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Landscape Observatory Engiadina Bassa / Val Müstair

Monitoring and Participation

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Abstract

Landscape is of great importance for human well-being and value creation. With this in consideration, the European Landscape Convention (ELC) was initiated with the aim of recognising the landscape in the European policy and raising awareness of landscape issues (Council of Europe, 2000). This European agreement proposed measures, one of which is the establishment of Landscape Observatories (LO). LOs are institutions or centres that describe the current state of the landscape, collect historical knowledge, build future scenarios of the landscape, and exchange knowledge and experience on landscape management practices (Council of Europe Committee of Ministers, 2008).

This study discusses the characteristics and importance of landscape monitoring through an analysis of LOs in Europe. The research questions were raised, on how these LOs have been implemented in Europe and how a potential LO could be implemented in the case study region of Engiadina Bassa / Val Müstair, Switzerland. Qualitative interviews were conducted with 13 representatives of European LOs in order to capture the diversity of LOs in Europe.

Due to a vague definition of what a LO is and a lack of international networking, a diverse landscape of LOs has emerged, which were categorised here according to their policy impact and their participatory character. The categorisation resulted in four LO types (Monitoring LO, Photographic LO, Awareness LO and Platform LOs), which help to understand the European landscape monitoring strategies. In addition, common practices and challenges have been identified, which can serve as orientation points for further landscape monitoring projects and promote international cooperation.

The findings from these interviews were then applied to the case study region of Engiadina Bassa / Val Müstair. A stakeholder analysis (SA) followed by ten qualitative interviews with stakeholders and landscape experts were conducted to elaborate the needs and potential of a regional LO. The interest in a regional LO in the Engiadina Bassa / Val Müstair is high among the interviewees, and there is a need for more awareness-raising and more dialogue with the focus on landscape. A Platform LO was found to be the most appropriate LO type to address issues of the current landscape management and to discuss the future demands on the landscape. Participation is essential in landscape management and monitoring, and further efforts need to be made to explore new approaches of participation in a landscape management context, and on how the outcome of such participatory processes can be embedded in policy-making processes.

This study provides a comprehensive overview of the diversity of LOs in Europe and how to translate it to a regional scale. The results of this study can be used as a starting point for the implementation of a LO in the Engiadina Bassa / Val Müstair.

Glossary

ELC	European Landscape Convention
FOEN	Federal Office for the Environment
HEPIA	Haute école du paysage, d'ingénierie et d'architecture de Genève
ILA	Integrated Landscape Approach
LABES	Landschaftsbeobachtung Schweiz
LO	Landscape Observatory
PLO	Photographic Landscape Observatory
SA	Stakeholder Analysis
TESSVM	Tourismus Engadin Scuol Samnaun Val Müstair AG
WSL	Swiss Federal Institute for Forest, Snow and Landscape Research

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1. Introduction

The landscape is subject to constant change, both in physical terms, such as the increase in settlement area or the transport network, and in perceptual terms, such as how people perceive and evaluate these changes (Rey et al., 2017). According to the definition by the European Landscape Convention (ELC): "Landscape' means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors" (Council of Europe, 2000a). This definition includes all landscapes reaching from landscapes with no apparent human influence to landscapes where human impact is particularly visible, such as urban areas (Roth et al., 2010; Council of Europe, 2000a). Landscape combines many functions that are important to people, known as landscape services. These include, for example, recreation, culture, living space, working space, etc. and contribute significantly to human well-being and economic value creation (Keller et al., 2019).

Initiated by the Council of Europe, the European Landscape Convention (ELC) is a treaty to recognise, describe and preserve the importance of the European landscape and it intends to be a response to the rapid changes in the landscape. As the international treaty was launched in the year 2000, the issue of landscape became part of international politics. Within this international agreement, the landscape was recognized as a central player to human well-being and to natural and cultural heritage (Council of Europe, 2000a). The member states of the ELC commit themselves to introduce landscape management into their legal framework with the aim of protecting and managing the landscape, to strive for the involvement of the public and local authorities in a participatory policy-making process and to integrate the landscape comprehensively into regional planning (Council of Europe Committee of Ministers, 2008). Switzerland ratified the ELC in 2013, and as Switzerland already had a legal basis for landscape protection, there was no need to make changes in the legislation (Dejeant-Pons, 2017; Eidgenössisches Departement für Umwelt, 2000). However, the "Landschaftsbeobachtung Schweiz" (LABES) program was appointed as a strategy of applying the ELC and fulfilling the agreement (Kienast et al., 2019).

Landscape Observatories (LO) are, according to the ELC, institutions or centres for recording changes in the landscape. They are a tool for monitoring landscape development, thus serve as a platform for information exchange. In addition, LOs should fulfil the role of describing the landscape at any given time and facilitating the exchange of information and experience related to landscape protection, management and planning. They should encourage participation and promote exchange and implementation at all levels. LOs also serve as a place to store historical knowledge, evaluate current landscape policies, and develop future scenarios. Such observatories are important meeting places for the scientific community, public authorities, and society (Council of Europe, 2019). Kienast et al. 2019 assessed the current monitoring efforts in Europe, on behalf of the ELC and they proposed a typology for different landscape monitoring projects, including LOs. They have also identified gaps in current monitoring efforts and identified issues that would be important to consider in the future. These issues include the

integration of soundscapes and nightscapes, place attachment, the role of landscape in the integration of migrants, and the success of policy-making (Kienast et al., 2019). However, apart from the gaps in content, what leads to a successful implementation of a LO and how it can be designed in a participatory and efficient way has not yet been identified.

