

# Making landscape services tangible

**Landscapes provide the physical foundation for life and simultaneously give us space for living, working, recreation, culture, and commerce. The added quality of landscapes for humans can only be fostered when landscape benefits are identified and made explicit. At present, this occurs far too rarely in spatially relevant projects. The participatory approach of 'landscape services' can be used to identify the functions of landscapes that contribute direct economic, social, and/or ecological benefits to individuals and wider society. In this way, landscape services provide an important basis for dialogue in the design of landscapes. The present factsheet supports implementation of the Swiss Landscape Concept adopted in 2020, in addition to other political-societal initiatives.**

## Promoting landscape qualities

High-quality landscapes offer an attractive living environment, strengthen the identity and cultural character of the local population, maintain the economic attractiveness of the area, and promote biodiversity. The *Swiss Landscape Concept* (FOEN 2020) formulates goals and measures aimed at consciously shaping and promoting landscape qualities. In addition, many other overarching strategies, sectoral policies,<sup>1</sup> laws, and regulations contain measures that help to

achieve these goals – at the international level, for example, the *European Landscape Convention* (2000) and the global Sustainable Development Goals (SDGs). In this way, numerous stakeholder groups in different policy areas and at different governmental levels are involved in managing the qualities of landscapes. Scientists in diverse disciplines investigate 'landscapes' and their significance for the environment, the economy, and society. It is the task of communities and authorities to implement the formulated measures and goals at the regional and local level and, in this way, to contribute to the sustainable development of landscapes. This requires local and regional engagement and qualified specialists. Thus, it is important to support education and training in landscape-relevant disciplines.

<sup>1</sup> E.g. *Swiss Biodiversity Strategy*, federal spatial development concept, strategy on building culture, *2030 Sustainable Development Strategy*, federal tourism strategy, *Health2030 Strategy*, federal policy for rural areas and mountain regions, *Swiss National Soil Strategy*, and federal agricultural policy, including environmental objectives for agriculture.

## Landscapes and how they benefit us

‘Landscape services’ refer to functions and characteristics that provide direct economic, social, and ecological benefits to individuals and society (FOEN 2020). This definition was collaboratively formulated by scientists, authorities, policymakers, economists, business actors, and civil society in the transdisciplinary project ‘Landscapes between valuation and value creation’ (Keller & Backhaus 2017).

In the relevant literature – and thus also this factsheet – emphasis is placed on the following services:

- **Identity and connectedness:** Natural features, their development, and human use shape landscapes. Experiences, encounters, events, and stories inspire feelings of connectedness and belonging to specific landscapes.
- **Aesthetic enjoyment:** Enjoyment using all the senses and including the corresponding pleasure of an appealing-looking landscape, well-being effects, and direct experience.
- **Recreation and health:** Spending time and exercising in a landscape promote health. Attractive landscapes increase physical and mental well-being.
- **Location attractiveness:** Beautiful views and proximity to outdoor recreation areas are sought-after characteristics when choosing where to live. Landscapes provide the essential foundation of tourism.

Spatially relevant projects and planning efforts often fail to specify or consider these services sufficiently or explicitly. Yet, they are crucial in order to identify landscape potentials and, in turn, strengthen landscape qualities – including the necessary conditions for functioning ecosystems, intact biodiversity, and regenerative natural resources.



### Identity and connectedness

Landscapes create connectedness! A ‘landscape’ is a space shaped by natural features, history, and the built environment, which is tied to people’s identity, individual life story, and position in the cultural community. It is often referred to by the term ‘home’. Central to the development of feelings of landscape connectedness, in addition to spatial aspects, are emotional elements like familiarity, security, and safety; social aspects like family and friends; and community structures like clubs and traditions.

The concept of landscape services helps diverse stakeholders find a common language to formulate their landscape needs and requirements, as well as to understand the effects that landscapes have on us humans. The landscape services approach is ideally suited to link (‘top-down’) legal measures and strategic goals for landscape development together with (‘bottom-up’) local experiences and values.

