

## Chapter 2

# The Landscape as a “Complex Indicator” of Urban Sustainability and Quality of Life of City Inhabitants

Roberta Cocci Grifoni, Rosalba D’Onofrio, and Massimo Sargolini

As mentioned in Chap. 1, the debate about the sustainable city and the quality of life of city inhabitants is like a large arena where heterogeneous approaches and contributions from different sectors meet, without ever converging on a common vision. Consequently, it is difficult to identify effective models to assess urban policies, plans, and projects to address the challenge of sustainability. The sectoral cultural approach to themes of urban sustainability and improving the quality of life in cities has extended from scientific research to plans and projects for transformation. A comparison of different possible project alternatives and monitoring of the results of policies and plans over time is often lacking, as well as an open dialogue between researchers and political and social actors (Bertuglia et al. 2004).

Today it is necessary to overcome this gap both in theory and in practice. A change in direction is needed, a change in everyone’s awareness (researchers, interest holders, institutional decision-makers, citizens) that the icon of a city “attentive to questions about the environment” is no longer enough. It is instead necessary to find the source of interactions between humans and biotic/abiotic components to favour urban sustainability. In this sense, recent studies have been increasingly concentrated on the relationship between ecosystem services and human well-being (Elmqvist et al. 2013; Nassauer et al. 2014). They define sustainability as “an adaptive process of facilitating and maintaining a virtual cycle between ecosystem services and human well-being through concerted ecological, economic, and social actions in response to changes within and beyond the urban landscape” (Wu 2014). At the basis of this concept, there is the conviction that the science of sustainability should be concentrated on the dynamic relationship between society and nature, integrating environmental, economic, and social processes on different scales: from the local scale to the global scale (Sargolini and Caprodossi 2015). In this perspective,

---

R.C. Grifoni • R. D’Onofrio (✉) • M. Sargolini  
School of Architecture and Design, University of Camerino, Ascoli Piceno, Italy  
e-mail: [roberta.coccigrifoni@unicam.it](mailto:roberta.coccigrifoni@unicam.it); [rosalba.donofrio@unicam.it](mailto:rosalba.donofrio@unicam.it);  
[massimo.sargolini@unicam.it](mailto:massimo.sargolini@unicam.it)

the landscape would represent "...a pivotal 'place' in the place-based research and practice of sustainability" (Wu 2012).

The introduction of the landscape in the science of sustainability is not new. Scholars, who have recently studied the landscape from the ecological and cultural points of view, seem to agree on the importance of the landscape as an operational scale in the field of sustainability research. For example, Forman (1990) maintains that human landscapes—those perceived on the human scale—offer notable advantages with respect to wider scales, despite the so-called paradox of management (Forman 1995). That is, although actions for sustainability tend to be more effective on the local scale, success should often be achieved on a wider scale. The advantages of the landscape approach to sustainability relate to the simplification of the decision-making process (Nassauer 1997; Gobster et al. 2007) and to the definition of common ground for the different subjects working together to improve the society/nature relationship: ecologists, geographers, planners and designers, and decision-makers. No single viewpoint or approach is enough to fully understand the human/environment relationships (Turner 1997).

With respect to the scientific debate briefly described above, which is centred on the operability of the landscape approach to sustainability, the European Landscape Convention (ELC) represents an additional step forwards. In fact, the ELC has sanctioned the comparison between the landscape and sustainable development, between the landscape and quality of life, as the search for a balance between social, environmental, and economic needs (D'Onofrio 2013).

In the second point of the preamble, the ELC states the cardinal objective for the European continent: "...to achieve sustainable development based on a balanced and harmonious relationship between social needs, economic activity, and the environment". In previous international documents that have favoured the spread of concepts and practices of sustainable development, the landscape has not received much consideration. In both Agenda 21 and the Aalborg Charter, references to environmental themes are frequent but the landscape is not mentioned.