With the landscape monitoring program Landschaftsbeobachtung Schweiz (LABES), the Swiss Federal Institute for Forest, Snow, and Landscape Research (WSL) has developed an instrument that can be referred to as a national Landscape Observatory (Kienast et al., 2015). LABES assesses the physical characteristics of the Swiss landscape through geodata analysis, along with the landscape as perceived by the population (BAFU, 2010). However, it does not act on a local scale and thus neglects participatory processes and stakeholder involvement. Therefore, the Swiss landscape monitoring network could benefit from additional LOs at regional or local levels to facilitate participatory processes, promote joint learning and address fundamental questions of sustainability and transformation.

This study aims to describe the currently implemented LOs in Europe, focussing on their participatory character and their policy impact. Further, it strives to identify the current gaps in the Swiss landscape monitoring network at the regional and local level, and to analyse the potential for an additional LO. A case study will be carried out in the region of Engiadina Bassa / Val Müstair, which is an alpine region with a landscape of high importance (Zwicker-Schwarm, 2023). This study will discuss the transdisciplinary and participatory nature of LOs and provide concrete implementation proposals for a LO in the Engiadina Bassa / Val Müstair.

The following research questions are addressed in this study:

(i) How was the ELC implemented in Europe, and what types of LOs are active?
(ii) What form of LO, in line with the Integrated Landscape Approach (ILA), would expand the current landscape monitoring network of Switzerland?
(iii) How could a regional LO be implemented in the Engiadina Bassa/Val Müstair?

2. Methodology

2.1 Assessment of European Landscape Observatories

2.1.1 Qualitative Guided Interviews

Qualitative guided expert interviews were conducted to collect data on LOs in Europe. The interview method was chosen on the one hand to collect general information about LOs, but above all, to gain deeper insight into the functioning of such institutions as well as the experience of the representatives in establishing and working within a LO. Qualitative interviews are applicable to collect data on perceptions and opinions of experts on specific issues (Barriball & While, 1994). In addition, the use of an interview guide enables to prioritise, while leaving room for the interviewees to add further information that is important to them (Cridland et al., 2015).

The interviewees were selected using a criteria-based selection process. The first criterion was country diversity. Representatives should come from separate European countries to gain more insight into different national management strategies. The second criterion is the diversity of the thematic focus, such as photography or awareness-raising. This criterion was chosen, because the whole range of institutions that call themselves LO should be described. The third criterion was the scale of the LO. This research sets a focus on local and regional LOs to have an in-dept insight into participatory processes.

The LOs were contacted by e-mail, mainly through the e-mail address of a person with a leading position in the institution. Further contacts were collected during the interviews. A total of 13 participants agreed to be interviewed (see Table 1).

Table 1: List of interview participants and the corresponding institution

Name LO	Country	Contact	Function of the Interviewee
Observatori del Paisatge	Catalonia, Spain	Pere Sala i Martí	Director
Observatório da Paisagem Protegida Local das Serras do Socorro e Archeira	Portugal	André Alves	Senior Technician, Commune of Torres Verdas in the department of environment and sustainability
Observatoire du Paysage – Parc régional Chasseral	Switzerland	Géraldine Guesdon-Annan	Project Manager, Parc régional Chasseral - Project for landscape and cultural heritage
Landschapsobservatorium – LandschappenNL	Netherlands	Gerrit Jan van Herwaarden	Policy Advisor at LandschappenNL
Osservatorio del Biellese Beni Culturali e Paesaggio	Italy	Patrizia Garzena	President
Observatoire photographique des Territoires du Massif Central	France	Pierre Enjelvin & Claire Planchat	P.E.: President C.P: Scientist and teacher, former president of the observatory
Laboratoire-observatoire du paysage Genevois	Switzerland	Charlotte Chowney & Natacha Guillaumont	C.C: Geographer and founder of the LO N.G.: Director of the faculty of landscape architecture at HEPIA and founder of the LO

Name LO	Country	Contact	Function of the Interviewee
Observatoire citoyen du paysage Parc naturel régional Jura Vaudois	Switzerland	Caroline Khamissé	Responsible for landscape and nature at Parc Jura Vaudois
Landskapsobservatorium Örebro	Sweden	Birgitta Elfström	Project leader
Landskapsobservatorium Västra Götaland	Sweden	Anders Nilson & Ida Carlsson	A.N. : Region Developer
Tájobszervatóriumok – Balaton	Hungary	Sándor Némethy	Scientist
POPP Breizh – Plateforme des Observatoires Photographiques du Paysage de Bretagne	France	Caroline Guittet	Project Leader
Observatoire du Paysage - Parc Naturel Plaines de l'Escaut	Belgium	Daniel Bragard	Project Leader for spatial planning and landscape

2.1.2 Conduct of the Interviews

Ten of the interviews were conducted via video call using Zoom (Zoom, 2022), two in writing due to language barriers and one in person, with the LO of Catalonia. The interviews were conducted using an interview guide in order to structure the interviews and to obtain consistent and comparable results (see Appendix A). The guide was designed carefully to ensure that the questions were not suggestive and as precise as possible (Kallio et al., 2016). The interview guide consisted of open and closed questions. The open questions were designed to allow space for discussion and further in-depth questions. The interview guide is divided into three parts. The first part aims to cover the basic facts about the LO. The second part focuses on the participatory nature and the stakeholder involvement in the institution and the third part covers the challenges, successes, and the policy impact of the LO.