The identified value of a given landscape varies based on the viewpoint of the person who beholds it. While some stakeholder groups may emphasize the ecological dimension and some the economic dimension, still others may focus on aesthetic aspects. These dimensions and aspects are all part of landscape perception (Backhaus 2010). In landscape projects, people’s different viewpoints have to be harmonized in dialogue.

## Landscape services

The website [landscapeservices.ch](https://landscapeservices.ch) offers recommendations for action, practical examples, and publications on the topic of ‘landscape services’. It is continuously updated by the universities of Zurich and Lausanne and enriched with new practical examples and publications.

The focus is on the following two types of landscape services:

- **Non-material services:** Identity and connectedness; aesthetic enjoyment; relaxation, recreation, and health.
- **Material services** such as value creation based on landscape-related location attractiveness.

The ‘services approach’ has long been used in the context of biodiversity under the term ‘ecosystem services’ (see Swiss Academies Factsheet ‘Achieving the SDGs with Biodiversity’, Obrecht et al. 2021). At the international level, the term ‘ecosystem services’ has since been replaced with the term ‘Nature’s Contributions to People (NCP)’ (IPBES 2019; Díaz et al. 2018). Understanding of the term ‘landscape services’ is compatible with the NCP categorization (Keller & Backhaus 2021). Use of the term ‘landscape’ instead of ‘ecosystem’ has the advantage of speaking to a wider audience – in particular spatial planners and architects (Fagerholm et al. 2012; Termorshuizen & Opdam 2009). In cases where promotion of biodiversity is the main focus, we recommend direct use of the NCP categorization.

