



HERCULES

Sustainable futures for Europe's HERitage in CULtural landscapES: Tools for understanding, managing, and protecting landscape functions and values

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D6.4 Report on innovative strategies and prioritised set of recommended policy measures

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Executive summary

The overarching objective of HERCULES work package (WP) 6 is to develop visions for re-coupling social and ecological components in cultural landscapes and to translate them into policy and management options. Previous work in WP6 collected European examples of good practice in consideration of ecosystem services applied to cultural landscapes, and task 6.4 focused on the ‘Development of innovative measures and compilation and prioritisation of policy options’. To fulfil this goal, the work undertaken in T6.2 led to the decision to rely largely on the new ISO 37101 standard (released in July 2016) on ‘Sustainable development of communities – Management systems – Requirements with guidance for resilience and smartness’.

Examples of innovative measures or “good practices” are listed through each of the twelve issues of the standard; the compilation and prioritisation of policy options is proposed through the use of the ISO DIS 37101 standard itself. It was therefore possible to illustrate each of the issues related to governance, education, innovation and creativity, health, culture and identity, living together, economy through sustainable production and consumption, place of living and working, safety and security, community infrastructure, mobility, and biodiversity and ecosystem services through the twenty European initiatives selected from the T6.2 process, five HERCULES case studies landscapes located in Lesvos (Greece), south west Devon (UK), Sierra de Guadarrama foothills (Spain), Vooremaa and Kodavere parish (Estonia), and the Grand Parc Miribel Jonage (France), and some additional examples taken from the HERCULES knowledge hub collection. The landscape approach that was adopted proved to be very consistent with the recognition of cultural and identity services.

The ecosystem services that were most difficult to illustrate, however, appeared to be on issues related to health care and health, and even more about safety and security. Indeed, if it can be shown that landscapes contribute to well-being and public health, and the prevention of major risks such as floods, questions remain from the security posture that addresses nature as a source of danger, whether in terms of hygiene (e.g. as pioneer species linked to cultural landscapes includes its share of organisms considered “harmful”), or safety (e.g. as outdoor activities are perceived at risk, especially in school places).

Section two, on the development of innovative measures and the compilation and prioritisation of policy options, addresses the foundations of sustainable policies considering ecosystem services through exploration of ten factors for success. Initial project contextualization is based on the knowledge of landscape features. These include societal, space or environment management methods, interconnections with other places in the neighbourhood, and uses associated with landscape functions. The latter requires taking into account stakeholders’ needs and expectations, which is the key to this approach. Prioritization of issues associated with risks and opportunities can facilitate decision-making from managers, whose commitment is essential, as well as leadership and involvement of community representatives. Modes of governance considered local stakeholders’ needs and expectations, in line with the accountability and transparency principles of sustainable development. Examples of operational inputs were then illustrated for the six ISO 37101 purposes: *attractiveness* with a particular focus on labelling practice; *social cohesion and contribution of social capital* concept; *well-being* and heritage; *preservation and improvement of the environment*, which is a core subject of landscape ecological management; *resilience*, which uses highly iconic structures like urban trees, or landscape features around the water cycle; and *responsible resources use*, again highly discussed through environmental management practices that still deserve to be more widely deployed. Stakeholders’ training and awareness requirements refer to the management of relational and human support. Communication is at the centre of any

approach to give feedback on the achievements towards local stakeholders, on the basis of playful, participatory, and multiple actions.

Finally, continuous improvement through experimentation and feedback is illustrated by a number of methods and tools identified during this work, which shows that the subject is under concern, and recognized synergies exist between ecological ecosystem services and sociocultural services. They can however still be subject to extensions, including the implementation of reliable indicators for practitioners, managers, consultants and professionals at the interface of landscape and environment field. The idea of an assessment tool based on landscape features is, in this respect, a way to continue to explore functional biodiversity.

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1 Introduction

The overarching objective of HERCULES work package (WP) 6 is to develop visions for re-coupling social and ecological components in cultural landscapes and to translate them into policy and management options. Previous work in WP6 collected European examples of good practice in consideration of ecosystem services applied to cultural landscapes (Deliverable 6.1), and place specific good practices in the context of landscape stewardship (Deliverable 6.2). Task 6.4 focused on the development of innovative measures and compilation and prioritisation of policy options.

Several publications are now emerging to facilitate the integration of ecosystem services in landscape ecology. However, if planners begin today to take into account biodiversity operational issues and ecological services through the implementation of environmental management approaches, the consideration of socio-cultural services is less advanced. They may take place under broader community approaches as part of the implementation of “Agenda 21” or the implementation of ISO 26000 – ‘Guidelines for the social responsibility of organizations’, but these methods seldom focus on landscape management.

Landscape is formed in the human mind and does not exist out of it (Karro, 2014), and technical valuation methods based on land characteristics fail to include interaction with stakeholders. Management system tools are therefore more appropriate to integrate such interactions, and, setting aside the dispute about ‘bottom-up’ versus ‘top-down’ approaches, allow the incorporation of a continuous improvement dynamic. Furthermore, just as it is desirable to include stakeholders at an early stage on landscape design projects, it is also necessary to maintain connection with stakeholders through everyday land use with permanent feedback regulations that help to manage complexity in a systemic approach. The ISO 37101 standard on ‘Sustainable development of communities — Management systems — Requirements with guidance for resilience and smartness’ allows this, being one of a number of international repositories that enable a broader reflection on land.

Here, we assess how the ISO 37101 standard can interact with and result in concrete examples of implementation of innovative measures or “good practices” through expertise collected in Europe through previous WP6 tasks, and how the use of this standard itself can help in the compilation and prioritisation of policy options for future land management.

2 Methodology

ISO recently developed an ISO 37101 standard with requirements, guidelines, and technical support tools for sustainable and resilient planning, published in July 2016. This standard intends to help any type of community to adopt a management system in a sustainable, smart, resilient logic, to improve its contribution to sustainable development and to assess its performance in this area. Designed as a management tool for the territory, its principles are naturally applicable to landscape management.

The EU working group on ‘Mapping and Assessment of Ecosystems and their Services’ (MAES) has developed a conceptual framework that links human societies and their well-being with the environment, which is built around a broad set of key policy questions.

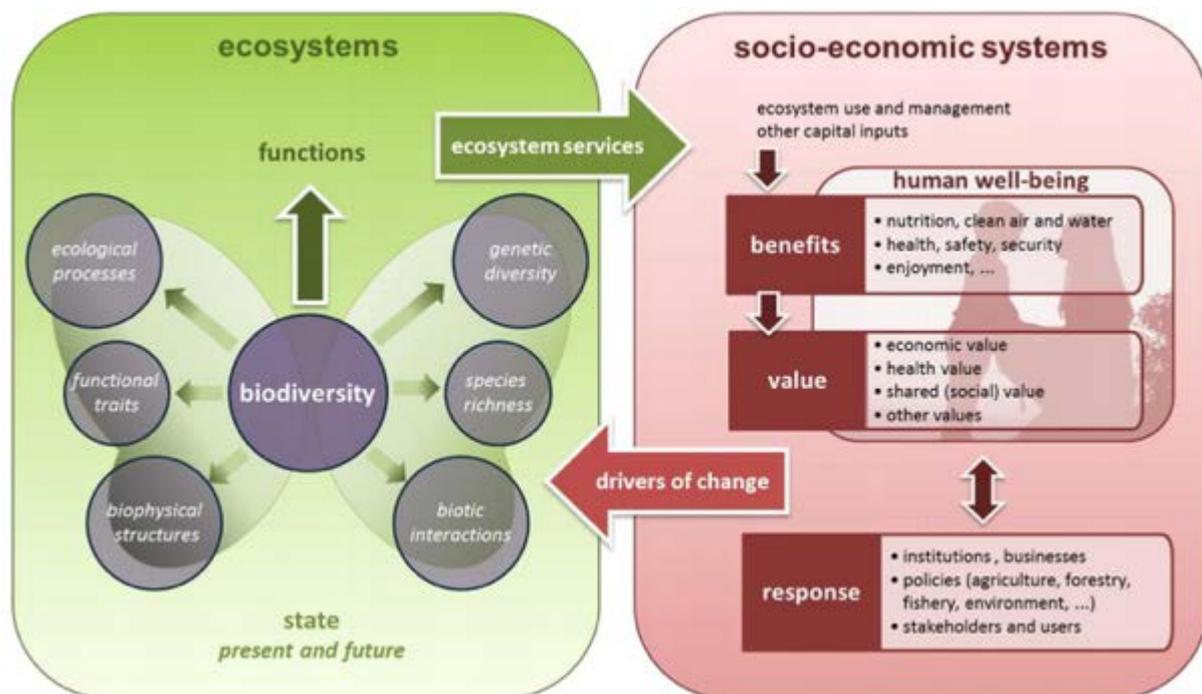


Fig. 1 – MAES framework (source:<http://biodiversity.europa.eu/maes>)

Several maps are proposed to characterize ecosystem types corresponding to Corine Land Cover classes. More tools have been developed through other HERCULES work packages with, for example, maps on the spatial distribution and relations between supply and demand of wild food in the European Union, covering all terrestrial wild food groups, or demand and supply of pollination in the European Union. They can be seen on [HERCULES Labs](#) and [HERCULES knowledge hub](#).

However, these maps do not include any valuation that results from interaction with stakeholders. As a complement, management system tools are therefore more appropriate to integrate such interactions, and help to manage complexity in a systemic approach based on a continuous improvement dynamic. Therefore, it is proposed here to follow a frame built upon ISO 37101 standard requirements, which includes such dynamics.

3 Report on innovative strategies

3.1 ISO 37101 issues and purposes applied to landscape stewardship

The ISO 37101 standard is a system through which it is possible to account for ecosystem socio-economic benefits and values. It uses 12 major identified issues, together with responses towards 6 sustainability purposes. In order to account for such benefits, the organization is invited to undertake an iterative cross-analysis of purposes and issues, as figured in Table 1, which shows the interconnections (grey) between socio-cultural issues (red) and ecological ones (green).

Help boxes provide guidance on the questions, provided as examples, which the organization or interested parties may raise in the course of this cross-analysis. This deliverable applies those questions to cultural landscape stewardship.

Innovative strategies collection includes several entries:

- [Heritage good practice and initiatives](#) have been collected during T6.1 and T6.3 (see Review on good landscape practices as related to heritage in D6.1), as well as Integrated landscape initiatives through WP1. They have been figured on the HERCULES Knowledge Hub, and then analysed through T6.2 process.
- Local initiatives have been collected on HERCULES study landscapes, through three series of local workshops performed within WP8 as well as localised landscaping skills and knowledge collected through T8.2 and reported in D8.2. They are also figured on the HERCULES Knowledge Hub (see D8.2 and D8.3).