2.1.3 Interview Evaluation

The interviews which were conducted via Zoom were recorded and transcribed using the software Trint (Trint, 2023). Simplified transcription was applied according to Dresing and Pehl (2010), where only the content of the conversation was recorded. The transcripts were intended to be as comprehensible as possible, therefore word repetitions or unnecessary filler words were excluded (Dresing & Pehl, 2010). The transcripts were analysed using the qualitative interview coding method (Mayring, 2000). Coding was carried out using the MaxQDA software (VERBI Software, 2022). Following Mayring's (2000) method, a coding key was created, combining inductive and deductive coding (see Table 2). The deductive coding categories were derived from the research questions and taken into account when creating the interview guide. The inductive coding categories are categories that became apparent during the evaluation of the interviews and were then directly included in the evaluation. The results of the coding were used to describe and categorise the LOs.

Table 2: Coding Key for the results of the qualitative interviews with representatives of European LOs (source: adapted from Mayring, 2000)

Category	Definition	Subcategory	Anchor Example	Coding Rule	Comment
Institution Description	This category includes any information about the structure of the LO, its legal status, and scale.	- Scale - Organisational Structure - Numbers - History	"LandschappenNL is representing 19 provincial organisations. So we are a national office, like an umbrella organization for 19 more regional provincial organisations, which are in effect also on their own independent, but who work together at LandschappenNL." (van Herwaarden, 2023, S.1)	Only information regarding the specific LO falls in this category. Structural or scale information of third parties or governmental entities will not be coded.	The category „numbers" was deleted during the coding process, due to lack of meaningfulness
Policy Impact	This category collects any information about the LOs connection to policy or decision-making and how the LO influences local/regional/national legislation.		"But the main goal about the Landscape Observatory, it is a decision support system linking the civil society, the scientific world, and the political decision-makers." (Némithy, 2023, S.2)		
Sustainability	This category includes all statements on sustainable development and the role of sustainability in the LO.		"And in this way, yes, you can say, it's a tool for the sustainability, but we have to say it's always a tool of documentation and a tool to speak with people and to try to make decision for better sustainability. But it's not a direct tool, it's always an indirect tool." (Guesdon-Annan, 2023, S.5)	Only text passages where sustainability is mentioned and labelled as such are coded.	
Challenges	This category gathers all the information about challenges and difficulties within the landscape, the Landscape Observatory and policy-making		"But I think one of the main challenges, is the difficulty to gather information about some indicators. There is one aspect that I think I am missing about	Only text passages where challenges are mentioned and labelled as such are coded.	Subcategories would have been beneficial here for the analysis:

Category	Definition	Subcategory	Anchor Example	Coding Rule	Comment
			this landscape, that is not directly related to the Landscape Observatory, but is very important to this area." (Alves, 2023, S.7)		- Challenges concerning landscape change / management - Challenges concerning the LO
Successes	This category includes all statements about best practices, successes and positive outcomes of the LO.		"For for us, we have like a community with people involved in the observatory. And yeah, I can say it's quite a success because after a couple of years we still have this community and we still have people interested to work with us on this Landscape Observatory." (Guesdon-Annan, 2023, S.7)	Only text passages where successes are mentioned and labelled as such are coded.	
Participation	This category includes all statements on the involvement of third parties such as public authorities, NGOs and civil society.	- Stakeholder-Involvement - Citizen-Involvement - Involvement of authorities	"From the beginning we start with people. Now we have like 25 people. We call them the "parrain et marraine du paysage", "Götti" from landscape. It's quite interesting because we meet them twice a year and we make some information of different topics." (Guesdon-Annan, 2023, S.1)	All statements about third parties, government authorities or citizens are coded in this section.	
Potential/Outlook	This category describes how the LO could or should develop in the future and which current projects are in progress.		"But I think one potential is to use these photographies with cartography, official catography. The day we can see this picture on a website from the Confederation. It would by interesting." (Guesdon-Annan, 2023, S.8)		

Category	Definition	Subcategory	Anchor Example	Coding Rule	Comment
Output	This category describes what data is collected and how it will be published.		"Last year we made an exhibition about the Landscape Observatory and it was quite interesting to really do this work, to document and describe the pictures." (Guesdon-Annan, 2023, S.2)		
Functions according to ELC	The ELC defined five functions that a LO should fulfil. This category includes all the statements about the functions or tasks the LO fulfils.	-Descriptive function -Network and Information Exchange function -Archive Function -Indicator assessment function -Scenario building function -Other	"The application we have is a set of indicators that let us manage and keep up in each indicator: How are we going at that time and running forward?" (Alves, 2023, S.1)		Others can be awareness rising or consulting function