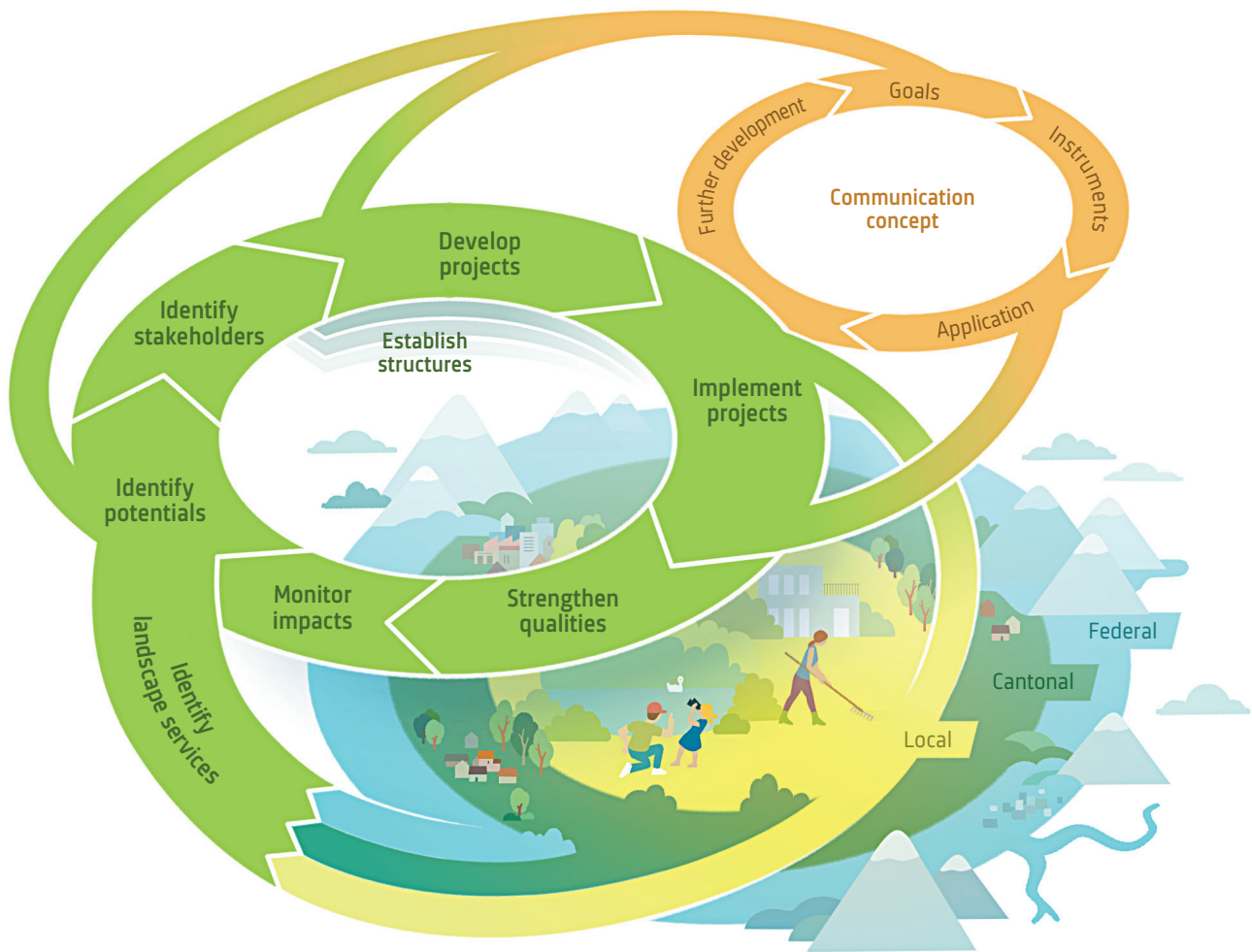


Figure 1: Cyclical model 'Landscape services strengthen landscape quality'.

## Identifying and strengthening landscape services: practical tips

So, how does the landscape services approach help in practice to strengthen landscape qualities? Drawing on results from different study regions in Switzerland, the authors have developed the cyclical model 'Landscape services strengthen landscape quality' (Figure 1). Similar participatory approaches are also applied to other issues – but here the explicit emphasis is on landscape services. Using surveys and discussions, facilitators identified the key landscape services from the perspective of locals and other stakeholders at the beginning of each project. In addition, they identified what landscape and structural qualities underlie these services and what other qualities the landscape might reveal in the future ('identifying potentials'). Based on this, concrete implementation projects were launched to strengthen the given landscape's qualities.

The model 'Landscape services strengthen landscape quality' is designed for application to a specific landscape and encompasses several different steps. It is crucial to involve local people from the beginning and throughout the entire process.

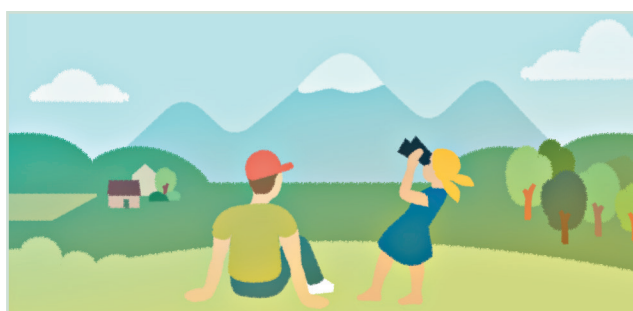
- **Identify landscape services:** The local population learns to 'read' the familiar landscape – including its natural and built qualities – and to identify its landscape services. Desired landscape improvements and landscape services are addressed in discussions or in workshops. Regional and

cantonal landscape plans and inventories provide useful bases for the identification of desired (future) landscape services.

- **Identify potentials:** The services that a given landscape can potentially provide are determined in a participatory way and/or derived from higher-level goals and strategies.
- **Identify landscape-relevant stakeholders:** Important actors and/or target groups, i.e. people whom facilitators intend to engage more strongly with the potential of the landscape, are identified and invited to participate in developing a project to strengthen landscape qualities. 'Key individuals' should be identified and encouraged to participate. They are the access point to other locally important actors.
- **Establish structures:** Initially informal structures should, where possible, eventually be integrated or transformed into existing or new, more formal institutional structures for the continuation of landscape-related activities. Structures are important in ensuring the continuity of projects, regularly assessing their relevance, and adjusting them as needed.
- **Develop projects:** Project ideas for strengthening landscape qualities are jointly outlined, responsibilities and milestones defined, and missing stakeholder groups identified and invited to participate.
- **Implement projects:** When implementing the agreed projects, the landscape-relevant actors and/or target groups should be integrated, and available landscape policy instruments should be employed (Steiger 2016).