Table 1– Matrix of major issues and fundamental purposes from ISO DIS 37101

Deliverable D6.4

PURPOSES → ↓ISSUES	Attractiveness	Social cohesion	Well-being	Preservation and improvement of environment	Resilience	Responsible resource use
Governance	To what extent are stakeholders involved and how are their contributions taken into account?	How does the governance system take into account issues related to social cohesion in the development and implementation of landscape policies?	How does the governance system detect and sufficiently take into account the aspirations for the well-being of landscape community members?	How are stakeholders involved in preserving and enhancing the environmental quality and aesthetics?	How are risks reflected in the governance of the community? How does landscape planning address these risks?	How does the community governance support responsible use of natural resources and reflects the concept of planetary boundaries?
Education and capacity building	How does the availability of education contribute to the attractiveness of the landscape?	How culturally diverse is the community? What benefits does it yield?	What strategies are used in the community to raise awareness on the benefits of preserving common resources and engaging in activities that serve public interest?	How does the education system foster higher engagement for environmental preservation and restoration?	What educational strategies are implemented in the community to prepare its members to face potential risks and help the landscape as a whole to become more resilient?	What strategies are used change mind-sets from business as usual to sustainability targeted approaches?
Innovation, creativity and research	How does the level of creativity and innovation in the community contribute to landscape attractiveness?	How does the landscape facilitate access to creative activities, opportunities and spaces?	What benefits improving the quality of landscape is expected to yield?	What benefits does community-based innovation bring to environmental management on landscape?	How does the community foster higher synergy between innovative programs, projects and activities and enhance landscape resilience?	How does the community use innovation, creativity and existing research capacity to encourage responsible use of natural resources?
Health and care in the community	How do health factors impacts landscape attractiveness?	How is landscape used to encourage healthcare charities in the community?	How equitable access to landscape contributes to community healthcare?	What are the land uses that impact the environment, especially water, air and soil quality, and, in turn, will have an impact on health?	How landscape policies strengthen emergency preparedness in the community?	How does landscape policies help to promote the use of materials and practices having fewer health risks?
Culture and community identity	To what extent does the landscape contribute to expand, maintain or erode the community's sense of identity? How do the community's cultural policies contribute to its attractiveness?	How accessibility and affordability to cultural events is ensured on the landscape?	How does landscape helps people to develop a distinct sense of identity, individually or collectively?	How is culture used to raise awareness on responsible resource use?	Are drivers for cultural landscape changes identified ?	To what extent is the natural environment a source of inspiration for community's identity and values?
Living together, interdependence and mutuality	How does social equity and inclusiveness contribute to enhance landscape attractiveness?	How does landscape contributes to build social ties in the community between its various components, particularly between those who are marginalized, economically and culturally?	How does landscape planning improves quality of life, safety and the health of population?	How does the landscape foster intergenerational, intercultural and social mix and mingle ?	How does landscape strengthens the bonds in a community to ensure they are strong enough to respond to disasters or serious crises?	How landscape as a non-monetary value can help to promote more efficient resource use?
Economy and sustainable production and consumption	How does land use contribute to employment?	How access to employment is facilitated?	How does the community encourage and support innovations in landscape?	What policies does the community follow to encourage local production and consumption? How successful are they or can they be?	What is the landscape's vulnerability to external economic development (e.g. higher prices for raw materials)?	Why did the community adopt an ethical food policy? Does it support local, organic and fair trade?
Living and working environment	How does the landscape contribute to quality of life and attractiveness?	How does lands use help limiting social segregation?	To what extent are the benefits of landscape for higher quality living and working conditions on well-being evaluated?	To what extent are land uses subject to regulations to limit their environmental impact, including reduction of greenhouse gas emissions?	How does the landscape policies balance resilience, including climate change adaptation with creativity and quality of life?	To what extent are non-renewable resources used in a sustainable way?
Safety and security	How safe is the landscape considered both internally by residents and externally by visitors?	How do landscape features and values improve safety and prevention of crime and violence for all, including its poorest members?	What are the landscapes policies to enhance safety and welcoming nature of public spaces?	How does the community ensure the preservation or management of scarce and valued environmental resources?	How is security and safety taken into account when planning land use?	How is responsible resource use taken into account when planning land use?
Infrastructures collectives	How does the capacity and quality of infrastructures available in the landscape contribute to its attractiveness?	To what extend the landscape infrastructures provide the same level of service for everyone?	To what extent do the services provided by the landscape infrastructure satisfy everyone in the community?	How does the community reduce the impact of infrastructures, and their use, on the environment, and assess such impacts?	How can landscape be improved with smarter infrastructure? How is infrastructures resiliency appraised?	How does the community ensure efficient use of natural resources and energy in the operation of its infrastructure, e.g. by implementing smarter solutions?
Mobility	How does investment in improved mobility show a return in terms of greater economic interaction, opening new contacts, diversifying local trade and contribute to the attractiveness of the landscape ?	How does improved mobility bind the community together and increase shared experience?	How do mobility conditions on the landscape enhance quality of life?	What steps are taken to reduce pollution (noise, air quality, greenhouse gas emissions throughout the associated life cycle) resulting from improved or increased mobility in the landscape?	How is resiliency of mobility services appraised? What plans and capabilities are in place to restore services in the event of a disaster or disruption?	How does the landscape integrate sustainable mobility, e.g. by including sustainable mobility features in landscape planning?
Biodiversity and ecosystem services	How do landscape policies prioritize biodiversity richness for the territory and made biodiversity protection a major focus of plans and projects?	How is access to nature and ecosystems facilitated?	How has the landscape helped citizens to become aware that intact ecosystems and diversity of species contribute to quality of life?	What is the content of the community Biodiversity Action Plan to preserve and restore biodiversity and ecosystems?	How is the loss of biodiversity and respond to the related risks assessed?	In what ways are biodiversity and ecosystem services considered as major natural resources and managed in a sustainable manner?

Table 2 – European initiatives sorted through ISO 37101 issues and purposes (Girod et al, 2017, in review)

PURPOSES→ ↓ISSUES	Attractiveness	Social cohesion	Well-being	Preservation and improvement of environment	Resilience	Responsible resource use
Governance	Green corridors in Edessa + The olive forest. Syn tis allis + Grand Parc Miribel Jonage	The olive forest. Syn tis allis	The olive forest. Syn tis allis	Environmental Workshop Days + The olive forest. Syn tis allis		The Mersey Forest Plan + The olive forest. Syn tis allis
Education and capacity building	Environmental Workshop Days + A vision for Dartmoor + Mapping Portee + Pogany Havas	The olive forest. Syn tis allis + Kodavere Vooremaa + Pogany Havas	One Hut Full + Environmental Workshop Days + A vision for Dartmoor + Syn tis allis	A vision for Dartmoor + Syn tis allis + Open Air Art Museum at Pedvale + Pogany Havas	One Hut Full	A vision for Dartmoor + One Hut Full + Grand Parc Miribel Jonage
Innovation, creativity and research	One Hut Full + Mapping Portee	One Hut Full + Environmental Workshop Days + Grand Parc Miribel Jonage	Environmental Workshop Days	One Hut Full + Environmental Workshop Days + Open Air Art Museum at Pedvale	One Hut Full + Save foundation	The Mersey Forest Plan + One Hut Full
Health and care in the community			The Mersey Forest Plan + Sperrins Gateway			
Culture and community identity	Walls and gardens+ One Hut Full + Mapping Portee + Kodavere Vooremaa	One Hut Full + Environmental Workshop Days + Sperrins Gateway + Open Air Art Museum at Pedvale + Modbury	One Hut Full+ Sperrins Gateway + Grand Parc Miribel Jonage	Walls and gardens+ Environmental Workshop Days + One Hut Full	Save foundation+ One Hut Full	Environmental Workshop Days + One Hut Full
Living together, interdependence and mutuality	The olive forest. Syn tis allis	Walls and gardens		Grand Parc Miribel Jonage		
Economy and sustainable production and consumption	One Hut Full + The olive forest. Syn tis allis + Grand Parc Miribel Jonage	One Hut Full + The olive forest. Syn tis allis + Grand Parc Miribel Jonage		One Hut Full + The olive forest. Syn tis allis + Grand Parc Miribel Jonage		One Hut Full
Living and working environment	Green corridors in Edessa + Kodavere Vooremaa	Green corridors in Edessa + The olive forest. Syn tis allis				One Hut Full
Safety and security						
Infrastructures collectives	Sperrins Gateway + One Hut Full			Grand Parc Miribel Jonage	Grand Parc Miribel Jonage	One Hut Full+ Grand Parc Miribel Jonage
Mobility	Sperrins Gateway + Colmenar Viejo				Grand Parc Miribel Jonage	
Biodiversity and ecosystem services		One Hut Full + Environmental Workshop Days		Grand Parc Miribel Jonage	Save foundation	Save foundation + One Hut Full + Grand Parc Miribel Jonage

In deliverable D6.3, practices referenced in collected initiatives were positioned at the crossroads of the matrix purposes/issues, i.e. the most significant in terms of context. The results have been reproduced in the D6.3 table shown at Table 2, displaying the most frequently observed topics, with a grey gradation.

Culture and community identity is the most addressed topic, both by the number of initiatives reported and by the good practices observed, and Education and capacity building is second. Then comes Innovation and creativity, Living and working environment, Governance, Living together, Biodiversity, Economy and sustainable production and consumption.

The environmental purposes (preservation and improvement of the environment, resilience and responsible use of resources) paradoxically have little interaction with the issues related to infrastructure and mobility, probably because searches were more focused on the cultural aspects and were not designed to explore these themes.

More social issues, such as health and safety are also less apparent. This shows that there is still an important area of investigation to be pursued in terms of exploring the relationships between landscape values for safety or health.

Examples classified through the various issues are given in detail below.

3.2 Governance

From the survey performed through WP8 initiating D8.1 Stakeholders strategy, we can tell that governance is highly valued and a major expectation from stakeholders, with growing importance of local involvement in project governance and tools, despite difficulties (Fig.2).

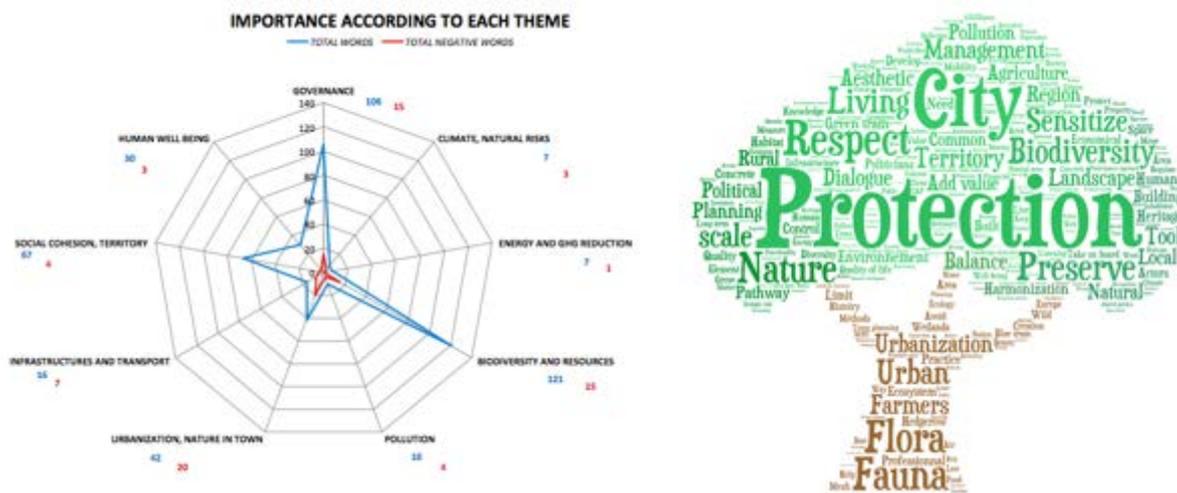


Fig.2 – Importance of governance through landscape heritage sustainable issues (source: Landscape perception survey results, D8.1)

An example is the work of the Mersey Forest partnership, which is working with partners in the UK, Belgium and the Netherlands to share approaches and develop best practices on a European project called Green Infrastructure for Tomorrow – Together! (GIF-T) that aims to develop a 'bottom-up' approach for sustainable land management. For the [Mersey Forest Plan](#), the public consultation took place over an extended timescale, and involved asking the public how they felt about trees and woodlands in Merseyside, where they would like to see more trees planted, and locations where woodlands could be better managed. The campaign included both traditional marketing methods and innovative interactive mapping too. The information gathered provided a factual basis on which to develop and implement local policy. The work has identified key areas to increase the connectivity of wooded landscape, not only to reduce habitat fragmentation but also to provide a range of ecosystem services.