2.2 Potential Analysis Engiadina Bassa / Val Müstair

2.2.1 Stakeholder Analysis

A stakeholder analysis (SA) was carried out for the Engiadina Bassa / Val Müstair case study. The SA followed the review by Bendtsen et al. (2021). First, a literature review was carried out to gain an overview on the region, including its geography, administration, culture, and history. The second step was to identify stakeholders who have an impact on, or are impacted by, the regional landscape. In this study "stakeholders" are defined as people, groups or institutions that can affect or will be affected by a potential LO in the region. This also includes powerless actors who merely have an interest in such a project (Bryson, 2004). Additional to stakeholders, also landscape experts were sought to collect information on the regional landscape management and the changes in the landscape. Three different methods were used to identify potential stakeholders:

1. Literature research: by reading local newspapers or by reading posts on the Internet, stakeholders were identified.

2. Expert nomination: Angelika Abderhalden, Director of the UNESCO Biosfera Engiadina Val Müstair, was asked to provide a list of key stakeholders, as she is an expert in landscape issues, especially in this particular study area.

3. Snowball sampling: In the interviews that followed, the participants were asked, if they knew of other case-specific individuals, groups, or institutions of interest.

Using the first two methods, 15 stakeholders/experts were identified and contacted by e-mail and interviews were conducted with ten stakeholders/experts (see Table 3). Semi-structured interviews were conducted to obtain further information about the stakeholders.

2.2.2 Qualitative Guided Interviews

The interviews were conducted by telephone, video call and in person. The interviews were not recorded. Notes were taken during the interview to summarise the important information mentioned. A protocol of the interview was written shortly after the interview in order to summarise and structure the notes taken during the interview. This method was chosen because the interviews were conducted under different conditions, i.e. the interviews were often combined with the participants introducing their institution. This resulted in interviews taking place outdoors or in changing locations, which would have made it difficult to record the interview. In order to maintain consistency throughout the method, it was decided to use protocols rather than recordings.

Table 3: Interview participants for the qualitative interviews in the case study region

Participant	Institution/ Function	Interview Format
Angelika Abderhalden	-UNESCO Biosphärenreservat Engiadina Bassa Val Müstair -Pro Terra Engiadina - Landscape Expert	Videocall
Curdin Tones	Somalgors 74	In person
Duri Jannett	-Expert in the regional landscape -Responsible for the maintenance of hiking trails in Tschlin	In person
Jon Duri Tratschin	Archiv Cultural Engiadina Bassa	In person
Jon Mathieu	Expert in Landscape History and the Alps	Videocall
Mario Pult	Archiv Cultural Engiadina Bassa	Phonecall
Martina Schlapbach	Regiun Engiadina Bassa Val Müstair	Videocall
Patrick Cassitti	Archaeological Archive - Stiftung Kloster St. Johann Müstair	In person
Linda Feichtinger	Parc da natüra Biosfera Val Müstair	Videocall
Enrico Celio	Expert in landscape development and representative of the model project INSCUNTRAR	In person

The interviews were explorative using an interview guide (see Appendix B). The interview consisted of three main parts. The first part aimed to capture the current and desired state of the regional landscape and its management. The second part explored the current and targeted state of stakeholder and citizen involvement in landscape-related policy-making processes. In the third part, a prototype testing was carried out where the four different types of LOs were discussed and the reactions and comments on the types were collected. This third part was only carried out with four stakeholders, who are actively working with landscape and have a holistic understanding of landscape management. Otherwise, experience has shown that it is too complex and abstract to discuss several potential LO types and how they would operate in the Engiadina Bassa/Val Müstair. For reasons of confidentiality, the data from the interviews will be anonymised and coded with the numbers 1 to 10.

2.2.3 Interview Evaluation

The protocols were coded according to the methodology of Mayring (2000) (see Table 4). The coding categories were again created combining an inductive and deductive method. The results of the interviews and literature research were then transformed into a Power-Interest Grid (Ackermann & Eden,

2011) and a Participation Planning Matrix (Bryson, 2004; USAID, 2020). The Power-Interest Grid is a tool to visualize the relevant stakeholders and their role in the current landscape management, further it helps to identify possible collaborations which could be beneficial in considering a potential LO (Bryson, 2004). The Participation Planning Matrix shows the different stakeholders' possible role in the implementation process of a regional LO.

Table 4: Coding Key for the results of the qualitative interviews with stakeholders and experts of the landscape in the region Engiadina Bassa / Val Müstair (source: adapted from Mayring, 2000)

Category	Definition	Subcategory	Anchor Example	Coding Rule	Comment
Relation to the landscape	This category describes the participants', or their institutions' relation to the landscape of Engiadina Bassa / Val Müstair		Various projects are underway with the landscape. For example, gardening, beekeeping and the biggest project about smelling the landscape. (Interview 8, 2023)	Only the activities of the person/organisation that relate to the landscape are considered	These statements can be very personal or spoken form an institutions' point of view.
Landscape Management	This category brings together all the information on how the landscape is managed in the region. The challenges and conflicts of the current management form a sub-category, how the landscape should be managed.	-Description -Wishes -Challenges/Conflicts	There was no agriculture in the Alpine region for a long time (only livestock farming), but it has now been rediscovered. (Interview 5, 2023)	Only case-specific information is collected in this category.	
Landscape Observatory Engiadina Bassa / Val Müstair	All statements on the implementation of a LO in the case study region are collected. The subcategories describe the participants' wishes for a LO, the potential they see in it, and the challenges they suspect in its implementation.	-Wishes -Challenges -Potential	Perhaps it would be exciting to find out in an LO what landscape means to whom and what demands are attached to landscape. Also, what the connection is to identity and whether landscape is only perceived in human terms. (Interview 8, 2023)	The sub-categories of 'wishes' and 'potential' are to be distinguished carefully. The potential describes functions or contents that the participant could imagine in the LO. Wishes are open desires that the participant would like to be addressed.	
Stakeholder	This category collects information on other key-stakeholders mentioned by the participants.	-further stakeholders to contact	Foundation for landscape conservation Switzerland would be interesting to contact. (Interview 8, 2023)	Only names of institutions or people that are still active were collected.	

