



From knowledge to action: Bridging the gaps toward effective incorporation of Landscape Character Assessment approach in land-use planning and management in Israel



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ABSTRACT

Although Landscape Character Assessment (LCA) has gained a significant recognition around the globe, the understanding of the challenges faced by planners and decision-makers in incorporating LCA processes and outputs in land-use planning remains insufficient. This paper presents a snapshot of the barriers to effective LCA-based land-use planning in Israel, with regard to four distinct phases of the process: (a) the knowledge development phase, i.e., the formulation of a credible LCA approach; (b) the approach adoption phase, i.e., the willingness to incorporate LCA processes and outputs into land-use planning; (c) the knowledge transfer phase, i.e., the actual incorporation of LCA outputs into land-use planning; and (d) the application management phase, i.e., the transition of LCA-based plans into action. To investigate the barriers, the study combines a literature review with thematic analysis of eight Israeli LCA-based land-use plans from all planning levels, and individual in-depth interviews with 35 senior planners and decision makers involved in the design and implementation of these plans. The study reveals that within the general trajectory of mainstreaming LCA approach in Israel over the past two and a half decades, significant gaps exist between LCA knowledge, LCA-based land-use planning, and on-ground action and results. The extent of the gaps differs across plans and planning scales. The gaps are rooted in the complexity of the LCA approach; language barriers; scientific and technical limitations; inconsistency and subjectivity; different academic, planning, and decision-making traditions; limited institutional capacity; vagueness and over-flexibility of approved LCA-based planning principles and instructions; and lack of sufficient involvement by stakeholders. This paper offers suggestions as to how these gaps might be bridged in the Israeli context. In conclusion, the study recommends the following: developing a legally binding, generic, credible, and continuously updated LCA-based planning guide, that should be written in the native language; establishing a national and comprehensive free-access online information center for sharing LCA knowledge; strengthening of institutional capacities at all planning levels; enhancing planners' and consultants' LCA skills; and inclusion of all affected stakeholders in the process.

Broadening the understanding of the obstacles and solutions to effective application of LCA processes and outputs in land-use planning and management practices can contribute to operationalizing this approach in various contexts and eventually, advance the reduction of anthropogenic pressures on valuable landscapes.

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1. Introduction

Protection of valuable natural and cultural landscapes, in many countries around the globe, is struggling with increasing development pressures. Many changes to landscapes relating to these pressures have broadened the concept of landscape character

to include not only exceptional landscapes, but also everyday landscapes, as proposed by the European Landscape Convention (Council of Europe, 2000; Van Eetvelde and Antrop, 2009). The landscape changes are particularly evident and significant in small and rapidly developing countries, with high diversity of natural and cultural landscapes, such as Israel. The increasing awareness of these changes, has generated, in many countries, and also in Israel, a wide and growing range of landscape assessment (LA) studies, including Landscape Character Assessment (LCA), that are

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undertaken at national, regional, and local levels (Amir et al., 1997; Blasi et al., 2008; Yang et al., 2008; Jellema et al., 2009; Swanwick, 2009; Atik et al., 2015). Consequently, many land-use and landscape planning decisions are increasingly drawing on the information provided by these studies. LCA, according to Natural England (2014), is the process of identifying, describing, and mapping the unique combination of elements and features that make landscapes distinctive. It also shows how the landscape is perceived, experienced, and valued by people. As an interdisciplinary area, LCA usually involves professionals from the planning, landscape architecture, ecology, geography, and history fields, among others.

Appreciation and understanding of landscapes have increased over time, latterly via qualitative and quantitative methods associated with the social and natural sciences, and often prompted by the need and desire to record, understand, influence, and manage changes in landscapes (Scott, 2002; Jellema et al., 2009). Since the 1960s, this has sparked a diverse array of efforts around the globe to develop techniques for landscape characterization and assessment and to incorporate the outputs of these processes in land-use spatial planning (see, for instance, Swanwick, 2002a,b, 2004; Turner, 2005; Blasi et al., 2008; Yang et al., 2008; Jellema et al., 2009; Atik et al., 2015). In UK and Ireland, for instance, LCAs provide information that is sometimes used to inform planning policies, the allocation of land for development, the assessment of planning applications, and the process of Environmental Assessments (Landscape Institute, 2013; Tudor, 2014; West Berkshire Council, 2015). Similar efforts have also become evident in Israel since the early 1990s, due to several demographic, cultural and regulatory developments that laid the groundworks for the introduction and employment of the LCA approach, as a tool to inform a diverse array of land-use planning initiatives (see, for instance, the list of plans in Table 1). However, in spite of this observed trend, the country continues to experience rapid spatial development at the expense of valuable landscapes, signaling that what is stated in LCA-based plans is not necessarily reflected in what is happening on the ground. Evidently, this indicates significant challenges to the effective implementation of the plans.