In Edessa, another project is developing three riverside walkways that 'reintroduce history, culture, and nature, and connect them to the local urban context'. When establishing [green corridors in Edessa](#), the participation of local people has been productive throughout the planning process and execution of the project: the 'green frame' of the proposal was presented to citizens and local authorities public and private sectors, with discussions regarding advantages and disadvantages of each option. In Italy, the [Conca Project](#) includes participatory watershed planning with a range of stakeholders from local authorities, technical consultants and community members, collaboratively developing a consensual spatial plan for the Conca river valley.

Natura 2000 award winning [3WATER project](#) is also a good example for reconciling interests/perceptions. The 3WATER project is based in the Vijvercomplex van Midden Limburg, in the north-east of Belgium, a Natura 2000 site that aims to maintain a viable

environment for nature, business and tourism. The ‘3E’ approach was key to reconciling different goals and interests. All the partners pledged to respect a balance between Economy, Ecology and Education, under Natura 2000 guidelines. The project focused on preserving local species such as the bittern (a member of the heron family) and the tree frog, through renovating ponds and wetlands, building new reed islands for the bittern and restoring traditional wet and dry heather. The results are impressive. The number of breeding pairs of bitterns has more than doubled, and the population of tree frogs is estimated to be the largest in the Benelux countries.

Another set of examples that were presented at a [HERCULES EU level workshop](#) are the land consolidation schemes which have been used in the Netherlands to develop landscape stewardship. After some tensions in the 70’s, the current success from the process relies on the fact that it is built on local and bottom-up initiatives which work on a participatory basis. Support from the local government has resulted from the action that has been taken by several land managers. It is clear that land consolidation is a powerful tool for problematic regions; however, key lessons are that stakeholder involvement is essential from the early stage and that force of law should be avoided to ensure effective consensual participation.

Public participation is a widely discussed topic in landscape research programs, and still a challenge to balance the need to establish modes of governance and the resistance to change associated with some projects. But beyond landscape planning, there is an identified need for a "permanent dialogue", not related to the project ([PDD2 Roundtable, 2015: Landscape and Sustainable Development, 2015](#)), on the basis of mobilization “promoting a dialogue setting individual expectations, collective (and desired) intentions, and possible developments of the territory” (Lazzeri, 2015, Fig . 3).

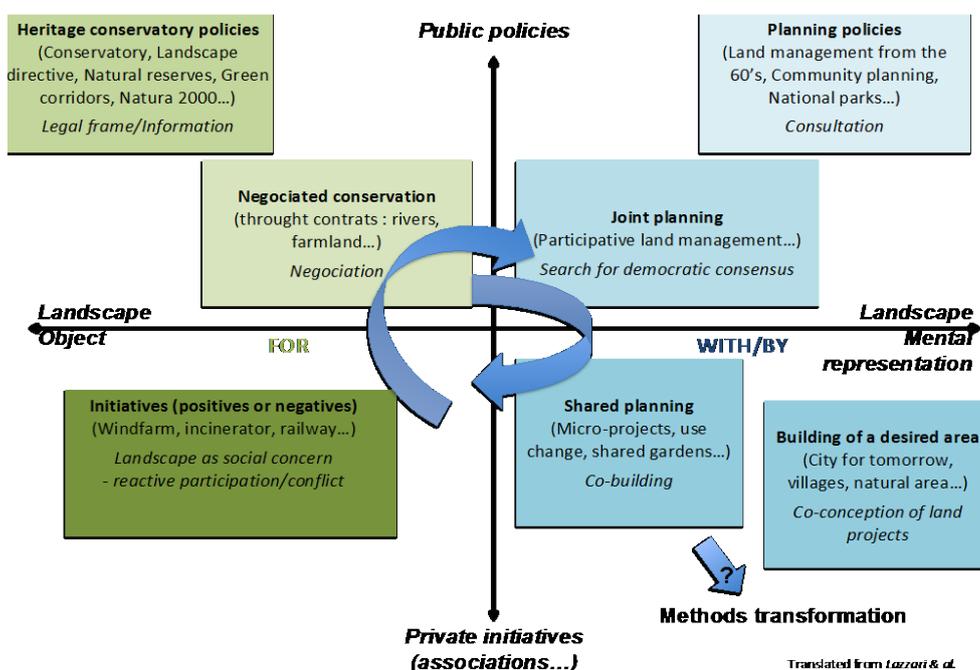


Fig. 3 – Types of assistance and dominant modes of participation (information to co-design) (source: Lazzeri, 2015)

This trend is now illustrated in the case of local urban micro-projects such as community gardens, or other initiatives like the [Saint Priest pocket gardens](#). These pocket gardens are

participatory projects of beautification on public spaces originally "abandoned" and maintained by volunteer residents who plant flowers, shrubs, etc. Ownership of the process by the inhabitants relied on twenty people mobilized over 200 neighbourhood council guests, with still a sustainable operation today. The project benefited residents-gardeners who were trained by practitioners from Green Space service, the neighbourhood that got living conditions improvement, technicians with building relationships with residents, and to elected officials who take advantage of the improving the image of the city (DREAL Rhône-Alpes, 2012).



Photo 1 – Saint-Priest pocket gardens (source: Saint Priest city)

3.3 Education and capacity building

This issue was the second most addressed topic in our sample. Cultural landscapes are known to improve long-term educational outcomes (Greater London Authority, 2003); connection to landscape allows harmonious cognitive development, and landscape is also at the centre of educational practices. The examples below illustrate how the link between landscapes and education systems helps to strengthen the attractiveness of the area by developing heritage, social cohesion through inter-generational exchanges, wellness by the practice of educational outdoor activities, learning about the responsible use of resources and environmental protection, and resilience in the transmission of knowledge to future generations.

In the [Mersey Forest](#), the forest school allows children to play in the natural environment, to acquire basic practical skills, and learn about the environment. Since 2009, The Mersey Forest Plan participants have worked with schools for adapting forest sessions. Activities such as building huts, cooking over a campfire and the artistic use of natural materials help children fight against their growing alienation from the natural world, builds confidence and improves their team behaviour.

An important part of another program, Urbanbees, around the discovery of wild bees, is reserved for education and training. School interventions, exhibitions, nature walks, lectures, nest box building workshops and professional training courses were organized to introduce wild bees to a wide audience: children, citizens, elected officials and professionals (green areas and farmers). Under the Urbanbees program, school-based interventions are programmed cycles. Different actions are proposed for students and children in Lyon metropolis. The program also offers a collection of resources for teachers ([Urbanbees, 2014, teaching files and games](#)).



Photo 2 – Urbanbees Life program, Lyon (left, photo: Geneviève Girod), and Kodavere uavits (right, photo: Krista Karro)

Landscapes offer fruitful imagery in language learning. In [Vooremaa Kodavere study landscape](#), heritage was celebrated on Cultural Landscape Day with the publication of the Kodavere dialect study book: “Kodavere Uavits” is an ABC book of the local dialect which was published for children in 2015. Much of the vocabulary in the book is landscape related, featuring both object and traditions/practices. This book was published to help children and the younger generation remember their cultural heritage, where the local dialect is closely connected to this specific land and landscape.

Through the [Dartmoor Vision](#), a multi-agency, stakeholder-driven process is developing and achieving a vision of the Dartmoor landscape in the year 2030. To achieve a vision reliant on the continuation of traditional stone working, farming, and upland practices, the Dartmoor Vision collaborates with local and regional educational facilities, and farmers, to sustain through education and practice, the functioning of the landscape. In Romania, [Pogany Havas](#) is an association of local governments, non-governmental organisations (NGOs) and businesses which supports traditional agriculture through training programs and study tours for farmers, as well as involving young people in the Life-School Program. It provides an opportunity for people to learn new skills, get involved in the local community and environmental protection projects, and take part in study tours abroad.

3.4 Innovation, creativity and research

Innovation, creativity and research foster the development of new forms of cooperation. Landscapes generally, and cultural landscapes especially, are a place for such exchanges. Outdoor activities facilitate discoveries and provide access for everybody to all kinds of wonders.

Thus, the [outdoor Art Museum in Pedvale](#), Latvia was opened by sculptor Ojars Arvids Feldbergs in 1991 and is now a state historical monument. Its 100 hectares covered by cultivated fields, flower meadows, hills, rivers and forests are an ideal place for creative professionals, - sculptors, painters, writers, artists - to express themselves freely, and they are encouraged to take their inspiration from nature using local materials.

In Nantes urban landscape, the art installations of illustrator [Claude Ponti](#) attracted nearly 1 million visitors, with fantastic creatures straight out of the imagination of the artist, who invites the public to play with all the works and clink the Steeples-Pots, bubbled with Deputy flower, to talk to Simone-the-voice-of-the-station and finish relaxation among the thousand Cousspoussins ... for the delight of children and "big kids".



Photo 3 – The vagabond mirante Appouare, Jardin des Plantes, Nantes (photo: Geneviève Girod)

But the artist can also appeal to other senses than visual. Gilles Malatray of [Earing Points](#) "Invite structures, institutions and audiences to explore new soundscapes around the city and the countryside, considering these environments as real aesthetic ear spaces, is not a simple artistic gesture... It emphasizes the variety of approaches, postures, ways, to hear and be heard collectively" (Gilles Malatray, Desartsonnants, 2016).

[Colmenar Viejo](#) uses both together in its Visual and Sound Landscapes initiative. School students from the municipality took part in a voluntary activity where they learnt how to take landscape photos and record landscape sounds. They learnt a new way to look at the landscape and how to express their relation with the landscape through art. They made an exhibition of the photos and sounds recorded, where their parents realised the importance of landscape to contribute to the personal development of their children.

Innovation, creativity and research foster also the elaboration of cutting-edge designs, while contributing to excessive risk aversion and giving due consideration to ethical implications and outcomes. Public consultation in the [Mersey Forest Plan](#) includes innovative geospatial mapping methodology that has provided an evidence base upon which to develop and implement local policy. The work has identified key areas for increasing woodland landscape connectivity that can assist not only in helping to reduce habitat fragmentation, but also provide a range of ecosystem services.

'[One hut full](#)' explores the history of the Dartmoor agriculture through a hike, and a multi-sensory experience, designed to provide thought, inspiration, and innovation for the future of upland hill farming. It's an experiential project set up to teach visitors about local practices, and to create new and more sustainable supply chains for locally adapted landscape products, with workshops running to connect different landscape members and to help them find new uses and niches for their products. The program supports innovative approaches that promote bio-based materials, and new sustainable technologies adopted by local entrepreneurs.