- **Strengthen qualities:** Potentials identified at the start of the process can be clearly designated and landscape qualities can be strengthened within the concrete projects.
- **Impact monitoring:** Explicitly defined goals make it possible to evaluate achievements and/or the need for further measures.

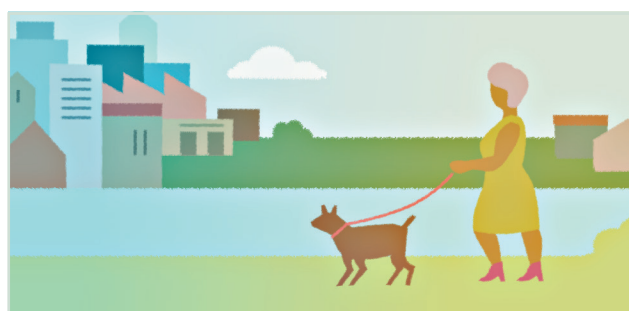
Notably, **strategically planned communication** (orange circle in Figure 1) provides crucial support throughout the entire process, including long-term maintenance and safeguarding of benefits from landscape services, in particular by means of structured goals, instruments, application, and further development. Communication is not only about raising awareness of landscape services, but also about understanding and conveying aesthetic and emotional aspects.



### Aesthetic enjoyment

Landscapes are pleasing! According to the Swiss landscape monitoring programme (LABES), the population generally rates Switzerland's landscapes as 'quite beautiful' (Rey et al. 2017). Landscape preferences remain relatively stable over time, while also displaying cultural and individual differences. Targeted surveys are needed to capture aesthetic preferences at the local level.

connectedness, into monetary values. While methods and studies exist for use in assessing the added economic value of individual landscape attributes, such assessments are disputed for a variety of fundamental and methodological reasons: 1) basic ethical opposition to monetization of nature and landscapes; 2) doubts about the methods applied and the reliability of resulting figures; 3) the belief that landscapes are a public good, whereas monetary values either represent privatized values (e.g. higher land prices based on location attractiveness) or fictitious values (e.g. people's willingness to pay for a walk in the forest), which are difficult to integrate when balancing various interests. More research is needed on ways of valorizing landscape services, and including them when weighing different interests, without necessarily measuring them in monetary terms.



### Recreation and health

Landscapes promote recreation and health! Diverse, high-quality landscapes encourage people to go outside and be active. In addition to measurable positive impacts on physical, mental, and social health, beautiful landscapes also have identifiable positive effects on human well-being (Abraham et al. 2007; Hofmann et al. 2018, SCNAT 2019).

## Strengths and limitations of the approach

The strengths of the landscape services approach lie in its ability to demonstrate clearly how landscapes benefit us. This distinguishes the approach from earlier participatory planning processes (e.g. landscape development concepts) used to evaluate and coordinate diverse interests and claims. By focusing people's attention on services, the present approach directly engages all stakeholders and encourages them to imagine their 'ideal landscape'. Such engagement is necessary, as meaningful discussion of landscape qualities is only possible when landscape potentials are explicitly articulated (Liechti & Ebnetter 2017). The process indicated in the cyclical model (Figure 1) requires skilled facilitation. Well-trained landscape experts and/or moderators should be involved.

The limitations of the approach lie in the attempt to capture the value and benefits of landscapes in economic terms. There is no instant formula that can be used to convert enjoyment of landscapes, with all our senses and feelings of

## Main findings and strategic recommendations

**The landscape services approach enables effective description of the added value and qualities of landscapes.** Landscape services can be used to demonstrate clearly the qualities that landscapes possess for different stakeholder groups, and the resulting added value they have for local populations. This can help increase people's acceptance of measures to protect and carefully manage landscape qualities. However, too much emphasis on landscape values can trigger intensified visitor traffic and increasing pressure on resources. Accordingly, communication of goals and messages should be planned carefully and strategically. Often, it is best to focus on fostering awareness and sharing information rather than promoting increased visitor traffic.