3. Landscape Observatories in Europe

3.1 What is a Landscape Observatory?

The ELC promotes an integrated landscape approach, where the complexity of the landscape with all its elements and meanings should be acknowledged and treated in a holistic and inclusive way (Bürgi et al., 2017; Council of Europe, 2000). Landscape Observatories (LO) were introduced as a tool to observe these interconnected components and monitor the changes in the landscape (Council of Europe Committee of Ministers, 2008). LOs are described as centres, institutions or platforms that monitor the landscape, publish the collected data and create space for discussion on further development and policy-making in terms of landscape. The ELC therefore defined five functions that a landscape observatory should fulfil (Council of Europe Committee of Ministers, 2008, S.21) "

- Describe the condition of landscapes at a given time;

- Exchange information on policies and experience concerning protection, management and planning, public participation and implementation at different levels;

- Use and, if necessary, compile historical documents on landscapes which could be useful foreknowing how the landscapes concerned have developed (archives, text, photographs, etc.);

- Draw up quantitative and qualitative indicators to assess the effectiveness of landscape policies;

- Furnish data leading to an understanding of trends and to forecasts or forward-looking scenarios."

There are no strict rules to follow when implementing a LO, leaving room for creativity and to adapt the LO structure to the needs of certain scales and to adjust them to the already existing landscape management. LOs can operate on any scale, from local to national, and in some cases even transnational.

In the following research, only institutions that label themselves "Landscape Observatory" are considered as such. Due to the rather broad definition of a LO many more institutions, associations or projects may call themselves a Landscape Observatory by fulfilling one or more functions, however this study lays a focus only on institutions named "Landscape Observatory".

3.2 Portraits of European Landscape Observatories

The following chapter presents 13 European LOs. The portraits of the LOs consist of general information, the definition of an LO, the functions fulfilled according to the ELC and a description of their participatory character. Also, if the LO fulfils functions other than those described by the ELC, they are also mentioned, such as consulting function or awareness-rising function. The portraits are based on the information collected in the interviews; they are referenced at the end of each portrait.

There are several LOs in Switzerland, which differ in scale, function and organisational structure. The LOs of the Parc Jura Vaudoise and Parc Chasseral are Photographic Landscape Observatories (PLO), whereas LABES is a national indicator-based monitoring program (Guesdon-Annan, 2023; Khamissé, 2023; Roth et al., 2010). There is even a new LO developing, the LaPAGE in Genève (Chowney & Guillaumont, 2023).

3.2.1 LABES

The Landschaftsbeobachtung Schweiz (LABES) aims to document the changes in the landscape of Switzerland and to make this data openly accessible in order to support the transition to sustainable landscape use (Roth et al., 2010). It is an indicator-based monitoring programme of the physical and perceived landscape, developed by the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL) in collaboration with the Federal Office for the Environment (FOEN) (Kienast et al., 2015). Data is collected from geospatial analysis and a nationwide survey (Kienast et al., 2015). The output of this monitoring program are datasets and three reports, published in 2010, 2017 and 2023 (BAFU & WSL, 2022; Rey et al., 2017; Roth et al., 2010). LABES was established before the ratification of the ELC, however it is seen as a tool to fulfil the agreement. LABES can be described as a LO, even though it is not labelled as one.

3.2.2 Observatoire du Paysage – Parc régional Chasseral

Country	Scale	Organisational Structure
Switzerland	Regional	The LO is a photographic observatory and a project of the Chasseral Regional Nature Park. It was initiated in 2017.

Definition LO

«For me, it's connected to the photography (…) There are three dimensions of this observatory: the knowledge, the sensibilization and the documentation. And for me, is not about the big landscape rather the landscape around us. It's quite interesting because when you speak about Landscape Observatories with people that don't know, you speak about landscape, always the big landscape, the beautiful one, the panorama. And in our case we like where we live, the village and all these things." – (Guesdon-Annan, 2023, S.1)

Table 5: LO Function according to the ELC, LO Parc régional Chasseral

Descriptive Function	☒	Repetitive photos are taken at different locations in the park but are not yet analysed or published.
Exchange and Network Function	☑	The idea of the Photographic LO was inspired by an example in France. The LO is also in contact with other LOs in Europe, such as the LO in Brittany. In Switzerland, the LO is also involved in different matters relating to photographic documentation of the landscape. For example, there is an exchange with the "Haute école d'ingénierie et de gestion du canton de Vaud".
Archive Function	☑	They are working with archive photographs to show the changes in the landscape more clearly.
Qualitative and quantitative Indicators	☒	
Data Analysis and Scenario Building	☒	
Other	☑	The LO aims to sensitise a part of the population living in the park to the topic of landscape and its change. It is also intended to show new ways of working with the landscape apart from LABES.