Cultural landscapes provide a space for experimentation for cultivated biodiversity and innovation towards resilience. The [SAVE Foundation](#) has the mission to preserve and promote cultural genetic diversity in Europe, with a particular focus on survival of endangered breeds of livestock and crop species. Maintaining local varieties of fruit and vegetables, far from standardized market production, is a real challenge towards facilitation of local soil and climate adaptation, together with attractiveness for micro-fauna.

In a vegetable garden in the technology park at Porte des Alpes, the land manager, practitioner, and neighbouring restaurant come together to conserve old varieties from the Lyon area with Resource Centre of Applied Botany (CRBA). A Franco-Russian cooperation is now engaged and supported by [De Natura Foundation](#) to support Vavilov Institute, the oldest seed bank in the world with mission to enrich the cultivated plant diversity.



Photo 4 – Local crop cultivation, Parc Technologique, Saint Priest (source: DLPB Lyon Metropole)

3.5 Health and care in the community

Invasive species, pests (pigeon, rat, etc.) and plants (e.g. ragweed) can be a concern for stakeholders and the theme is not valued within our sample. Indeed, bottlenecks remain with the fear of wildness.

However, it can be shown that cultural landscapes contribute to the well-being and public health. Several studies describe the therapeutic benefits of biodiversity on the psyche of the inhabitants, the presence of the plant acting on the psychological well-being and behaviour of citizens, with a special ability to restore mental fatigue, reduce stress, and promote healing in care centres. Children who live in tree-lined streets have lower rates of asthma than average (Schellenbaum Lovasi, 2008). Health also stimulates the economy. The annual cost of care is rated at £ 2 billion to the city of Liverpool, and the forest is a long term investment: to help reduce the "health gap" between rich and poor, with a particularly strong focus on reducing heart disease and stroke, the program 'Natural Choices' conducted in The [Mersey Forest Plan](#) with the National Health Service in Liverpool supports the development of tree cover near hospitals and health centres.

The Art and Care Garden of Charpennes Geriatric Hospital associates also sensory therapy and art entertainment including gardening for patients suffering from Alzheimer's disease or age stroke diseases (JAS). In addition, pets have positive effects on people with fragile health (children, the sick, the elderly) and their presence can be fostered such as in Institute for Childhood and Family to whom Parilly Park offers dwarf Soay sheep to promote contact with children.



Photo 5 – Outdoor physical activities, Parc de La Cerisae, Lyon (left, photo: Geneviève Girod) and Soay sheep at the Prefectural Institute for Childhood and Family, Bron Parilly (right, source: DEN Lyon Metropolis)

3.6 Culture & community identity

Culture and community identity is the most addressed topic, both by the number of initiatives reported and by the good practices observed (see Table 2). Culture represents and creates wider relations between human and nature, past, present and future, the materialised and the imagined world (Dessein, 2016). Culture and community identity are essential to preserve lifestyles, including intangibles such as practices, know-how, languages, spirituality and customs, while allowing or even encouraging the evolution of heritage and traditions (source ISO 37101). Cultural Landscape Days were organized in the 5 study landscapes and are reported in D8.4.

In Modbury, a trail was organized to reconnect people to the land through a discovery of heritage trees. Modbury is undergoing rapid urbanization on the outskirts of Plymouth, with marked changes in the landscape. To keep the memory of places, the heritage trail refers to landscape features created by man, such as dry stone walls, hedges, water sources (ponds and springs), and trees.

In the Kodavere area, local growing of onions and garlic gave the name to the Sibulatee (Onion Route), a tour focusing on the traditional vegetable gardening of Russian Old Believers, a distinctive group of people by [Lake Peipsi](#), where grain cultivation is impossible.



Photo 6 – Contrasting heritage between Russian old believers’ house and vegetable gardens (left), and Estonian traditional house and orchard (right, photos: Geneviève Girod)

In Colmenar Viejo, three main festive traditions dating back to the Middle Ages are organised by the municipality in close collaboration with the local community. The first one is the annual pilgrimage to a rural chapel, one of the main identity icons for the inhabitants (religious or not). The other two are linked to pagan traditions to welcome the spring season and to remember the wild stock farming past of the village. These three traditions have a very strong relation with the cultural landscapes of the area, and are very important to foster the sense of place and community for the people living in the municipality.



Photo 7 – Heritage valuation through Photography (source: Maria Garcia Martin)

[Sperrins Gateway Landscape Partnership](#) brings communities together to create a shared vision for the conservation and management of Sperrins landscape and heritage. It helps around 20 projects, and develop a high quality, integrated, sustainably managed and well-utilised walking trail network, including an audio trail, that enhances the health and well-being of local people and visitors by providing improved access throughout the Sperrins Gateway. These trails enable people to appreciate the distinctive heritage features and character of the Sperrins Gateway landscape through increased access and interpretation and encourage an improvement to health and well-being through outdoor recreation provision.

[SAVE Foundation](#) links agrobiodiversity to identity and part of the local culture. Agrobiodiversity is not only an essential part of biodiversity, but also an essential instrument for rural development in marginal areas, especially in areas of special environmental value like traditional Agro Eco Systems (TAES). In those areas, conservation of Agro-Biodiversity is an option for the local people to improve their income and for sustainable landscape management.

'[ENtopia - Our Places in Europe](#)' was the subject of a presentation during [HERCULES 2nd EU level workshop](#), and is a European project promoted by Europa Nostra to solicit applications and participation from smaller towns and villages across Europe with the aim to define a “Future Vision for Sustainable Settlement” and to implement qualitative norms for good places to live in and enjoy. It seeks to encourage and endorse smaller towns and villages and their local authorities and communities to work towards their sustainable futures through identifying and celebrating their cultural and environmental qualities and assets.

3.7 Living together, interdependence and mutuality

Living together, interdependence and mutuality entail the development of collective and collaborative lifestyles that produce mutual economic and social benefits in terms of inter and intra-generational equity and social mobility (source ISO 37101).

The social role of collective and shared urban gardens can be highlighted here, as well as all associated practices that contribute to non-monetary exchanges (barter services, plants, grains, etc.), like movements like "Incredible Edible" voluntary citizen participatory and solidarity approach, born in England and disseminated in whole world today. One of the major advantages of this approach is that it connects a young population with landscapes, some of which might have scant alternative opportunities for such experiences.

Cultural landscapes themselves are places of intergenerational meetings, sometimes with conflicts of use, which provide a demonstration of the life of the place. Finding common issues is an effective means of sharing best practices and experiences irrespective of borders (whether of countries, counties, regions or smaller areas). For example, the Walls and Gardens project crosses borders, and promotes the historical and cultural ties between France, Belgium, the Netherlands and Britain, on past military areas that today are ideal places for relaxation, recreation, and natural sites of major ecological interest. Inviting partners to consider the notion of "border" and fortifications, the project is a chance to address issues related to the creation of the border, the impact on people, and trade flows. Indeed, the fortified cities, marking yesterday the separation between states, are now a reconciling item to gather around the same issue and the same heritage.

3.8 Economy and sustainable production and consumption

Support policies to peri-urban agriculture are developing, and can be anchored on major metropolitan natural areas. [Grand Parc Miribel Jonage](#) (GPMJ) is a peri-urban park whose mission is servicing landscapes, for which the role of farmers is essential. The Parc owns 400 ha of farmlands operated by 16 contracted farmers, plus 100 ha operated directly by GPMJ. GPMJ implemented a label "Les Saveurs du Grand Parc" that aims to encourage producers, distributors, processors and consumers to focus on organic and local products. The HERCULES project contributed to organising a workshop around this approach to evaluate the balance between supply and demand, and to develop the tools necessary to promote local supply, further discussed in D6.3.



Photo 8 – “Les saveurs du Grand Parc” productions (top), Mini-market in Grand Parc Miribel Jonage, during 2015 European Heritage Day (bottom left, photo: Frédéric Girod) and Moulin Marion old mill (bottom right, photo: Alticime)

Large peri-urban parks can also supply the timber industry, as is the case of GPMJ, with the assistance of the National Forest Organisation in forest management plan. The Parilly park has a woodworking workshop within the service, and the Lacroix-Laval Domain also uses horses for some logging operations and for other uses, horses being much appreciated by the public.



Photo 9 – Forestry in Lyon metropolitan parks (photo: Geneviève Girod)

Other good practices were collected within T8.2 in Rhône-Alpes rural area and are reported in deliverable D8.2. Between those, [Biau Panier association](#) was created in 2005 following strong demand from Trièves residents for a bio local supply chain. The purpose of this non-profit association is to offer a wide range of local organic products.



Photo 10 – Organic vegetable farm in Trièves (photo: Sarah Torrecillas)

Within the HERCULES Study Landscapes, olive oil production in Lesvos is widely discussed in chapter 4.7.2, and growing onions, garlic, and vegetable in Kodavere area and the shores of Lake Peipsi has been mentioned in chapter 3.6.

3.9 Living & working environment

Facilitating access to cultural landscape, as a living and working environment, supports fair and equitable access to a high quality of life and working conditions that match the needs and expectations of interested parties (ISO 37 101).

Farmers and land managers are providing ecosystem services including scenery, environmental services, or services for recreation activities. One of the [Grand Parc Miribel Jonage](#) missions is to facilitate access to those, in particular for people who might otherwise not have the means to access them. Thus, it reinforces its recreational facilities with for example, the renovation of three beach portions on the Atol' sector dedicated to public enjoyment.



Photo 11 – Work in progress on Atol' beach (photo: Alticime)

3.10 Safety and security

Our sample of examples did not provide any match against the issue of safety and security, and safety seemed to be the most difficult topic to illustrate along with health and care. Indeed, if it can be shown that cultural landscapes contribute to the well-being and public health, there are nonetheless difficulties because part of the stakeholders see nature as a source of danger, either in terms of health (based on risks associated with or the fear of harmful plants, animals, or water features) or in terms of safety (because outdoor activities are perceived as riskier, especially for children).

According to Paul Gobster (2004), *safety* at the river's edge is expressed through two aspects for stakeholders: "*physical safety* - children at risk of falling into the river, health concerns result about direct physical contact with polluted water; and *personal safety* – the river as a hang-out for young gangs engaged in criminal activity, a place for drinking and drugs use, and as habitat for the homeless" (2004). The issue of public safety arises often in large parks, sometimes with a choice between more extensive maintenance for biodiversity, and the need to maintain visibility for public safety.

