Landscape planning and ecosystem services in Europe and beyond

Landscape planning with ecosystem services – theories and methods for application in Europe, edited by C. von Haaren, A. A. Lovett, and C. Albert, Dordrecht, The Netherlands, Springer Nature, 2019, Landscape Series 24, 506 pp., €83.29 (e-book), €106.99 (hardcover), ISBN: 978-94-024-1681-7

Why a book, and why on these topics?

‘To the landscape planners of tomorrow.’ The first lines of this new book, entitled ‘Landscape Planning with Ecosystem Services’ already give an indication of the intended readership, namely young landscape planners and landscape architects with an interest in planning. But ecologists and geographers are also to be addressed, whether still studying or having just started with their careers. However, this is much more than just a reference book for the classroom. With a wealth of material and examples as well as research and practical applications from around Europe, it is much more than just a textbook. In fact, it offers an outstandingly clear overview of the world of landscape planning and ecosystem services gathering contributions by more than 45 international experts. Here we find a comprehensive discussion of the current state of scientific research and practice on the subject, brought together in one publication. In their preface, the editors presciently ask: ‘why a book […]?’ at a time when everyone is struggling to keep up with the unbridled flood of disparate information and journal articles on the Internet. The answer: A book forces you to read with a higher degree of concentration. You have to make an investment of your time. Indeed, the integrative character of a book renders the informational overkill of the flood of journal articles somehow manageable. I still believe in the power of books!

But, first, what is meant by landscape planning? Landscape planning and landscape policies play a prominent role in Europe. Referring to the European Landscape Convention (Council of Europe 2000), landscape planning should assess and evaluate natural and cultural resources and the cultural character of landscapes. It should determine and evaluate land use forms including an assessment of ecological and landscape aesthetics conflicts. Landscape planning should then define cultural landscape quality objectives and establish preservation and development measures. Monitoring, public participation and communication about landscape issues are also important factors addressed by the European Landscape Convention. The results of landscape planning have to be incorporated into the overall strategical spatial planning instruments such as regional plans and/or local zoning plans (see Hersperger et al. 2020). The main challenges for all countries that signed and ratified the European Landscape Convention are to establish the policies and planning instruments as such, as well as to establish specific assessment methods. Here, the concept of ecosystem services might be helpful to meet the methodological requirements of the convention towards a landscape and natural resources assessment.

Keeping this planning perspective in mind, the ecosystem services concept describes services provided by nature and potentially or actually used by humankind. The concept addresses supporting services, provisioning services, regulation services and cultural services (see e.g. Grunewald and Bastian 2015). In the last years international research on ecosystem services has made first theoretical advances and proposals about how the concept can be applied in planning, either regional or landscape planning (e.g. de Groot et al. 2010; Albert et al. 2016).

Hence, integrating both concepts of landscape planning with ecosystem services assessment might raise important synergies. Several ways of merging both concepts are now described and available in great depth in the reviewed book by von Haaren et al. (2019).

Theories and conceptual framing

Turning now to the contents of the book: a glossary placed at the beginning helps to clear up any terminological issues. This is especially valuable and helpful in view of the still relatively novel concept of ecosystem services, which is explained here in detail. Part I provides a basic discussion of important theories and methods, describes the basis of evaluation in the legal, economic and social sense and addresses general questions of data availability and processability using GIS. I particularly like the definition and operationalization of the concept of landscape sustainability given in Section 4.3.2.1. Referring to the authors, the following ‘sustainability principles’ can be directly applied in practical planning and ES evaluation (von Haaren et al. 2019, p. 53):
(1) The rate of use of renewable raw materials must not be greater than their rate of replenishment. This basic rule includes not only materials such as wood but also biodiversity, if this is considered as a raw material.

(2) The rate of use of non-renewable raw materials must not be greater than their rate of substitution by physically and functionally equivalent renewable raw materials or by increased productivity of both renewable and non-renewable resources.

(3) The rate of deposition of materials must not be greater than their rate of assimilation. Materials introduced into the environment should thus be evaluated in terms of absorption capacity, with all functions taken into consideration.

(4) Biological diversity must be maintained. This includes the protection and development of ecosystems, habitats and species diversity and genetic diversity in the landscape.

