agriculture related enterprises
 - l. Food producers
 - m. Forestry and forestry related enterprises
 - n. Private service sector other than tourism, transport and travel
 - o. Tourism, hotel and hospitality services
 - p. Transport and travel services
 - q. Telecommunication companies and service providers
 - r. NGOs
4. The cultural web and the Stakeholder Power Grid matrix
 5. Organisational structures
 6. Resistance to change
 7. Social marketing and public education

Part IX. Ecomuseums

1. Definition
2. History of ecomuseums
3. Ecomuseums and the concept of new museology
4. The French National Committee of ICOM
5. European Network of Ecomuseums
6. The 2016 Milan Cooperation Charter
7. The DROPS Platform
8. The Strategic Document of Italian Ecomuseums
9. New concept: the landscape-based ecomuseum
10. Ecomuseums as means of heritage conservation
11. Participative methods and management models for ecomuseums
12. The role of ecomuseums in landscape conservation
13. The CULTURECOVERY project
14. Case studies
 - a. Ecomuseum of Alsace, France
 - b. Flodden 1513 Ecomuseum, UK
 - c. Beamish Museum, County Durham, UK
 - d. Trentino Ecomuseum Network, Italy
 - e. Ecomuseum Mošćenička Draga, Croatia
 - f. Ecomuseum Berslagen, Sweden
 - g. Balaton Ecomuseum, Hungary

Part X. Landscape observatories

1. Definition of landscape observatory
2. The functions of landscape observatories
 - a. decision support in landscape protection, management and planning.
 - b. establishing landscape quality objectives
 - c. observation of evolution and change in the landscape
 - d. preparing landscape catalogues
 - e. social, information and educative functions
 - f. research, stimulating scientific collaboration in matters of landscape
3. Case studies
 - a. Landscape Observatory of Catalonia
 - b. Landscape Observatory of Finland
 - c. Landscape Observatory of Västra Götaland, Sweden

Part XI. National parks, protected areas, nature parks, nature conservation areas

1. Defining characteristics of National parks
2. Levels of protection
3. International Union for Conservation of Nature (IUCN)
4. World Commission on Protected Areas (WCPA)
5. Natural Monuments
6. Protected Areas
7. Protected Landscapes
8. Strict Nature Reserves
9. WCPA High Seas Task Force
10. Wilderness Areas
11. IUCN protected area categories
12. Case studies
 - a. Abisko National Park, Sweden
 - b. Lake District National Park, UK
 - c. Babia Góra National Park, Poland
 - d. Šumava National Park, Czech Republic
 - e. Balaton Uplands National Park, Hungary
 - f. Poloniny National Park, Slovakia
 - g. Vorpommersche Boddenlandschaft National Park, Germany
 - h. Guiana Amazonian Park, French Guiana
 - i. Sierra Nevada National Park, Spain
 - j. Nebrodi Natural Park, Sicily, Italy
 - k. Kruger National Park, South Africa

Part XII. Geoinformatics and spatial planning in the management of cultural landscapes

1. Introduction
 - a. Principles for GIS in landscape conservation
 - b. Biodiversity and sustainability
 - c. The heritage-dimension
2. Spatial analysis

- a. Spatial dependence
 - b. Data sources
3. Application of GIS in landscape ecology
4. Application of RS in landscape ecology
5. Data quality and spatial analysis functions for linking GIS and spatial analysis to ecological modelling
6. European spatial planning practice
7. Synergies between landscape and spatial planning
8. Landscape in spatial planning instruments at different scales
 - a. The European scale
 - b. National and regional scales
 - c. The local scale
9. Landscape conservation as the interaction of social, economic, and physical systems
10. Opportunities and challenges

Part XIII. Sustainable or regenerative approach?

1. Evolution in a wider context
2. Co-evolution among humans and natural systems
3. Rethinking the current development approach
4. A Sustainable Future – Regenerative Development
5. Creating regenerative processes
6. Identifying the Value of Regenerative Development
7. Socio-economic sustainability drivers of sustainable regeneration
8. Regenerative Landscape Sustainability: A New Paradigm?

Part XIV. International good practices and future trends

Part XV. Special case studies, which do not fit into a universal scheme

Concluding remarks