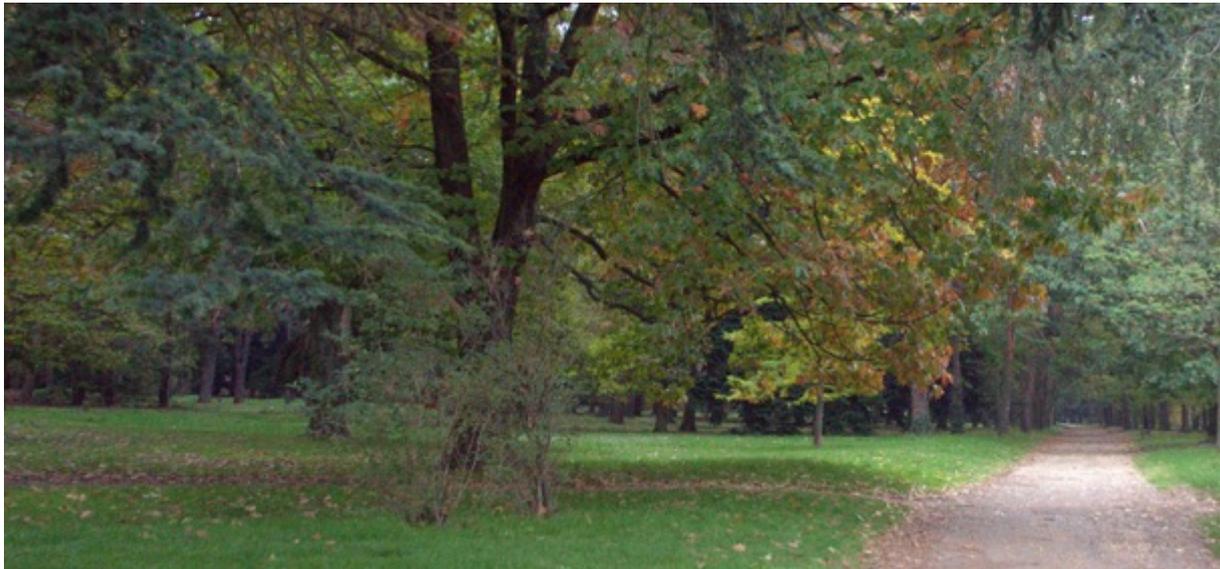


Photo 12– Lines of sight maintenance under trees, Parc de Parilly, Lyon Metropolis (photo: Geneviève Girod)

This risk-averse approach to considering safety and biodiversity in cultural landscapes is even more present in schools, that result from parents' worries about the dangers of wildlife (Lyon Green Spaces Direction, workshop 2015). However, in urban areas, green space plays a safety role, reducing the occurrences of assault and domestic violence (Schellenbaum Lovasi, 2008).

Clearly, there are conflicting perceptions about safety and security issues in terms of some people's perceptions about landscape and wildlife. On a wider and longer-term scale, cultural landscapes undoubtedly contribute to preventing health risks, climate events, and major risks such as floods, which is further discussed in the next chapter. However, the demonstration of such long-term benefits needs to be balanced with considerations of short-term risk, and a clearer and more structured consideration of this tension of conflicting perspectives would benefit from further exploration.

3.11 Community infrastructures

ISO TR 37150 technical report reviews the community infrastructure along the lines of community functions described in table 3.

Table 3 – Layers of a community

Layers	Examples of functions
Community services	Education, healthcare, safety and security, tourism, etc.
Community facilities	Residences, commercial buildings, office buildings, factories, hospitals, schools, recreation facilities, etc.
Community infrastructures	Energy, water, transportation, waste, ICT, etc.
NOTE “Water” includes sewage and wastewater as well as drinking water	



In essence, basic functions of community infrastructure appear to support the other two levels, and in this context cultural landscapes have a major connection to water supply, transportation, and to a lesser extent management of green waste.

Water is central to the history of the territory of the [Grand Parc Miribel Jonage](#), which handles a great multiplicity of uses. It is especially important as a source of drinking water, and as a flow area to fight against floods, which have both led to the establishment of safeguards for the preservation of biodiversity, but also contributed to economic activity through gravel extraction (which is now reducing), and as a recreation place for eastern Lyon residents.



Photo 13 –Water in Grand Parc Miribel Jonage, vital infrastructure for the city of Lyon (photo: Alticime)

According to Cerema (2015), "sanitation devices may constitute amenities opportunities conducive to the development of biodiversity and diversification of the urban landscape... These adjustments may be composed of a mosaic of environments such as ponds, swamps, ponds, wet meadows". In well-designed operations, residents can rather perceive recreational aspects and improvements of their living environment than water treatment feature. [Park San Vicens](#), created in 2009 from a local consultation process, is thus an excellent example of pooling uses with the provision of public scenery in a storm water management dedicated lake, and contributes to the city climate change adaptation. Pontoons and walkways wooden path of the San Vicens Park are also accessible to people with reduced mobility. In addition, decks and gateways are locally produced, and all the materials were reused to shape site and frame views.



Photo 14 – Circulations around water park in San Vicens, Perpignan (photo: Geneviève Girod)

3.12 Mobility

Though not highly represented here, mobility was highly discussed with local stakeholders in 2 of the 5 study landscapes, as a conflict between the desire for friendly access (Colmenar Viejo and GPMJ), and rather negative perceptions about the impact of cars in the landscape (GPMJ). The municipality of [Colmenar Viejo](#) has created a dense net of walking and cycling paths all over the area that connect places of cultural and natural relevance with the village.

[Sperrins Gateway](#) develops walking trail and /or multi use trail like Ulster Way, Old Dublin road access, gate and pillars enhancement, including Moyola river access work with the Moyola Angling Club, Moorland habitat restoration works for the native red grouse at Lough Fea and grey partridge at Megargy, and Heritage skills programme restoration and conservation of small built structures (stone pillars, small lime kilns, milk stands etc.).

Another project on the Nervion River banks, Spain, aims to regenerate the landscape associated with the river and promote ecological connectivity between different cities through which the river. Nervion river is located in a valley of a region with hilly and mountainous terrain, resulting in a concentration of industrial land and urban infrastructure in the flat areas. The project was implemented in several phases, with the development of alternative modes axis (pedestrian-cyclist) following the course of the river, and connected to the network stations. The aim is to regenerate the landscape associated with the river and promote ecological connectivity between the different cities where the river passes (E-CLIC Case Study # 32, Nervion River).



Photo 15 – Linear Park Nervión: Development of an axis soft modes connected to the network stops between the cities of Llodio and Delika (source: Elena Gomez Chico, Parque lineal en el alto Nervión)

3.13 Biodiversity and Ecosystem Services

The final ISO 37101 issue is biodiversity, which ‘cuts across’ all other subjects because it is the source of all the socio-cultural services mentioned previously. Biodiversity is an important topic in our societies where landscape issues deal with its preservation at different scales. It contributes directly here to the attractiveness of cultural landscapes.

[SAVE Foundation](#), already mentioned in chapter 3.4, strives to halt and reverse the trend of genetic erosion of agrobiodiversity, the biodiversity in agriculture. In times of climate change the living conservation of agricultural biodiversity is essential, since their broad genetic spectrum allows adaptation to changing environment. Preserving agrobiodiversity in Europe through local breeds and varieties that are well adapted to their environment and need little or no nutrition supplements appears to be particularly relevant, because their ecological footprint is generally better than in the modern high-yielding breeds and varieties.

[BERAS](#) promotes a genuine ecological alternative for a good environmental status of the Baltic Sea, and establishes ecological recycling agriculture (ERA farms) in intensive agricultural areas and thereby reduce input of nutrients and pesticides to the Baltic Sea.

The previous HERCULES deliverable D8.2 has introduced the idea of creating a biodiversity index linked to landscape features. The resulting index was correlated with a range of flora and fauna inventories (insects, including dragonflies and moths, amphibians, and birds). The results show no significant correlation between index value and flora and fauna richness, but appear to show correlation between the diversity of landscape features and flora richness. This work is a step towards further thoughts on assessing biodiversity through the diversity of landscape features.



Photo 16 – Biodiversity in Grand Parc Miribel Jonage, *Coenagrion mercurial* (photo: Dimitri Mercier)

4 Recommendations for implementation and prioritization of set of policy measures

4.1 Understanding cultural landscape and their context

As a preliminary, it is essential to understand that there are no generic policy measures that could be recommended as applicable in or suitable for every European cultural landscape. This has been illustrated in the five HERCULES SLs with their quite different issues and concerns.

What is proposed here instead is a common method to implement and prioritize such policy measures, each of them being very dependant of local context. As said in the previous chapter, a major learning point from landscape management good practice is the integration of such local issues, based on prior determination of the external and internal sustainability issues already introduced, that are relevant to the cultural landscape in accordance to purposes defined above, and on involvement of stakeholders at an early stage. This is the essence of the ‘landscape approach’ that is discussed and recommended in Deliverable D9.4.

For example, in order to help managers to face the effects of climate change, it is essential to consider a local approach. Because of the wide variations in different places of predicted climate change effects, and the different trade-offs and large regional differences in mitigation and adaptation potential of different options, it is necessary to tailor policy measures to site and farming-specific conditions. Differences are influenced by a number of factors such as farm characteristics (size, location, yields, level of inputs), climatic and environmental conditions (land and soil characteristics, water availability), the degree to which mitigation measures compete with traditional agricultural practices and profitability (e.g., extensive grazing systems or fertilization), and the incentives in place such as financial support. The varied mix of land cover and use types (landscape composition), their spatial arrangement (landscape structure) implies the need for an integrated landscape management system that encompasses the implications and solutions mentioned in previous chapters. Landowners and land managers must be encouraged to seek complementary solutions to common problems, including the ones arising from climate change.” (Source: [Climate Change and the Rural Economy](#)).

Green corridors policies could provide an adequate anchorage, as local implementation can be an opportunity for an open approach to cultural heritage (Fig.4), provided that they include recommendations for stakeholders’ engagement.

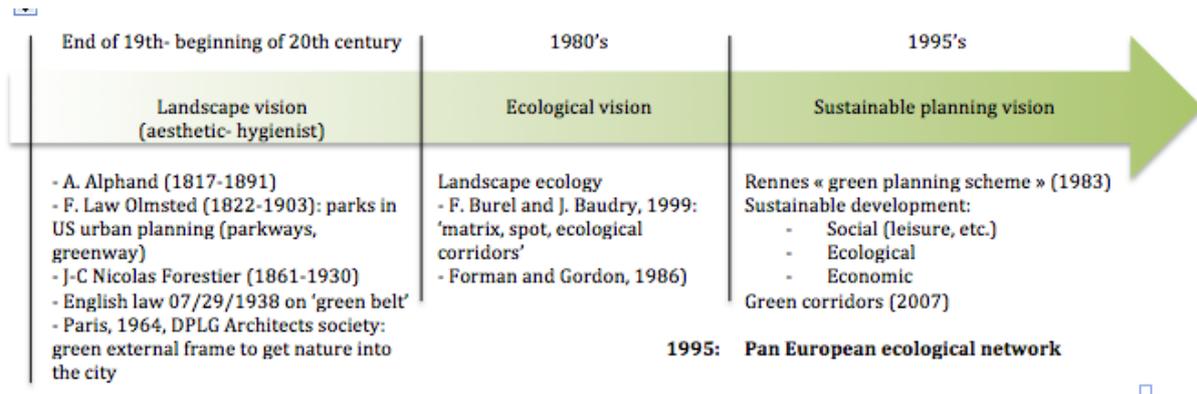


Fig. 4 – Representation of the evolution of the green corridors concept (adapted from Renault, 2013)

Each of the cultural landscapes studied through the HERCULES project have been described through the D3.1 List and documentation of case study landscapes selected for HERCULES. However, beyond the identification and classification of sites of interest, the registration of valued features in 'ordinary landscape' has to rely on local stakeholders.

4.2 Understanding stakeholders' needs and expectations

The European Landscape Convention is the first international treaty dedicated to landscapes. It makes clear the necessity to identify the expectations and needs of stakeholders. Several tools and means have been used through the HERCULES project to collect stakeholders' expectations. The stakeholders' engagement strategy (see D8.1) has included internet survey, face to face interviews, and local workshops within WP8.