The ELC expresses the conviction that the quality of European landscapes and the quality of life of populations that are an integral part of those landscapes is determined by the close interrelationship between economic, social, and cultural aspects that have settled over time and in space. Furthermore, this interrelationship is strongly rooted in the specifics of each landscape. This aspect therefore serves as a possible meeting point for discussing different approaches, the different components of nature and culture, subjective and objective aspects, and material and immaterial elements, even within the goal of sustainable development. It is a sort of "interface between humans and nature", a "litmus paper" for the effects that human activities produce on natural components of the planet (water, land, air, flora, and fauna), affecting their quantity, quality, and distribution, as well as the cultural value of the territory.

Conservation, or the enhancement of these characteristics, favours greater quality of life for the people because it contributes to the local economy and satisfies recreational, emotional, and spiritual needs as well as the sense of community identity. In this perspective, urban landscape planning and design can inspire a broad,

multidimensional change in the natural and constructed environments. In pursuing this, urban sustainability coincides with the sustainability of the urban landscape overall (Dinep and Schwab 2010).

Two fundamental concepts on which this research is based are inspired by the relationship between the landscape and sustainability:

- The landscape as an “integrating concept” whose importance is fully revealed when addressing the theme of enhancing territorial transformations, when, more than evaluating the individual parts, one is interested in stability and the operation of the urban system as a whole. The landscape can therefore provide an opportunity to address the problems of sustainability in urban and territorial development in more complex terms.
- The landscape as a “complex indicator” of urban sustainability, capable of bringing together a wide range of aspects and knowledge, to highlight the criticalities and peculiarities of a territory and a city, to allow solutions to the conflicts to be selected in the most balanced way.

Most of the conflicts seen in urban areas are a consequence of urbanization processes that have not considered the limits of the places or investigated their margins of flexibility. Each hypothesis for the sustainable transformation of a place should, in fact, remain within the margins of flexibility that those places need to maintain in order to survive (Paolinelli 2011; Sargolini 2012). Where the balance and stability of the landscape system is manifest in controlling these conditions, the landscape can contribute to solutions to the problems of sustainability (Benson and Roe 2007).

For a landscape-based approach to sustainability, it is necessary to integrate the multiple dimensions of environment, economy, and society, technical aspects (e.g., related to energy savings, environmental management of the city, recycling of resources, etc.), and nontechnical aspects such as social behaviours, the spatial organization of the city, and aesthetic visions.

These different aspects can be investigated through parameters and indicators that do not aim to measure sustainability in absolute terms. As mentioned in the previous section, this is very difficult if not impossible to do. The indicators can, however, provide useful indications to verify that city management is oriented towards sustainability and contribute to determining which actions should or should not be pursued (Ness et al. 2007). To investigate this theme, we start from this assumption and the need to use an approach wherein the parameters and indicators applied are flexible, transparent, and relatively easy to use.

For a landscape-based approach to sustainability, a large number of indicators have been developed in recent decades, especially after the world meeting in Johannesburg on sustainable development. An unending series of international organizations, governmental agencies, NGOs, local communities, businesses, and universities have dedicated significant energy to designing and implementing indicators to assess the state and trajectory of environmental conditions and socioeconomic development. Today, therefore, hundreds of indicators and indices of sustainable development, developed and used on the global, national, and local scales, are available.

**Table 2.1** Desirable properties for sustainable parameters and associated indicators (Source: Baral and Holmgren 2012)

---

Parameters should be:

- Forward looking and practical
- Small in number (fewer than five)
- Adequate in coverage or linkage to SDGs framework
- Generally applicable to any landscape situation
- Predictive of changes due to management choices
- Sufficient when considered together

---

Indicators should:

- Be practical (easy to understand, cost-effective)
- Be easily measurable (and compatible with changes in temporal and spatial scales)
- Be readily understandable and policy-relevant
- Fulfil statistical requirements concerning verification, reproduction, representativeness, and validity
- Provide adequate information on spatiotemporal scales
- Have high transparency of the derivation strategy
- Provide information on long-term trends
- Reflect local sustainability that enhances global sustainability

---

**Table 2.2** Indicators, orientations, and sustainable urban landscape

---

*Safety*: includes a series of questions that range from the satisfaction of primary needs such as health, education, and protection from crime, as well as the impact of natural and technological catastrophes

---

*Health*: incorporates indicators related to the quality of the urban environment, the urban form, urban metabolism, and the sustainability of the local urban system