**Recommendation:** In addition to local populations and local stakeholders (e.g. farmers, landowners), projects should also engage the cantonal authorities: they should identify desired landscape services and strengthen them when planning regional landscape quality goals, in cooperation with municipalities.





## Location attractiveness

Landscapes create value! Attractive landscapes are preferred residential and vacation areas. They contribute significantly to high quality of life, and are also a key location factor for businesses looking to incentivize professionals who seek a good place to work and live. For tourism, Switzerland's landscapes are a crucial asset: mountains, lakes, aesthetic qualities, and the diversity and accessibility of landscapes are important to the success of Switzerland as brand (Schmid Pelli & Partner 2021).

**Local stakeholders are open to participating in discussions on desired landscape qualities.** The landscape services approach enables straightforward discussions with stakeholders about perceived and desired landscape qualities. The approach helps facilitate exchange about issues including aesthetic appeal, recreation, and connectedness, and helps to structure people's statements. In this way, it also provides support in cases of conflict regarding landscape use, as it draws attention to issues that often receive insufficient weight in negotiations. Overall, local stakeholders display substantial willingness to discuss 'their' landscape, its significance, and its qualities. Municipal, cantonal, and federal authorities should make use of this willingness to develop landscape projects together with local stakeholder groups.

**Recommendation:** Cantonal and federal authorities should cooperate more closely with local stakeholder groups in order to strengthen and maintain landscape knowledge in different regions. In protected landscapes, conservation regulations provide the binding framework for activities. Within this legal framework, facilitators and participants should explore and utilize their available scope for action.

**New cooperative structures should be promoted.** Realizing and safeguarding landscape projects in the long term requires new, flexible structures of cooperation between local populations and outside experts. The roles of key participants can change continuously: for example, a participant may initially be a valuable 'supplier of ideas', and afterwards act mainly as an observer for the rest of the process. Others may shift from being 'critics' to being 'supporters'. Some participate in the projects as representatives of an institution (e.g. municipal authority, school board, environmental organization), others as an interested private party, and still others as authorized agents (e.g. environmental consultants). It is crucial that the processes are skilfully moderated and sometimes supported with content-related

or administrative services. The resulting dialogue can generate a local 'landscape culture', or concrete engagement with the landscape.

**Recommendation:** The needs and goals of the stakeholders involved will determine what type of structures are appropriate to promote cooperation in a given project. The collaboration should be flexible in order to accommodate changing conditions. For some projects, it may make sense to end the collaboration after the projects conclude. In other cases, some form of long-term cooperation under a shared umbrella may be appropriate.

## Bottom line for the promotion of landscape qualities

Promotion of landscape qualities pays off in the long run. High-quality landscapes improve human well-being, making them very valuable for emotional and physical health. Engagement with the 'services' provided by landscapes helps people identify landscape qualities. Accordingly, the approach has the potential to highlight different 'benefits' and 'values' and to help resolve related conflicts. In order to monitor the development of landscape services over the long term, the Swiss landscape monitoring programme (LABES) will incorporate them in its future reporting (Wartmann et al. 2021).

Dialogue with the public is needed to establish common ground regarding desired landscape qualities. Expert resources for describing and categorizing landscapes are already largely available. However, individuals and institutions are needed who can initiate and lead discussions about landscape qualities with relevant, interested partners.