(5) The time frame of human activity impacting on the environment must be kept in balance with the time frame of natural processes relevant to the ability of the environment to respond.

(6) The intensity of use should be adapted to local conditions (functions, sensitivity of ecosystem processes) in order to be ecologically responsible and sustainable [...].

(7) Human health should not be endangered or exposed to unwarranted risk.

(8) Ideally, all people should have an adequate right to use the world’s resources.

These eight principles might be better applicable in landscape planning and ecosystem services evaluation than using a broad and only general definition of sustainability such as from the United Nations (1987): 'To meet the 'needs of the present without compromising the ability of future generations to meet their own needs.'

Driving forces and pressures for landscape and ecosystem services change

In the main body of the book (Parts II to IV), the classical steps of landscape planning are discussed, namely assessing the state and value of landscapes, conducting a conflict analysis, and developing suitable planning targets and measures. The editors have chosen to subdivide those steps using the DPSIR approach (Smeets and Weterings 1999), resulting in a transparent and clear structure, namely of Driving Forces, Pressure, State, Impact, Response (DPSIR) with regard to landscape change and development. Because of the clear and recognizable structure, this book could become a reference book to be used 'on the job'. Depending on the work step in the daily planning process of planners, geographers and biologists, specific topics can be quickly found and applied without having to read and absorb the entire contents once again.

More specifically, the editors have chosen to begin the main content by examining the driving forces of landscape and ecosystem services change along with the pressures that derive from these (Part II). Megatrends such as globalization and industrial agriculture, changing lifestyles as well as urbanization and (regenerative) energy production are named as essential drivers and pressures. The authors elaborate these megatrends in the context of European policies and to landscape planning. The European Landscape Convention (Council of Europe 2000) plays a major role in European environmental and landscape policy alongside the Water Framework Directive or the Habitat Directive (along with other directives). In my opinion, however, the instruments and directives for environmental assessment (Strategic Environmental Assessment and Environmental Impact Assessment) should also have been included in the list of 'EU Policies' and directives given in Table 8.1, especially as impact assessments are dealt with more intensively in the later sub-section 8.3.2. Beside the tools given by the Water Framework Directive and the Habitat Directive impact assessments provide additional important instruments for landscape and ecosystem services management. Nevertheless, that section provides a good overview of the most important driving forces and pressures in Europe. It can be seen that while the concept of ecosystem services has found its way into EU policy processes at the strategic level, for example via the European Biodiversity Strategy, there has so far been little attempt by the EU at operationalization by means of legislative directives.

Landscape and ecosystem services assessment methods

Part III is the most comprehensive section of the book and the one with the most practical implications. Here we find a discussion of methods to identify and evaluate the state of the landscape and ecosystem services as well as the potential impacts on them. Various categories for assessing relevant ecosystem services are named, for example, the productive capacity of soils, the potentials of water catchment areas, the possibilities for renewable energies, climate regulation and greenhouse gas storage as well as the aesthetic landscape capacity or habitat functions. The authors of one unifying chapter (Chapter 19) discuss the multifunctional assessment of landscapes across all ecosystem services. Here the terms 'ecosystem services' and 'landscape functions' are often used synonymously. In my view, however, these are not the same thing (see e.g. Willemen et al. 2008), rendering this contribution more difficult to understand than others in the book. I feel that the authors could have employed a term such as 'multiservices' instead of 'multifunctionality'. In general,
the various contributors to Part III argue for a quantitative approach to assessment. The last chapter in this ‘assessment part’ of the book (Chapter 20) is devoted to basic questions of the economic evaluation of ecosystem services. Each of these chapters on landscape and ecosystem services assessment provides an introduction to evaluation methodology, before mostly offering some good illustrations and practical examples of such techniques within landscape planning. More maps could have been included, to better illustrate the discussion and make the arguments more comprehensible, for example in Chapter 14’s discussion of how to evaluate the sequestration and storage of greenhouse gas. In general, however, Part III of the book already contains a large number of clear map illustrations. Interestingly, unlike in the e-book version, these maps are only printed in black and white while most books sold today are electronical publications.