Participatory Character

The LO in the Parc régional Chasseral has a godfather/godmother system. Volunteers who live in the park or have a connection to it can become godfathers/godmothers of the park and take part in the LO's photo documentation programme. These volunteers take photos of the same sites each year.

Source: Guesdon-Annan, 2023

3.2.3 Observatoire citoyen du paysage - Parc naturel régional Jura Vaudois

Country	Scale	Organisational Structure
Switzerland	Regional	The LO is a project of the Parc Jura Vaudois and focuses specifically on the photographic documentation of the landscape. As part of this project, 100 historical archive photographs have been collected. The next step is to repeat these 100 archival photographs in order to visually capture the current state and aiming to show the evolution of the landscape. The project is still ongoing and archive photos are still to be repeated.

Definition LO

"For me, it's a way to monitor the landscape and to see the evolution of the full landscape in time." – (Khamissé, 2023, S.1)

Table 6: LO Function according to the ELC, LO Parc Jura Vaudoise

Descriptive Function	☑	The photographs have not yet been evaluated, since not all 100 photographs are taken. They should be used to describe and show the change in the landscape.
Exchange and Network Function	☒	When the LO was set up, they were in contact with other Swiss and French LOs, but now this exchange faded.
Archive Function	☑	Archival photographs of the landscape were collected of which 100 photographs were selected for replication.
Qualitative and quantitative Indicators	☒	
Data Analysis and Scenario Building	☒	
Other	☑	The replication of the photographs should make the participants aware of landscape-relevant topics.

Participatory Character

The collection of the archive photographs was done with the help of the community through calls on social media, the website, and newsletters. The next step was to find volunteers willing to take the repeat-photos. Around 30 people are currently volunteering. Each volunteer was able to choose between one and ten archive photos that they would then remake. In addition, a photographer is available to provide technical assistance to the volunteers.

Source: (Khamissé, 2023)

3.2.4 Laboratoire-Observatoire du paysage genevois LaPAGE

Country	Scale	Organisational Structure
Switzerland	Local/Regional	The LO, which is still in development, is the result of a project launched in 2017 by HEPIA (Geneva School of Landscape, Engineering and Architecture). The aim of the LO is to create a platform for the exchange of information and thus build a bridge between the cantonal administration, the university and the population. Through this cooperation, the LO aims to ensure the sustainable use, planning and management of the region. The LO serves as an instrument to bring together the expertise, experience and needs of different actors and thus to promote a holistic and future-oriented development of the landscape.

Definition LO

"But basically, our definition of Landscape Observatory, for us what we're trying to do is really some kind of platform to collect and bring together and exchange and share information and awareness to environmental and spatial and living issues within the framework of landscape and sustainable development." – (Chowney & Guillaumont, 2023, S.2)

Table 7: LO Function according to the ELC, LaPAGE

Descriptive Function	☑	The aim of the LO is to record changes in the landscape and to share and process this information.
Exchange and Network Function	☑	The LO should be designed as a platform for the exchange of information between as many stakeholders as possible, the cantonal administration and the university.
Archive Function	☒	
Qualitative and quantitative Indicators	☒	In any case, data should be collected, but it is not yet clear in what form. Indicators were not mentioned, but perceptions of the landscape should certainly be recorded.
Data Analysis and Scenario Building	☒	
Other	☑	By involving different stakeholders, attention is drawn to different problems and issues in landscape planning and awareness is raised.

Participatory Character

The project was initiated by HEPIA, and from the beginning of the project there has been close cooperation with the cantonal administration, which has been actively involved in the development and brainstorming of the LO. The question of who will be in charge of this project is still open and under discussion. In the planned implementation of the LO, cooperation with

various stakeholders will be sought. This inclusive approach allows for a broad participation of different stakeholders and leads to more sustainable solutions for the challenges and projects at hand.

Source: (Chowney & Guillaumont, 2023)

3.2.5 Landscape Observatory of Catalonia

Country	Scale	Organisational Structure
Spain	Regional	The LO acts as an advisory body to the government of Catalonia in landscape issues and strives to fulfil all functions defined by the ELC.

The LO of Catalonia is one of the most active and most established LO in Europe, as it was mentioned in multiple interviews (Elfström, 2023; Nilson & Carlsson, 2023). The LO was established in 2005. Due to a shift in government from more ecological interests to social and cultural interests, the LO was initiated as a tool to follow up the ELC. During the first three years they developed a methodology on how the LO could benefit the local authorities and fulfil all the functions given by the ELC (Sala i Martí et al., 2023, S.1). The main tool was the creation of landscape catalogues (Sala i Martí et al., 2023, S.1). These catalogues describe the landscape quality and define the landscape objectives for the region (Nogué i Font et al., 2016). Over the years, landscape catalogues have been put together for each spatial unit (9 Catalogues in total) and are still being developed. Another unique aspect of the LO of Catalonia is its Documentation Centre. The centre compiles various resources on landscape-related topics, such as newspapers, magazines, books, or audio files (Sala i Martí et al., 2023, S.3).