## Landscape guidance

The Swiss Landscape Concept aims to increase awareness and ability to act with regard to landscapes. Municipalities are encouraged to emphasize landscape quality in their areas of action, consider it in their spatial planning, and actively promote its development. To support this, municipalities can take advantage of free landscape consultations with experts offered from 2021 to 2023 in the framework of a FOEN pilot project (see [bafu.admin.ch/landschaftsberatung](https://bafu.admin.ch/landschaftsberatung), available in German, French, and Italian). Supported by FOEN, the Association for Spatial Development (EspaceSuisse) engages additional landscape experts for consultations on landscape issues both in and outside settlement areas ([espacesuisse.ch/de/beratung/siedlungsberatung](https://espacesuisse.ch/de/beratung/siedlungsberatung), available in German and French). Both pilot projects are conducted in close cooperation with the Union of Swiss Cities and the Association of Swiss Municipalities, the Conference of Commissioners for Nature and Landscape Protection, the Conference of Cantonal Planners, and professional associations such as the Federation of Swiss Landscape Architects.

## Key facts

- 'The beauty and diversity of Swiss landscapes, with their region-specific natural and cultural characteristics, offer a high quality of life and of location, for both current and future generations.' This vision articulated by the Swiss Landscape Concept provides the guiding framework to promote the quality of landscapes.
- This factsheet shows how engagement of local stakeholders with the qualities and services of landscapes can contribute to dialogue on desired landscape developments.
- The emphasis of the services described is on societal and economic welfare, in particular on the services of 'identity and connectedness', 'aesthetic enjoyment', 'recreation and health', and 'location attractiveness'.
- The authors have carried out projects in several Swiss regions together with the local population, with the aim of increasing awareness and appreciation of landscape characteristics (Keller et al. 2019a; 2019b; 2021). This factsheet combines insights from these projects with knowledge from landscape research. This leads to the following key findings:
  - The landscape services approach enables constructive description of the added value and qualities of landscapes.
  - Local actors take an interest in 'their' landscapes and related services. These actors can be readily involved in projects to strengthen such services.
  - The quality-oriented development of landscapes at the local level necessitates new informal or formal structures that foster participatory dialogue among local stakeholders and with external experts.

### SDGs: The global Sustainable Development Goals of the UN

With this publication, the Swiss Academies of Arts and Sciences contribute to SDGs 3, 11, and 12:

'Ensure healthy lives and promote well-being for all at all ages', 'Make cities and human settlements inclusive, safe, resilient and sustainable' and 'Make cities and human settlements inclusive, safe, resilient and sustainable', and 'Ensure sustainable consumption and production patterns'.

> [sustainabledevelopment.un.org](https://sustainabledevelopment.un.org)

> [eda.admin.ch/agenda2030/en/home/agenda-2030/die-17-ziele-fuer-eine-nachhaltige-entwicklung.html](https://eda.admin.ch/agenda2030/en/home/agenda-2030/die-17-ziele-fuer-eine-nachhaltige-entwicklung.html)

References are included in the online version at [landscape-alps-parks.scnat.ch/factsheet/landscape\\_services](https://landscape-alps-parks.scnat.ch/factsheet/landscape_services)

### ABOUT THIS PUBLICATION

#### PUBLISHER AND CONTACT

Swiss Academy of Sciences (SCNAT) •  
Forum Landscape, Alps, Parks • House of Academies • Laupenstrasse 7 •  
P.O. Box • 3001 Bern • Switzerland • +41 31 306 93 44 • [folap@scnat.ch](mailto:folap@scnat.ch) •  
[landscape-alps-parks.scnat.ch](https://landscape-alps-parks.scnat.ch) • [@FoLAP\\_CH](https://twitter.com/FoLAP_CH)

#### RECOMMENDED FORM OF CITATION

Keller R, Clivaz M, Backhaus N, Reynard E, Lehmann P, Schüpbach U (2022)  
Making Landscape Services Tangible. Swiss Academies Factsheets 17 (1)

#### AUTHORS

Roger Keller, University of Zurich • Mélanie Clivaz, University of  
Lausanne • Norman Backhaus, University of Zurich • Emmanuel Reynard,  
University of Lausanne • Peter Lehmann, 2030etc AG • Ursula Schüpbach,  
Forum Landscape, Alps, Parks of the SCNAT

Authors are listed according to the importance of their contributions.