Protection, maintenance and development of landscape and ecosystem services

Part IV of the book deals with options in landscape planning for the protection, maintenance and development of landscape and ecosystem services, and thus explores possibilities of deriving response measures. The various authors describe how landscape targets as well as Leitbilder (landscape visions) or scenarios can be developed and why this is important for everyday planning practice. Chapter 23 discusses how measures can be derived for the prevention of water pollution as well as flooding. Concrete and detailed recommendations are identified for improving the aesthetic and recreational quality of landscapes as well as to protect and foster biodiversity, with an emphasis on the multifunctionality of diverse measures. In this way, the discussion of measures in Part IV accords well with the assessment methods presented in Part III to show how concrete measures for landscape and ecosystem services development can ultimately be derived from assessment results.

Landscape and ecosystem services communication

Rather than ending with the elaboration of the DPSIR model, this book goes beyond this to deal with questions of communication (Part V) and landscape governance. Landscape communication not only encompasses technical and organizational issues of how to involve the public in planning processes but also around the potential of design to inspire citizens for landscape projects and measures and to foster acceptance. The book thus gives examples of how landscape and ecosystem services communication with citizens can be realized via design projects. Increasingly, planning must actively involve the population at large. An interactive landscape plan must provide a platform for discussion and be receptive (also in a technical sense) to objections from concerned citizens. However, interaction implies dialogue in both directions, so that decision-makers have to respond proactively to objections raised by the local populace. The book also illustrates how, in the years to come, the potential of social media must be exploited to a much greater extent – especially when aiming to reach younger people.

Global implications

Finally, Part VI attempts to embed European landscape planning concepts in the global context. Perspectives from outside the EU are primarily oriented on the USA, with a focus on the state of Oregon, as well as on Japan. In my view, this consideration of countries outside Europe could have been highlighted in the book’s title. I tested the book as a practical teaching aid, specifically as course material for my students at the National University of Singapore in the Master’s programme in Landscape Architecture. When using the book by the students, the title seemed to engender some initial skepticism against a possibly strong regional and European perspective. At first, the students doubted whether the book’s contents could be applied to Southeast Asia, specifically to the context of Singapore. However, they quickly discovered that the described assessment methods would also be suitable for use outside Europe. Therefore, the title could have made the following promise, which – in my opinion – is more or less justified by the contents: ‘Landscape Planning with Ecosystem Services – Theories and Methods for Application in Europe and Beyond.’

References

Albert C, Galler C, Hermes J, Neuendorf F, von Haaren C, Lovett A. 2016. Applying ecosystem services indicators in landscape planning and management: the ES-in-Planning framework. Ecol Indic. 61(1):100–113. Elsevier. doi:10.1016/j.ecolind.2015.03.029.

Council of Europe. 2000. Explanatory report for the European landscape convention. Florence, European Treaty Series-No. 176. [accessed 2019 Nov 25]. https://rm.coe.int/16800cce47.

de Groot RS, Alkemade R, Braat L, Hein L, Willemsen L. 2010. Challenges in integrating the concept of ecosystem services and values in landscape planning, management and decision making. Ecol Complex. 7(3):260–272. Elsevier. doi:10.1016/j.ecocom.2009.10.006.

Gruenewald K, Bastian O. 2015. Ecosystem services – concept, methods and case studies. Heidelberg: Springer Berlin.

Hersperger A-M, Bürgi M, Wende W, Bacau S, Gradinaru S-R. 2020. Does landscape play a role in strategic spatial planning of European urban regions? Landsc Urban Plan. 194:103702. Elsevier. doi:10.1016/j.landurbplan.2019.103702.
Smeets E, Weterings R. 1999. Environmental indicators: typology and overview. Copenhagen: EEA. Technical report No. 25.

United Nations. 1987. Our common future. World commission on environment and development. Oxford: Oxford University Press.

von Haaren C, Lovett A-A, Albert C, editors. 2019. Landscape planning with ecosystem services – theories and methods for application in Europe. Springer Nature Dordrecht. Landscape Series 24; p. 506. E-Book ISBN: 978-94-024-1681-7.

Willemen L, Verburg PH, Hein L, van Mensvoort M-E-F. 2008. Spatial characterization of landscape functions. Landsc Urban Plan. 88(1):34–43. Elsevier. doi:10.1016/j.landurbplan.2008.08.004.