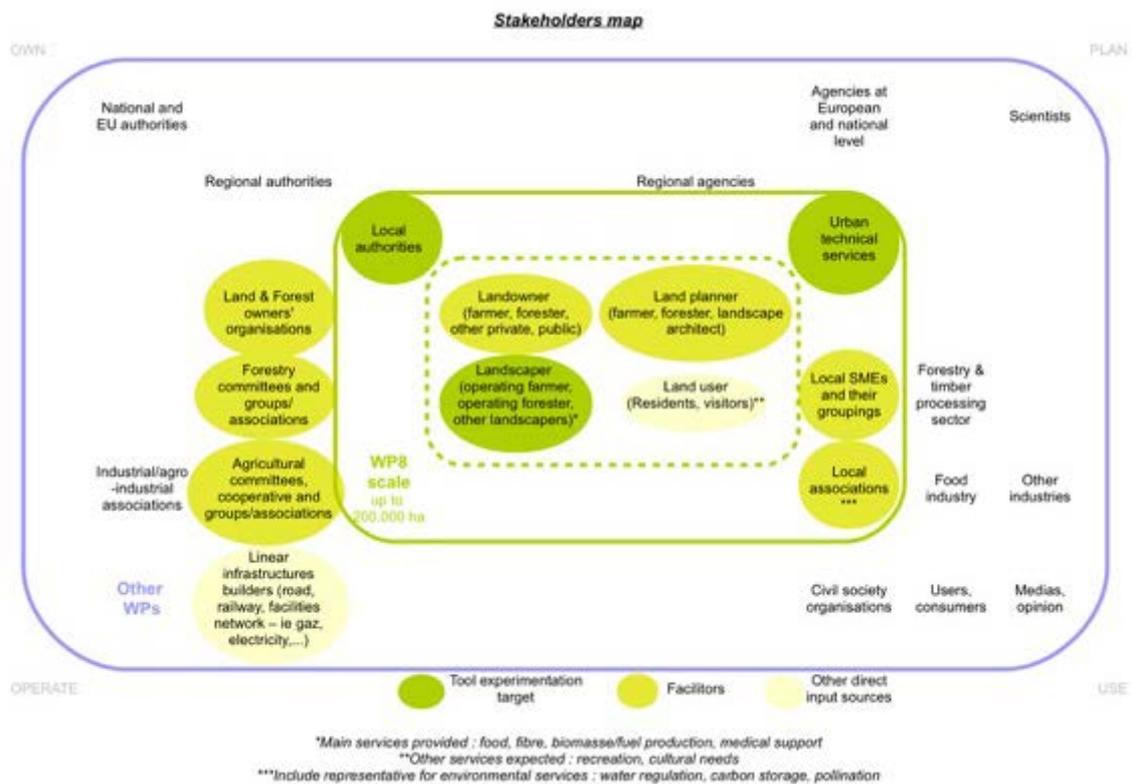


Fig. 5 – Example of stakeholders mapping

WP3 has also captured how the inhabitants from the SL perceive the benefits landscape provide to their well-being using Public Participation GIS approaches (D3.3). In Lesvos and Devon, WP5 an agent-based landscape change model was constructed based on extensive interviews with farmers. Maps depicting alternative landscape futures for the region and assumptions of the model were discussed and debated with local people. The model was seen as informative and particularly valued as a tool for opening discussion on the future of the area, and its use maintains a motivational drive at a time of agricultural abandonment and increased uncertainty for heritage conservation (D5.3).

4.3 Integrated landscape management system

From the previous examples we can recommend that an integrated and sustainable approach to landscape management should consider ten key factors (fig.6):

- Contextualization of the project
- Taking into account the needs and expectations of stakeholders
- Prioritization of issues associated with risks and opportunities
- Leadership and involvement of elected representatives
- Governance
- Relational and human support
- Operational inputs
- Playful, participatory, and multiple approaches for stakeholder's engagement
- Accountability to local actors and restitution
- Continuous improvement through experimentation and feedback

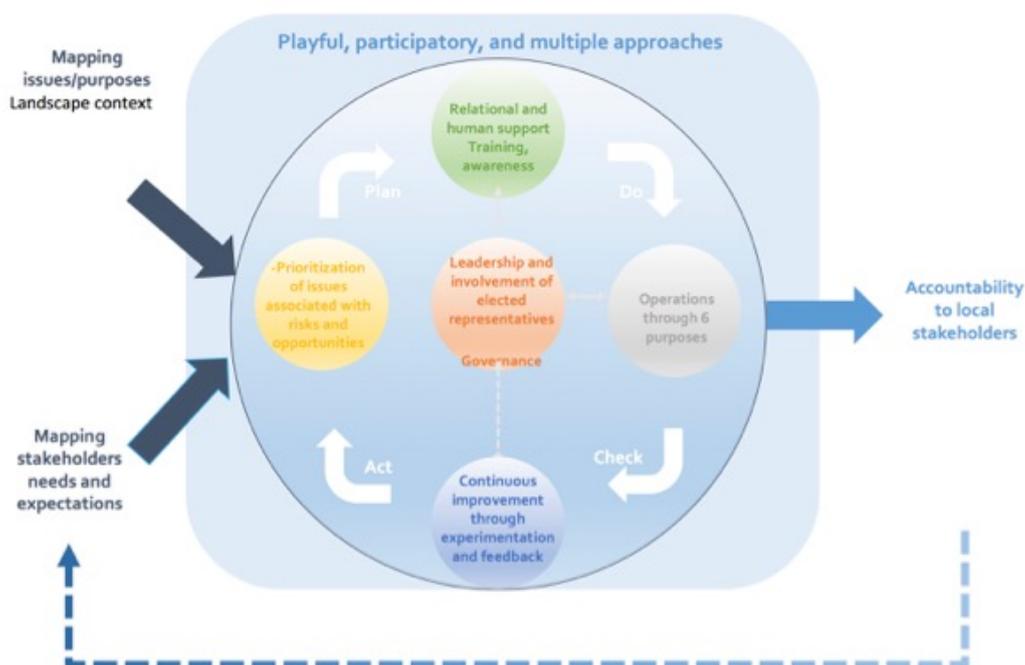


Fig. 6 – Continuous improvement approach

4.4 Risks and opportunities assessment and planning

To enable decision makers to set clear priorities for landscape management, it is essential that they are able to qualify and prioritise the different issues they are dealing with. A primary criterion concerning the effectiveness of cultural landscape management performance can be introduced here, which can be termed “existence of good management practices”. This criterion could be evaluated in a "Strength" and "Weakness" tab, together with additional external factors qualified in terms of "Opportunity" and "Threats", which may rely on the data input set from context understanding.

We suggest that a comprehensive approach to all ISO 37101 questions could assess the risks and opportunities of all the 12 issues and 6 purposes in the standard, as figured below for a development manager, based on interviews with parts internal and external stakeholders (Tab. 4).

Table 4 – Example of overall SWOT valuation on ISO 37101 12 issues and 6 purposes

PURPOSES→ ↓ISSUES	Attractiveness	Social cohesion	Well-being	Environment preservation and improvement	Resilience	Responsible resources use
Governance	Strength	Opportunity	Strength	Opportunity	Weakness	Strength
Education	Weakness	Weakness	Weakness	Strength	Weakness	Strength
Innovation and creativity	Weakness	Weakness	Opportunity	Strength	Opportunity	Weakness
Health and car	Strength	Opportunity	Strength	Opportunity	Strength	Strength
Culture and identity	Strength	Opportunity	Strength	Weakness	Weakness	Weakness
Living together	Strength	Opportunity	Strength	Strength	Strength	Strength
Economy and sustainable consumption	Weakness	Weakness	Opportunity	Weakness	Weakness	Strength
Living and working environment	Strength	Opportunity	Strength	Opportunity	Strength	Strength
Safety and security	Strength	Weakness	Weakness	Opportunity	Strength	Opportunity
Community infrastructures	Strength	Opportunity	Strength	Weakness	Strength	Weakness
Mobility	Weakness	Opportunity	Weakness	Weakness	Weakness	Weakness
Biodiversity and ecosystem services	Strength	Opportunity	Strength	Opportunity	Strength	Strength

Legend: Strength/Weakness/Opportunities/Threats - Prior action potential for the considered landscape are framed.

It appears logical that most of the action potentials could be related to identified weaknesses, and that aims could be related either to respond to a threat or to seize an opportunity.

The SWOT approach was used in T6.2 and D6.3 to identify major good practice in selected initiatives, as reported in table 2 above. Each issue and / or purpose considered may also be

assessed through risks and opportunities. An example of mapping threats and opportunities is given through 3rd local workshop report on local food labelling in GPMJ (table 5).

Table 5 – Example of mapping threats and opportunities is given through 3rd local workshop report on local food labelling in GPMJ

<p style="text-align: center;"><i>STRENGTHS</i></p> <p>1 / A label historical and deeply rooted. 2 / A quality charter with 4 goals (protecting the environment, relocate the economy, enhance the territory, and create links between producer and consumer), that integrates local economy. 3 / A commitment from Grand Parc to maintain economic activity with farmers. 4 / Examples of pooling services (shared irrigation). 5 / An interest shared by the public. 6 / A location in the neighbourhood of a big city, and ownership of 2200 ha.</p>	<p style="text-align: center;"><i>WEAKNESS</i></p> <p>1 / Tensions related to the multiplicity of uses. 2 / Great diversity in soil vocations and uses. 3 / Direct sales (e.g. sales at the farm) is a new retail business, which is not familiar to the producer. 4 / Farming conditions in the peri-urban area become difficult to bear for farmers, with constraints on access to water, pests (wild boar, pigeon, crow), theft (theft of production and damage to the equipment), and access to operations. 5 / Prices for organic production.</p>
<p style="text-align: center;"><i>OPPORTUNITIES</i></p> <p>1 / Local supply creates social ties. 2 / There is a market with 3-4 million potential customers nearby. 3 / The means of distributions exist with a structured organic network. 4 / Enhancing grain in sustainable agriculture is possible.</p>	<p style="text-align: center;"><i>THREATS</i></p> <p>1 / Urban citizen no longer have agricultural roots. 2 / Acreage are not sufficient to feed all city inhabitants. 3 / Local supply concept is sometimes misleading and need supply chain optimization. 4 / Solidarity must not be forgotten, giving access to food for all. 5 / Changing habits.</p>

4.5 Leadership

The GPMJ example can again be mentioned here, with the preparation of a Vision 2030 through a seminar for all elected officials representing 16 communities and defining the political agenda for the coming period, based on 4 pillars:

- Preserving the drinking water of the agglomeration
- Preserving natural heritage
- Allow flood mitigation
- Raise awareness and educate



Photo 17 – Grand Parc Vision 2030 (source: GPMJ)

4.6 Operating purposes

We can here refer again to table 2 to target examples of implementation on specific purpose. Upon each purpose, below are proposed some recommendations taken from replicable initiatives.

4.6.1 Labelling tools to foster attractiveness

One of the tools that was proposed, especially in the case of sustainable production, was labelling, as a process of recovery and recognition from the public. The third EU-wide HERCULES workshop concluded that landscape labels could add a coordinated way to establish integrated, inter-sectorial and multi-level governance and financing mechanisms to plan and manage cultural landscapes at a regional level. They provide opportunities to create new alliances and networks to direct landscape management towards sustainable practices and outcomes (although more negatively they could also be perceived as “just another label”). However, there is a real and positive opportunity to emphasise the importance of local quality of soils and landscapes as a means of promoting product quality and vice versa, even though at present this relationship is not always very clear to the consumer.