The continuous mainstreaming of LCA-based land-use planning in Israel underlines the need for better understanding of the barriers to and opportunities for the proper incorporation of LCA approach in planning, and of the obstacles to an adequate implementation of LCA-based plans. This study is intended as a contribution to meeting this need. To achieve a comprehensive understanding of the obstacles to transferring LCA from theory to real world practice, it is useful to classify these obstacles into four distinct phases: (a) *the knowledge development phase*, which refers to the formulation of a credible LCA approach; (b) *the approach adoption phase*, which refers to the willingness to incorporate LCA outputs into land-use planning; (c) *the knowledge transfer phase*, which refers to the actual incorporation of LCA outputs into land-use planning; and (d) *the application management phase*, which refers to the transition of LCA-based plans into action.

The study explores the barriers in accordance with these phases, and its main objectives are: (a) to reveal the LCA knowledge-planning-practice gaps; (b) to propose how to transfer LCA knowledge effectively into land-use planning practices and how to apply LCA-based plans adequately in land-use development and management in the Israeli context. More specifically, the aims of this study are to:

a) summarise the cumulative knowledge and experience regarding the barriers to proper LCA implementation in land-use planning and decision making;

- b) investigate how the Israeli planning system interprets and applies LCA processes and outputs at the national-, district-, and local-level land use planning;
- c) reveal the conceptual, scientific, institutional, and operational gaps and barriers to effective and efficient transfer of credible LCA knowledge into land-use planning in Israel;
- d) discover the obstacles to adequate implementation of LCA-based land-use plans on the ground, and
- e) identify key opportunities and challenges for bridging the gaps between LCA knowledge, land-use planning, and land-use decisions.

To address these goals, the study combines a literature review with the analysis of Israeli LCA-based planning case studies, and with interviews with key informants who gained extensive experience with design and implementation of LCA practices in Israel.

2. Theory

2.1. *The evolution of the concept and techniques of Landscape Character Assessment (LCA): a brief background*

The European Landscape Convention (Council of Europe, 2000) defines “landscape” as “an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors. As a result of this interaction, landscape becomes a diversity of visual, cultural and ecological constructs (Atik et al., 2015). The concept ‘landscape character’ is defined by Swanwick and Land Use Consultants (2002) as “a distinct, recognizable and consistent pattern of elements that make one landscape different from another, rather than better or worse. Accordingly, ‘landscape character assessment’ (LCA) is defined as the process of mapping, describing and evaluating landscapes on the basis of the presence and arrangement of various landscape elements (Swanwick and Land Use Consultants, 2002; Jellema et al., 2009). This evaluation is a fundamental procedure for assessing the conditions and quality of a system, and it is the first step toward planning or management actions (Farina, 2000). In this regard, it is important to take into account and understand all features of the landscape, both biophysical and visual, in order to integrate them into land use policies (Will, 2005). A Landscape Character Assessment can also be the output of this process.

Since the 1960s, the concepts and methods of classifying and evaluating landscapes have evolved considerably (Zube, 1984; Swanwick, 2002a,b; Swanwick and Land Use Consultants, 2002; Groom, 2005; Wascher et al., 2005; Meyer and Grabaum, 2008; Hazeu et al., 2011). The early approaches to landscape evaluation sought to ascribe values to different landscapes. However, they foundered on disagreement about how to value a landscape, given the complex interactions between people, perception, and culture, which determine people’s response to what they see and experience (Robinson et al., 1976; Scott, 2002; Warnock and Griffiths, 2015). During the mid-1980s and early 1990s, a different approach emerged, seeking to separate the characterization process from evaluation and giving equal weight to the natural, cultural, and visual dimensions of the landscape (Countryside Commission, 1991). In the 1990s, the landscape evaluation approach was replaced by “Landscape Character Assessment” (LCA), which contained several developments, including making a distinction between the relatively value-free process of identifying, classifying, and mapping areas of distinctive character, and the more value-laden stage of making judgements based on knowledge of landscape character to inform decisions; representing landscape character on a variety of spatial scales; placing a stronger focus on historical/cultural elements, and allowing the participation of a

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