#### REVIEW

Damian Jerjen and Christa Perregaux (Espace Suisse) •  
Felix Kienast (WSL) • Urs Steiger (steiger texte konzepte beratung)

#### COORDINATION

Ursula Schüpbach (Forum Landscape, Alps, Parks of the SCNAT)

#### EDITING

Marcel Falk (SCNAT) • Ursula Schüpbach (Forum Landscape, Alps, Parks  
of the SCNAT)

#### TRANSLATION AND PROOFREADING

Anu Lannen and Marlène Thibault (Centre for Development  
and Environment, University of Bern) • Sierra Deutsch (University of Zurich)

#### ACKNOWLEDGEMENTS

The authors thank Christoph Grosjean, Thomas Kuske and Matthias  
Stremmlow (FOEN), Jodok Guntern and Daniela Pauli (Swiss Biodiversity  
Forum), Silvio Decurtins and Marcel Falk (SCNAT), Maarit Ströbele (Forum  
Landscape, Alps, Parks) and the reviewers for their valuable comments on  
earlier versions. In addition, they express their thanks to all other persons  
mentioned in the imprint for their contribution to the completion of this  
product.

#### NOTE

This factsheet was prepared with the financial support of the Federal  
Office for the Environment (FOEN), the Swiss Academy of Humanities and  
Social Sciences and the Canton of Ticino. SCNAT is solely responsible for the  
content.

#### ILLUSTRATIONS AND INFOGRAPHIC

Ralph Sonderegger

#### LAYOUT

Monique Borer and Olivia Zwygart (SCNAT)

Print version available from [folap@scnat.ch](mailto:folap@scnat.ch).

ISSN (print): 2297-8283

ISSN (online): 2297-1831

DOI: 10.5281/zenodo.6036242



Cradle to Cradle™-certified and climate-neutral factsheet,  
printed by Vögel AG in Langnau.



## References

Online resources were last accessed on 18 February 2022.

Abraham A, Sommerhalder K, Bolliger-Salzmänn H, Abel T (2007) **Land-schaft und Gesundheit. Das Potential einer Verbindung zweier Konzepte.** Institut für Sozial- und Präventivmedizin, Universität Bern, Bern. <https://doi.org/10.7892/boris.73684>

Backhaus N (2010) **Landschaften wahrnehmen und nachhaltig entwi-ckeln. Ein transdisziplinäres Modell für Forschung und Praxis.** Geographica Helvetica, 2010(1):48–58. <https://doi.org/10.5194/gh-65-48-2010>

Díaz S, Pascual U, Stenseke M et al. (2018) **Assessing nature's contributions to people.** Science, 359:270–272. <https://doi.org/10.1126/science.aap8826>

European Landscape Convention (2000) Available online at <https://www.coe.int/en/web/conventions/full-list?module=treaty-detail&treaty-num=176>

Fagerholm N, Käyhkö N, Ndumbaro, F, Khamis M (2012) **Community sta-keholders' knowledge in landscape assessments – Mapping indicators for landscape services.** Ecological Indicators, 18:421–433. <https://doi.org/10.1016/j.ecolind.2011.12.004>

FOEN (Ed.) (2020) **Swiss Landscape Concept. Landscape and Nature in Federal Policy Areas.** Federal Office for the Environment, Bern. <https://www.bafu.admin.ch/ui-2011-e>

Hofmann M, Young C, Binz TM, Baumgartner MR, Bauer N (2018) **Contact to nature benefits health: Mixed effectiveness of different mechanisms.** International Journal of Environmental Research and Public Health 15(1):31. <https://doi.org/10.3390/ijerph15010031>

IPBES (2019) **Summary for Policymakers of the Global Assessment Report on Biodiversity and Ecosystem Services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services.** IPBES Secretariat, Bonn. <https://doi.org/10.5281/zenodo.3553579>

Keller R, Backhaus N (2021) **Wie fördern Landschaften das Wohlbefinden der Menschen? Erkenntnisse transdisziplinärer Forschungsprojekte aus der Schweiz.** In: Walsh C, Kangler G, Schaffert M. Landschaftsbilder und Landschaftsverständnisse in Politik und Praxis. Springer, Wiesbaden, 141–157. [https://doi.org/10.1007/978-3-658-30959-6\\_8](https://doi.org/10.1007/978-3-658-30959-6_8)