Labelling of local products from the peri-urban agriculture has been widely discussed in this article through “Les Saveurs du Grand Parc” initiative. Other labelling practice like origin designation are widely extended in France, such as the “Comté cheese”, in Jura from which representative participated to second EU-wide HERCULES workshop. In this particular case, the label is not only a designation of origin of production but is associated with several quality standards, including extensive cow pasture with biodiversity preservation based on the local “Montbeliarde” cow breed and the related quality requirements for cheese production.

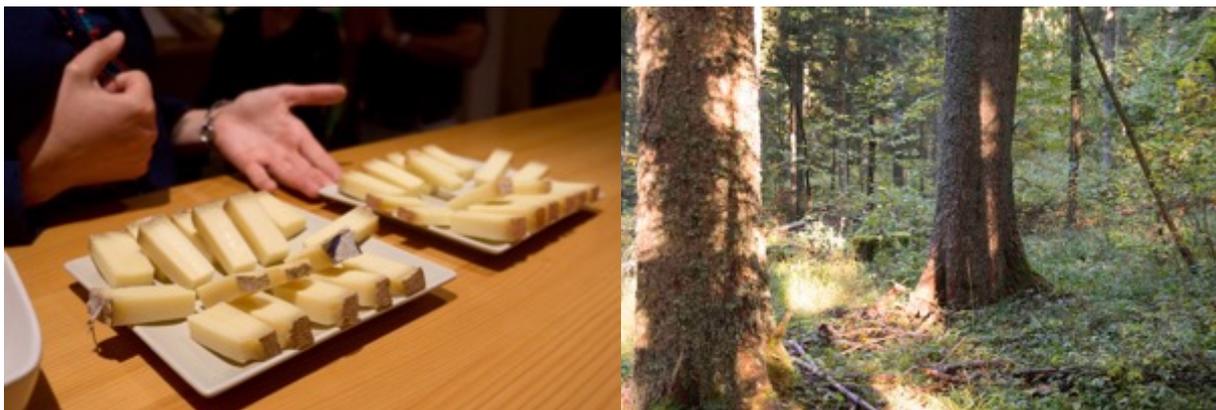


Photo 18 – Comté AOC tasting workshop (left, photo: Frédéric Girod) and Bois de Chartreuse timber (right, photo: Sarah Torrecillas)

Example of origin designation applied to forest management was introduced on the Knowledge Hub through [Bois de Chartreuse](#). The "Bois de Chartreuse®" standard meet a set of strict requirements to value traditional knowledge: irregular stands (no clear-cut), natural renewal, proximity (60km maximum between cutting and planting). The timber has a low carbon, high strength and robustness and traceability. The purpose of Regional Natural Park and

Interprofessional organization is eventually to have this recognized as AOC (Controlled Origin Appellation) designation. The aim is to try to develop the practice based on labels, linked to landscapes, rather than just products. One example of landscape labelling featured in deliverable D6.2 *The Science and Practice of Landscape Stewardship* (Bieling and Plieninger, in review) is the “Bun Tschlin” initiative from the Engadine region on Switzerland. The aim of the initiative is to provide an umbrella label with which products and services of Tschlin can market themselves. This is a holistic approach to linking the identity of the cultural landscape to the products and services it provides, and the communities it sustains, facilitating cooperation and collaboration in the provision of local livelihoods.

4.6.2 Supporting social capital for social cohesion

Most initiatives represented in table 2 under the social cohesion purpose strongly incorporate socio-cultural and heritage issues. In Lesvos, the community has a rich ‘human capital’, based on actors bridged together in an NGO “Syn tis allis” and the social enterprise “MODOUSA”, who seek to adopt new management systems, more decentralisation and more open to change and innovation, while strongly integrate landscape conservation and aesthetics as a way of living together (Kizos et al, 2017, in review).



Photo 19 – Syn ti allis olive trees (source: Thanasis Kizos)

4.6.3 Comforting heritage values for well-being

The European Landscape Convention recognizes landscape as an essential component for populations quality of life. It aims to protect and enhance the landscape, whether outstanding or daily, and establishes the objectives of preserving landscape quality.

Beyond the recognized link between well-being and the distance between home and the nearest green space, the question of green space heritage value is essential. With high cultural heritage value, remarkable trees are insufficiently known heritage, and public vote is a good way for dissemination. The European Tree of the Year competition, which exists since 2011, aims to showcase old trees as an important part of the natural and cultural heritage that deserve special attention and protection. Trees participating in the European Tree of the Year competition are not selected for their beauty, size or age, they are selected for their history closely linked to that of men, so as to find trees that are an integral part of life of a community.



Photo 20 –The Oak football field, Kuressaare, Saaremaa, Estonia (source: European Tree Contest winner of 2015, inserted photo: Elina Kalm)

Thus, many landscapes unique to each locality reveal the identity and culture of the people and feed their idea of beauty. Far from horticultural mass production, similar at European scale whatever the city, urban landscape would benefit from supporting representative diversity of local identity, as in the case of San Vicens Park in Perpignan, which honours rock roses and other Mediterranean plant collections from local nurseries.



Photo 21 – Mediterranean vegetation of the San Vicens Park (photo: Geneviève Girod)

4.6.4 Preserving environment in cultural landscapes

The Singapore Index (Nagoya declaration; URBIO, 2010) suggests some urban biodiversity indicators that could be relevant at community scale. However, the understanding of landscape structures resulting from human action, and their functionalities, can be meaningful at the local scale. This point was particularly emphasized during first HERCULES workshops organized in South West Devon. Modbury is a sector undergoing rapid urbanization on the outskirts of Plymouth, with marked changes in the landscape, the largest of the last millennium. To keep the memory of places, heritage sites have been identified in the town, with the creation of a heritage trail. These sites refer to items called "semi-natural" that represent the landscape features created by man, such as dry stone walls, hedges, water sources (ponds ...), but also symbolic figures as the isolated tree, valued by open space created around.



Photo 22 –Heritage dry stone wall in SW Devon and urban drystone insect spiral in Lyon area (photos: Geneviève Girod)

In the “Natural and cultural heritage” landscape manager forum, Patrice Notteghem proposed an “eco-anthropological approach to better qualify site heritage value, referring at once to its biodiversity and its cultural load. It also led to optimize its management, ranging from assumed non-intervention to serve naturalness, to active involvement on landscape components to

extend, restore or replace neglected practices. These built and robust landscapes, so full of culture, can be a reference for sustainable agriculture” (Notteghem, 2016).

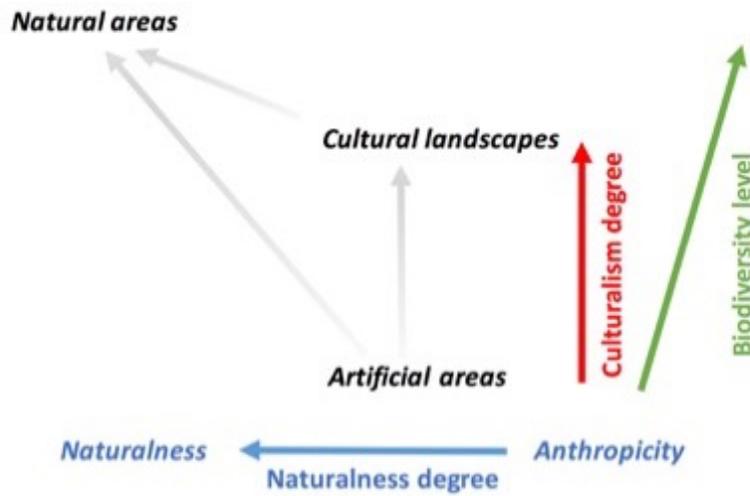


Fig. 7 – Adapted from Notteghem, 2016

Thus, culturalism degree can be valued through landscape features. This is particularly relevant with hedgerows, as illustrated in SW Devon SL by the WP5 work quantifying hedgerows through surface measurement. The general process of polarization between intensive production landscapes (often on the sets) and plots abandoned / protected (often side valleys and background), is present in agricultural landscapes. There is no possible restoration without motivation by functional use (wood energy and / or livestock protection).

4.6.5 Resilience and climate change adaptation

Urban trees are central features for resilience. They offer unmatched density plant to purify air, or provide shade, and comes with a root system that, when not coated is potentially rich in microorganisms. The "Tree Charter" of Lyon Metropolis, uses the concept of "urban forest", which is to consider urban trees as a whole including associated plant strata. In this view, each tree is important both for itself and for its contribution to extensive interactions network. The Charter serves each of territorial actors, and highlights eight great principles:

- Diversity,
- Permanence,
- Duration,
- Landscape dynamics,
- Economy,
- Learning,
- Solidarity (territorial, trans-generational, knowledge sharing),
- Innovation.



Photo 23 – Urban tree banks in Avenue Garibaldi, Lyon (photo: Geneviève Girod)

The Charter thus covers most issues both social and environmental mentioned here, with multiple uses as shown in photo 24: water management, greenway, bike lane ... (Charte de l'arbre, Grand Lyon, 2011).

Resilience deals also with risk prevention, including floods and floods, already mentioned in chapter 3.10 on infrastructure. Grand Parc Miribel Jonage plays as such a vital role to protect the Lyon Metropole. Many actions are conducted for the public to communicate around the "Blue Ring" that characterizes the territory of upstream Rhone, shared between Ain department

and the Metropolis. The spillway figured in photo 25 is part of the path of the audio-guided trail figured on KH and of a series that spotlight different aspects of the Jonage Canal, whose construction over a length of 18.850 km was conducted from 1894 to 1899 in order to supply Cusset hydroelectric plant-dam.



Photo 24 – Flood spillway in GPMJ (left, photo: Elisabeth Rull) and Rain garden of the Lycée Saint Exupéry (right, source: Certu, inserted photo: Workshop Ark / landscaper Pierre Pionchon, <http://wiklimat.developpement-durable.gouv.fr/>)

Water cycle management, as well as adaptation to climate change is vital to resilience. As part of the National Climate Change Adaptation Plan (UCC), the Cerema developed WIKLIMAT collaborative platform to enable adaptation to climate change knowledge sharing among stakeholders. The platform presents experiences and achievements through three entrances sheets: "Issues", "Media" and "Territories". Thus, the Saint Exupéry High School rain garden, Lyon, allows at once to collect and retain storm water, and participate in mitigating the phenomenon of urban heat island (ICU).

Other landscape features already mentioned above also contribute to resilience: water ponds prevent heat islands, hedges "break" winds, provide shade, and prevent soil erosion ... These last are often forgotten, while their quality and richness in microorganisms are essential to the maintenance and sustainability of all other structures. In urban areas, Marc Barra (2012) introduces three ways forward:

- Multiply the greening of buildings, in quantity and quality,
- Save maximum soil sealing, among others to maximize CO₂ storage,
- Relocate and mix energy and materials sources to reduce footprint, as discussed in next chapter (Barra, 2012, meeting Energy and Biodiversity, Natureparif).

The UHI (Urban Heat Island) Strategy Plan featured in D6.2 (Case 11) details a theoretical study of urban landscape adaptation interventions in the context of increasing heat in cities. Key aspects of this are increased greening of surfaces such as tramways, roofs and walls, increasing provision of green spaces and "micro parks" to facilitate heat diffusion pathways through the city landscape.