What is unique about the LO of Catalonia is their full commitment to the ELC. There is no individual definition of the term LO or landscape for that matter, but they use the ones given by the ELC (Sala i Martí et al., 2023, S.1). Also remarkable is their functionality on different scales. Although the LO is limited to the region of Catalonia, they are working on the landscape catalogues in local contexts (Sala i Martí et al., 2023, S.4). They also strive to maintain contacts all around the world and thus to accompany landscape themes internationally (Sala i Martí et al., 2023, S.3). This work is very important and the LO in Catalonia supports many other LOs or landscape-oriented projects throughout Europe.

Table 8: LO Function according to the ELC, LO of Catalonia

Descriptive Function	☑	The tool of Landscape Catalogues is used to describe the entire landscape of Catalonia.
Exchange and Network Function	☑	The LO Board Members consist of local authorities, stakeholders, and representatives from local universities. It therefore provides a platform for the exchange of knowledge and diverse insights. In addition, the LO is in contact with several other LOs around the world, offering their expertise in landscape policy-making.

Archive Function	☑	The Documentation Centre is a detailed compilation of important literature on landscape issues. The LO also hosts a platform of landscape photographs from the region, but they do not collect historical documents.
Qualitative and quantitative Indicators	☑	For the Landscape Catalogue, indicators are created to monitor changes in the landscape.
Data Analysis and Scenario Building	☑	The data collected is compiled into maps or other publications. Scenario building is also actively undertaken by working closely with the authorities and defining landscape objectives.
Other	☑	Awareness raising is another important function of the LO in Catalonia. Workshops, presentations, newsletters etc. are used to reach different groups of the population and to raise their awareness on landscape topics.

Participation & Policy Impact

The LO of Catalonia actively seeks for a high level of participation. For the work on the Landscape Catalogues, local stakeholders and authorities have been involved to agree on landscape objectives (Nogué i Font et al., 2016). They are also open to any kind of collaboration with universities or the media. To keep the landscape in constant dialogue, the administrative Board of the LO consists of different stakeholders, authorities, and representatives from universities (Sala i Martí et al., 2023, S.1).

They work closely with the authorities to achieve their aim of improving the recognition of the landscape in policy (Sala i Martí et al., 2023, S.1).The Documentation Centre is consulted by local technicians for information on landscape issues (Sala i Martí et al., 2023, S.3). The LO also organises workshops or courses on specific landscape-related topics for interested representatives of the public administration sector (Sala i Martí et al., 2023, S.5).

Source : (Nogué i Font et al., n.d.; Sala i Martí et al., 2023)

3.2.6 Observatório da Paisagem Protegida Local das Serras do Socorro e Archeira

Country	Scale	Organisational Structure
Portugal	Local	The LO covers a local nature reserve and acts as an indicator-based monitoring tool for the comprehensive analysis and documentation of the landscape and its dynamic changes. The LO is led by the Municipality of Torres Vedras, which plays a central role in its coordination and implementation.

Definition LO

"In our case, it's the monitoring program that we have to do in our local protected area. And we call it Landscape Observatory." – (Alves, 2023, S.1)

Table 9: LO Function according to the ELC, LO of the local protected area Serras do Socorro e Archeira

Descriptive Function	✅	The LO has an indicator-based monitoring function for the local protected area.
Exchange and Network Function	❌	There is no contact to other LOs, except from the national conference of protected areas.
Archive Function	❌	
Qualitative and quantitative Indicators	✅	The site is monitored using approximately 30 indicators in the areas of natural values, cultural values and socio-economic values.
Data Analysis and Scenario Building	❌	Not yet, but planed for the future development of the LO
Other	✅	The LO is an advisory tool for the municipality to support them in landscape management and therefore has a consulting function.

Participatory Character

The LO requires greater involvement of the community, which has not been involved so far. Some stakeholders are indirectly involved through a Community Advisory Board. In bi-annual meetings, they are invited to discuss and jointly develop the agenda for the next six months. In this way, the various stakeholders are involved in the decision-making process and their perspectives are heard.

Source: (Alves, 2023)

3.2.7 Landschapsobservatorium – LandschappenNL

Country	Scale	Organisational Structure
Netherlands	National	LandschappenNL acts as an umbrella organisation for various NGOs in the Netherlands that deal with landscape-related issues on a national level. The LO is a project of LandschappenNL to record changes in the landscape. However, the LO is not very active at the moment and there have already been discussions about a possible termination of the project.

Definition LO

"We had three important parts of the observatory which we wanted to work on. The first one was the physical observations on the landscape. What do we see on developments and changes in the landscape? (…) The second one is, we want to see how the policies on landscape developement. (…) And of course, we think that, then comes the third part, the participatory part of the Landscape Observatory, which is how are the people living in the landscape evolved? What do they think of these changes and what do they want with their landscape?

How do they value their landscape? What is important to them?" - (van Herwaarden, 2023, S. 2)

Descriptive Function	✅	The main task of the LO is to monitor the landscape, including the monitoring of ongoing landscape policies.
Exchange and Network Function	✅	There are some international relationships with other LOs and with the European Environmental Bureau in Brussels.
Archive Function	✅	An archive is maintained to compare the data collected during the current monitoring with previous monitoring.
Qualitative and quantitative Indicators	✅	Monitoring of small structures in the landscape is carried out based on indicators.
Data Analysis and Scenario Building	❎	
Other	✅	Another of the LO's functions is to raise public awareness of the landscape issues by introducing citizens into the monitoring activities.