Keller R, Huser K, Breitenmoser P, Backhaus N (2021) **Landschaftswissen in Kürze. Informationen für Lehrpersonen.** Universität Zürich und Pädago-gische Hochschule Zürich, Zürich. <https://doi.org/10.5281/zenodo.4637191>

Keller R, Clivaz M, Reynard E, Backhaus, N (2019) **Increasing landscape appreciation through the landscape services approach.** A case study from Switzerland. Sustainability, 11(20):5826. <https://doi.org/10.3390/su11205826>

Keller R, Clivaz M, Backhaus N, Reynard E (2019) **Landschaftsleistungen in Landschaften von nationaler Bedeutung.** Forschungsbericht mit Handlungsempfehlungen für Bund, Kantone, Gemeinden, NGOs und Bewirtschaftende. Im Auftrag des Bundesamts für Umwelt BAFU. Universität Zürich und Université de Lausanne, Zürich, Lausanne. <https://doi.org/10.5167/uzh-171386>

Keller R, Backhaus N (2017) **Landschaft zwischen Wertschöpfung und Wertschätzung – wie sich zentrale Landschaftsleistungen stärker in Politik und Praxis verankern lassen.** Universität Zürich, Zürich. <https://doi.org/10.5167/uzh-139468>

Liechti K, Ebner L (2017) **Landschaftsqualität in der Welterbe-Region – Beispiele aus dem Wallis.** UNESCO-Welterbe Schweizer Alpen Jung-frau-Aletsch, Naters. <https://doi.org/10.7892/boris.99076>

Obrecht A, Pham-Truffert M, Spehn E et al (2021) **Achieving the SDGs with Biodiversity.** Swiss Academies Factsheet 16 (1). <https://doi.org/10.5281/zenodo.4457298>

Rey L, Hunziker M, Stremlow M, Arn D, Rudaz G, Kienast F (2017) **Wandel der Landschaft: Erkenntnisse aus dem Monitoringprogramm Landschafts-beobachtung Schweiz (LABES).** Bundesamt für Umwelt und Eidg. For-schungsanstalt für Wald, Schnee und Landschaft, Bern und Birmensdorf. <https://www.bafu.admin.ch/uz-1641-d>

Schmid Pelli & Partner (2021) **Chance Landschaft. Eine touristische Poten-zialbetrachtung.** Schmid Pelli & Partner, Zürich. [https://www.bafu.admin.ch/dam/bafu/de/dokumente/landschaft/externe-studien-berichte/chance-landschaft.pdf.download.pdf/Chance-Landschaft-im-Tourismus\\_2021.pdf](https://www.bafu.admin.ch/dam/bafu/de/dokumente/landschaft/externe-studien-berichte/chance-landschaft.pdf.download.pdf/Chance-Landschaft-im-Tourismus_2021.pdf)

SCNAT (2019) **Biodiversity, a guarantee of health?** Swiss Academies Fac-tsheet 14 (3). <https://scnat.ch/en/id/6wKVf>

Steiger U (2016) **Den Wandel der Landschaft gestalten: Überblick über die landschaftspolitischen Instrumente.** BAFU Umwelt-Wissen 1611. Bundes-amt für Umwelt, Bern. <https://www.bafu.admin.ch/uw-1611-d>

Termorshuizen JW, Opdam P (2009) **Landscape services as a bridge between landscape ecology and sustainable development.** Landscape Ecology, 24, 1037–1052. <https://doi.org/10.1007/s10980-008-9314-8>

Wartmann F, Hunziker M, Kienast F (2021) **Programm Landschaftsbeob-achtung Schweiz. Methodische und inhaltliche Weiterentwicklung 2018-2020.** WSL Berichte 103. Eidg. Forschungsanstalt für Wald, Schnee und Landschaft WSL, Birmensdorf. <https://www.wsl.ch/de/publikationen/default-2d3d36914f.html>