---

*Perception and culture*: refers to the spatial quality, because a “constructive” and attractive quality environment contributes to collective interaction and favours social cohesion in the city, the quality of public spaces, and the vitality of the city

---

*Efficiency*: encompasses urban development that guarantees the protection of natural and historical/architectural resources and the cultural and artistic heritage

---

Source: Amin (2012) Sustainable Urban Landscape: An Approach for Assessing and Appropriating Indicators, Archnet-IJAR, International Journal of Architectural Research, vol. 6, no. 2, 98–114

The literature shows that there is growing interest in choosing concise, balanced sets of indicators to provide meaningful information on specific aspects indicated as the most meaningful. By way of example, Table 2.1 lists “desirable properties” for choosing indicators that can therefore provide quick indications on the sustainable management of a landscape and the effectiveness of current policies. Table 2.2 shows the performance, which, according to some scholars, the selected indicators should ensure, to assess the ability of a landscape to generate and maintain conditions for an adequate, safe, harmonious habitat (MacKendrick and Parkins 2004).

In choosing the most pertinent indicators, it is necessary to consider existing limits and restrictions, such as:

- The physical conditions and laws of nature that confirm that not everything is possible
- Nature and human objectives that confirm that not everything is desirable
- The importance of time in forecasting responses that should keep up with threats, profitability, and sustainability of the urban landscape

In addition, it is clear that the choice of indicators is a complex question that falls under the expertise of different subjects such as decision-makers, designers, researchers, and communities. The choice also depends on the context where the indicators are applied, the scale of reference of the assessment, and the characteristics of the places under evaluation. Indeed, if these references are lacking, it is impossible to choose the indicators.

The holistic approach to the indicators of urban sustainability according to the landscape perspective should therefore work to re-establish the correct relationships between natural processes and human activities, connecting long-term sustainability with the ethical responsibility of individual and collective behaviour.

To investigate the quality of life of city inhabitants, the research addressed the sustainability of the urban landscape, starting from the principles inspired by the European Landscape Convention. This:

- Recognizes the landscape in every place as an “important part of the quality of life for people everywhere”
- Defines the landscape as the result of natural and/or human action and their interrelationships
- Aims to evaluate the landscapes identified, “considering the particular values assigned to them by interested parties and the relevant population”.

Following Amin (2012), this quality of life/quality of landscape link is investigated by the research, in the following interpretational keys:

- *Safety*, which consists of a series of issues that range from the satisfaction of primary needs, such as health, education, and criminal protection, to the impact of natural and technological catastrophes
- *Health*, which encompasses indicators related to the quality of the urban environment, the urban form, urban metabolism, and the sustainability of the local urban system
- *Perception and culture*, which refers to spatial quality, because a high-quality and attractive built environment contributes to collective interaction and favours social cohesion, the quality of public space, and the vitality of the city
- *Efficiency*, which includes urban development while guaranteeing the protection of natural, historical, and architectural resources, as well as the cultural and artistic heritage

These interpretational keys can be reduced to three main families of indicators of urban sustainability present in recent research and studied on the European level. These areas—“Distinctive and pleasant”, “Efficient and nice”, and “Clean and healthy”—are deemed useful to the goals of the research and are observed through the lens of the landscape.

The first large area refers to the role of parks, open spaces, and green areas (linear and pointlike) in the city and the immediate context. It addresses relationships with the environmental infrastructure of the surrounding territory, slow paths, architectural and archaeological resources, centralities, and the places of collective identification in the city to improve the activities of living and therefore of working, residing, meeting, social relationships, and pleasure.

The second area of investigation and assessment, “Efficient and nice”, regards the overall organization of the city and its energy needs on the different building scales in relation to the urban and economic planning of the city and its territorial context. The aim is to improve the quality of buildings and open spaces for interaction as a function of reducing overall energy needs, achieving thermo-hygrometric comfort in open spaces, and more broadly and intelligently using renewable sources of energy. *In this case, the slow landscape is accompanied by energy and perceived well-being, which becomes the matter and structure of new landscapes.* Together, the two approaches dismantle and reconstruct the multiple levels of interpretation and the likewise different problems on which all disciplines affecting the change in our frameworks of living reason and operate.