In rural areas, the current consequences - change of species, but also change in the importance of hazards- make forecasting difficult. It is worth recalling, as discussed in Chapter 3.3, that maintaining agricultural biodiversity is a real challenge to species resilience composing our food, but also species offering other services. Prevention of plants invasion is also a major

threat, particularly along linear infrastructure, and is favoured by suppressing bare soil. Japanese knotweed encountered along rivers, for example can be kept away by the preservation of natives, such as willows, poplars, nettles, and bindweed. Mechanical weed control solutions rarely can prevent their spread, and suppression requires long-term management plan with successful eco-pastoralism attempts with Solognote sheep in Sainte Foy, but also with other sheep and especially goats, as Lorraine goat in ditches. This shows that monitoring and management are still needed around those in anthropized environments, while accepting the possibility that these species could however provide some ecosystem services in terms of pollination for example.

4.6.6 Nature based solutions for responsible resources use

Again, semi-natural landscape components remind us of historical landscape structures and features. Soil and water bioengineering represents the implementation of techniques using plants and their mechanical and / or biological properties for soil erosion control, restoration of degraded environments and remediation of polluted soil and water, and refer to biological engineering historical term appeared more than 150 years ago, in the context of mountain land restoration policy. Engineering refers to the design of projects for the implementation of bioengineering, both addressed as nature based solutions. Today, nature based solutions sector is booming, particularly in Europe, where the legal framework (including European Water Directive) introduced the need to implement soft techniques for soil erosion control and to restore degraded environments (Source: Agébio, 2015, Soil and water bioengineering Symposium: skills, regulations and benefits). The Agébio association contributed to the development of professional rules on "soil and water engineering work" published in 2015 by UNEP, National Union of Professional Landscapers. Nature based solutions combine plant and environment knowledge to enhance ecosystem services and preserve natural resource, at the interface of ecology and landscape skills.



Photo 25 – Rhône river banks renewal with nature based solutions (source: Agébio workshop, photo: Frédéric Girod)

Besides nature based solutions to prevent erosion, soil preservation is also a major issue, and permanent cover an essential criterion within standards like Ecojardin (Micand & Larramendy, 2014). The objective is to minimize inputs and reuse organic materials (waste cuttings ...) on site as mulch. Similarly, the Ecojardin standard requires water consumption monitoring criteria to reduce or suppress water input, and replacement of annual with perennial and shrub flowerings. The challenge is to find good compromises between water uses and resource

preservation. Indeed, water is necessary and contributes to refreshment. Furthermore, aesthetic function is generally based on horticultural variety. Ecological practice is sometimes perceived as a "release-making" from gardeners and the loss of their knowledge to the benefit of naturalist, but there is a whole field of innovation between the natural area composed entirely of native plants and totally artificially grown composition that is the same everywhere. Rich perennial flowerings in Germany for example shows that it is possible to achieve a natural landscape aesthetic, and to imagine horticultural and native mixtures, like those tested in Gerland park in Lyon, or explore the potential attractiveness of horticultural plants, even non-local, for insects and biodiversity as done so by the Urbanbees Life program.



Photo 26 – Ecological maintenance of ordinary horticultural shrubs in CFPPA Marmilhat (left, photo: Geneviève Girod) and agro-ecology in vegetable farm in Trièves (right, photo: Sarah Torrecillas)

In rural areas, responsible resource use involves agro-ecological practice, such as in the Trièves example already mentioned in chapter 3.8. Research on agro-ecological practice still needs to be extended to crop cultures, as mentioned in the next chapter.

4.7 Training and awareness

Training is a main driver for conducting change and a major issue for landscape managers. It involves a comprehensive approach with the establishment of annual or pluri-annual training plan for all staff, reviewed regularly, and rely on establishment of annual interviews to collect individual training needs.

The implementation of an integrated landscape maintenance plan provides a structured framework that can manage the complexity of input, like that of the MFR of the west of Lyon, which aims to train students from middle to high school as well as through continuing training, on alternative weed control practices. It clearly states its willingness to promote environmental management practices in training landscape students with a strong engagement on environmental responsibility in the school project. The MFR has also a social role, with the participation of youth in the Lyon fairs and exhibitions, such as the Garden Scene event in Lacroix-Laval Park, contributing to training students on public relationship.



Photo 27 – Maintenance plan in West Lyon MFR (entry on left, photo: Geneviève Girod)

In the case of Marmilhat educational centre for young landscapers (CFPPA), ecological practice is discussed today more widely within farming high school they belong to (EPLEFPA), and further projects aim to reinforce connections through both green corridors and agro-ecological practices. Marmilhat EPLEFPA will thus be associated to appointed “Limagne living laboratory” to test agroecology in field crops, with association of farmers, businesses and stakeholders in research and training, and CFPPA Marmilhat will participate to show future farmers and undergoing training farmers, agro-ecological crop management in field crops through experiments on high school farm.

Though still in urban landscape, Lyon's green space direction has implemented "cross-training" between gardeners of different districts to strengthen internal awareness amongst sectors. Since June 2014, they have developed a network of Ecojardin sites gardeners upon a monthly appointment allowing them to learn and train on technical inventory and monitoring of biodiversity, based on participatory science protocols (Florilèges, wild Bees, Observatory of butterflies, garden birds, and earthworms) or on dedicated themes (meteorology and Lyon mineralogy, Wetland counting, amphibians and dragonflies, forest soil fauna). The objectives are to disseminate the ecological skills of some gardeners with sharing practices to produce natural heritage management knowledge.



Photo 28 –Gardeners training (photo: DEV Lyon)

Thus, the idea of training through knowledge transfer is reproducible in many landscapes. Strengthening collaborations between land managers and environmentalists, and reconciliation between landscape business and ecological issues, are also a challenge to answer these questions. And integrating socio-cultural issues, far from being an additional and burdensome layer, is very important as a means of creating a link with social ties.

4.8 Communication and participation

Cultural landscapes are living places, and thus, beyond users' participation to their design, accountability for current maintenance is essential. The quality of public welcome is the first indicator of living urban landscapes. Its monitoring and evaluation are therefore recommended to ensure site sustainability in terms of response to users' expectations. One of the main approaches proposed by the Ecojardin standard to implement this monitoring is the establishment of contacts and exchanges between gardeners maintaining the site and users. Developing the role of green spaces to strengthen local identity, and encourage participatory initiatives goes through setting up partnerships with local associations, as well as investment and user participation in landscape planning, management and development as already mentioned in previous examples through governance and other chapters related to stakeholders relationship, including meetings with users, but also through participation in sites maintenance, fauna-flora surveys achievements, walls revegetation, etc.

The Grand Parc Miribel Jonage has built a [new educational environmental centre L'îloz'](#), that organizes from spring several events around the discovery of the river Rhône and associated natural areas, on vegetable growth in the local garden, and on wild food discovery. Cultural Landscape Day organized in GPMJ was linked to European heritage days, also successful strategy to address public participation in cultural landscapes. Playful and participatory approaches were used for stakeholders' engagement, with many game for children, craft workshops, storytelling and musical happenings.



Photo 29 – Cultural Landscape Day in GPMJ, September 20th, 2014 (source: GPMJ)

4.9 Assessment and continuous improvement

The evaluation of practices ultimately helps create a dynamic improvement process based on feedback. Besides its value for communication with stakeholders, labelling is also a practical evaluation tool. As part of transverse and complex standards, such as ISO 37101, internal or external audit contribute to the dynamics of continuous improvement.

However, assessment also requires indicators. WP8 attempted to develop an indicator set, by developing a biodiversity index based on heritage and landscape features that integrates the five pressures on biodiversity identified by the Millennium Ecosystem Assessment (MA, 2005) (disappearance of habitats, fragmentation of territories, disruption of trade, resource depletion, pollution inputs), but the tool initially proposed in task 8.2 proved to be too complex to handle for operational actors.

It was then highly simplified to create a Landscape Ecological Diagnostic model, taking inspiration both from the diagnostic of green spaces ecological value (Bouvin & Levoiturier-Vajda, Ville de Lyon, 2014), and from ecological value diagnostic developed by a local farming chamber and ARDAB biological agriculture association, based on landscape features (hedgerow, water pond, meadow, dead wood, bird nests, drystone pile, wood pile, built features) and maintenance practice (soil coverage, mowing period) observation (Grab, 2016). This proved to be interesting but still needs scientific validation.

Finally, qualitative assessment tools, of SWOT type can also be used, as featured through T6.2 and T6.3, and proposed Landscape Management Assessment model elaborated from Table 4 and based on stakeholders' interviews.

Both assessment tools were tested and made available on [HERCULES Labs](#) (see (D8.4)). Their interest and relevance varies according to scale (site / community), context (design / operating, urban / rural) or issues (environmental / eco-socio-cultural).

5 Conclusion

Today there are many gaps due to the absence of a shared methodological framework for the socio-cultural-economic evaluation of cultural landscapes. However, rather than offering a static model of integrated initiative, it is considered preferable to promote dynamic management approaches that incorporate iterative feedback loops and improvement by strengthening cross services, actors, and landscape design connected to daily uses. The approach in ISO 37101 provides a structured framework for collecting local initiatives based on experimentation, which are based on knowledge-tested feedback.

It is shown from this work that, far from being incompatible, many good environmental management practices provide in great synergy between a range of beneficial socio-cultural services. Finding the right balance between culture and biodiversity can be difficult, and one response has been to assess the support of cultural (domestic) biodiversity in terms of its contribution to the preservation of plant and food heritage, and foster biodiversity value of cultural landscape. The search for innovative designs combining socio-cultural and other environmental issues like infrastructures and mobility, in landscape approach, and the creation of new synergies between landscape architects and ecologists is a way to improve stakeholders' encounters. Trees, hedges and water points are the major features of both aesthetic and biodiversity values, and they are critical to landscape resilience and climate change adaptation. Foodscape considerations and emerging peri-urban agriculture are also vectors to educate urban citizens on more natural landscape issues. The education of young and old through training or on all the mentioned themes, remains a fundamental issue to meet resilience and sustainability goals.

However, gaps exist in relation to health issues, together with safety and security dimensions, that are ISO 37101 criteria but which are less highlighted in ecosystem services approaches. Long-term perspectives for risk prevention by maintaining ecosystem diversity can clash with short-term views on outdoor activities and perceived dangers, especially in the urban context, and it is important that these differing perspectives be reconciled.

Finally, the paper identifies the need for the development of reliable indicators for operators, managers, consultants, and professionals, at the interface of business landscape and environment. The idea of a valuation model based on landscape features, to explore functional biodiversity, offers potential in this respect, together with a landscape management assessment tool based on considered issues.

Summing up, it is essential that approaches to environmental governance are holistic, in the sense that they should take into account the biophysical environment, the human processes that co-produce it, and the human well-being that depends on it. Considering these at a landscape scale helps to achieve solutions that are appropriate and sustainable in context. The transdisciplinary 'landscape approach' to governance avoids the pitfalls of single-sector or single-discipline approaches, which tend to produce solutions that are rapidly undermined by lack of wider acceptance, by developments within other aspects of landscapes or by unforeseen events (Tabbush P. et al, (2017, in review). Therefore, sustainable solutions to the challenges arising in relation to the environments in which we live are more likely to flow from a landscape approach. This landscape approach is discussed in detail in Deliverable D9.4

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