The third area, “Clean and healthy”, investigates the theme of safety and the quality of the main components of the urban environment (air, water, land). The different scales of city organization are addressed in relation to the territorial context, the needs of living, the formal and overall compositional balances, and the individual buildings. The goal is to favour the reduction of all types of pollution and improve the quality of the urban environment. In this area of investigation, the combination of knowledge from earth, natural, and biological sciences is particularly close, and particular effort is made to favour agreements and comparisons between languages and methods. Our research aims to offer a useful contribution in this direction.

## References

- Amin AM (2012) Sustainable urban landscape: an approach for assessing and appropriating indicators. *Int J Archit Res* 6(2):98–114
- Baral H, Holmgren P (2012) A framework for measuring sustainability outcomes for landscape investments. Working Paper 195, 2015, Center for International Forestry Research CIFOR
- Benson J, Roe M (2007) *Landscape and sustainability*. Taylor & Francis, Routledge
- Bertuglia CS, Rota FS, Staricco L (2004) *Pianificazione strategica e sostenibilità urbana. Concettualizzazioni e sperimentazioni in Italia*. FrancoAngeli, Milano
- D’Onofrio R (2013) *Paesaggio & piani*. FrancoAngeli, Milano
- Dinep C, Schwab K (2010) *Sustainable site design: criteria, process, and case studies for integrating site and region in landscape design*. Wiley, Hoboken
- Elmqvist T, Fragkias M, Goodness J, Guneralp B, Marcotullio PJ, McDonald RI, Parnell S, Schewenius M, Sendstad M, Seto KC, Wilkinson C (eds) (2013) *Urbanization, biodiversity and ecosystem services: challenges and opportunities*. Springer, Dordrecht
- Forman RTT (1990) Ecologically sustainable landscapes: the role of spatial configuration. In: Zonneveld IS, Forman RTT (eds) *Changing landscapes: an ecological perspective*. Springer, New York
- Forman RTT (1995) *Land mosaics: the ecology of landscapes and regions*. Cambridge University Press, Cambridge
- Gobster PH, Nassauer JI, Daniel TC et al (2007) The shared landscape: what does aesthetics have to do with ecology? *Landsc Ecol* 22:959–972
- MacKendrick NA, Parkins JR (2004) *Framework for assessing community sustainability: a synthesis of current research in British Columbia*. Northern Forestry Centre, Canada

- Nassauer JI (ed) (1997) *Placing nature: culture and landscape ecology*. Island Press, Washington, DC
- Nassauer JI, Wu JG, Xiang WN (2014) Actionable urban ecology in China and the world: integrating ecology and planning for sustainable cities. *Landsc Urban Plan* 125:207–208
- Ness B, Urbel-Piirsalu E, Anderberg S, Olsson L (2007) Categorising tools for sustainability assessment. *Ecol Econ* 60:598–508
- Paolinelli G (ed) (2011) *Habitare. Il paesaggio nei piani territoriali*. FrancoAngeli, Milan
- Sargolini M (2012) *Paesaggi Urbani di qualità per la città sostenibile*. In: Talia M, Sargolini M (eds) *Riconoscere e Ri-progettare la città contemporanea*. FrancoAngeli, Milan
- Sargolini M, Caprodossi R (2015) La rete ecologica regionale per la rigenerazione urbana. Il caso studio del conero. In: Voghera A (ed) *Progetti per il paesaggio*. Libro in memoria di Attilia Peano. Inu Edizioni, Rome, pp 108–117
- Turner BL (1997) Spirals, bridges and tunnels: engaging human-environment perspectives in geography. *Ecumene* 4:196–217
- Wu J (2012) A landscape approach for sustainability science. In: Weistein MP, Turner RE (eds) *Sustainability science. The emerging paradigm and the urban environment*. Springer, New York
- Wu JG (2014) Urban ecology and sustainability: the state-of the-science and future directions. *Landsc Urban Plan* 125:209–221



<http://www.springer.com/978-3-319-65580-2>

Quality of Life in Urban Landscapes

In Search of a Decision Support System

Grifoni, R.C.; D'Onofrio, R.; Sargolini, M.

2018, XVI, 399 p. 68 illus., 63 illus. in color., Hardcover

ISBN: 978-3-319-65580-2