Participatory Character

One of the main activities of the LO is the mapping of small structures in the landscape, with the active involvement of the citizens. This community involvement is currently the only direct contact with citizens and stakeholders. There are difficulties in establishing contact with other stakeholders, such as the landowners. Further efforts are therefore needed to strengthen these relationships and ensure effective cooperation.

Source: (van Herwaarden, 2023)

3.2.8 Landskapsobservatorium Västra Götaland

Land	Scale	Organisational Structure
Schweden	Regional	The LO is part of the regional authorities of Västra Götaland and consists of two employees. The LO started with a pilot project in 2019 and has since been funded and continued. They work project oriented with the aim of addressing landscape issues in a participative approach.

Definition LO

"For us it is a platform. We have created a platform to be able to work with all the different landscape issues, cross-section or narrowly." – (Nilson & Carlsson, 2023, S.1)

Table 11: LO Function according to the ELC, LO Västra Götaland

Descriptive Function	☒	
Exchange and Network Functionn	☑	The LO is in contact with other national and international LOs. They are also part of the CIVILSCAPE network and are in contact with the Council of Europe. Further, the LO addresses landscape issues and encourages the emergence of cross-sectoral and collaborative projects.
Archive Function	☒	
Qualitative and quantitative Indicators	☒	
Data Analysis and Scenario Building	☒	In the near future, there are plans for a project on future landscapes and how they are perceived.
Other	☑	Awareness on landscape issues is raised through the work with citizens and stakeholder.

Participatory Character

The LO works closely with a wide range of stakeholders, including heritage associations, universities, and local councils. Fostering exchange and collaboration between these different stakeholders is the main approach to address landscape issues. By working with the different stakeholders, a wide range of expertise and resources are collected.

Source: (Nilson & Carlsson, 2023)

3.2.9 Landskapsobservatorium Örebro

Country	Scale	Organisational Structure
Sweden	Regional	The LO is an institution for working on various landscape-related projects, partially funded by the Örebro Läns Museum. The key aspect of this LO is to seek dialogue with people and raise awareness on the importance of the landscape.

Definition LO

"I think it lends itself to a lot of different things. And we used it in order to highlight the importance of landscape. (…) In the convention landscape is used in a slightly different meaning and we're trying to raise awareness and knowledge about the landscape, how the landscape is affecting us and how we are affecting the landscape." - (Elfström, 2023, S.1)

Descriptive Function	☒	
Exchange and Network Function	☑	The focus of the LO is on relationships. Relationships between humans and nature, humans, and history, and between humans and humans. Therefore, the flow a vivid dialogue and exchange is fostered.
Archive Function	☒	There is a lot of dialogue about the landscape and practices of the past, but the data is not recorded or stored.
Qualitative and quantitative Indicators	☒	
Data Analysis and Scenario Building	☑	Within the dialogue with people, future landscape management is discussed, and wishes are gathered.
Other	☑	Raising awareness of landscape and heritage is ensured through a mobile museum.

Participatory Character

The LO seeks actively for dialogue with various stakeholder and citizens about landscape matters. Collaboration for projects is sought with people living in specific areas, different associations, such as heritage associations, and NGOs. Another approach is to involve artists in landscape issues. Through interaction with the public, interest groups and other stakeholders, active participation is sought to deepen a common understanding of landscape, its diversity and its values. The LO thus opens up opportunities to mobilise society and gain broad support for the protection, conservation and sustainable development of the landscape and therefore fosters bottom-up projects.

Source: (Elfström, 2023)

3.2.10 Osservatorio del Biellese Beni Culturali e Paesaggio

Country	Scale	Organisational Structure
Italy	Regional	The LO is an association of volunteers who want to work for/with the landscape. There are approximately 30 members of the LO, 20 of them are other organisations, like NGOs, foundations etc. The main activities of the LO are campaigns and organizing events.

Definition LO

"I think in our case it is a network. It could be a network of other organizations or a network of people. And I think that the main goal is building up relationships between the people, the landscape, and the transformation that is going on. So I think that a Landscape Observatory is something very dynamic." – (Garzena, 2023, S.1)

Descriptive Function	☑	The LO wants to help local people identify and describe the landscape.
Exchange and Network Function	☑	The aim of the LO is to create a network of different people and organisations to stimulate the exchange of information. The LO is also part of the CIVILSCAPE, an international association for organizations that aim to protect, manage and plan the landscape according to the ELC (CIVILSCAPE, 2021).
Archive Function	☒	
Qualitative and quantitative Indicators	☒	
Data Analysis and Scenario Building	☒	
Other	☑	An important function is to raise the awareness of the local population. People in the region should be aware of the landscape and it is change.

Participatory Character

As part of the LO, walks are offered specifically for the local population. These walks focus on places in the landscape that have undergone major changes and serve as an opportunity for discussion and exchange. However, cooperation with the local authorities has ceased. Instead, other stakeholders are to be involved. In particular, the LO wants to work with industrial stakeholders, as industry is very present in the area.

Source : (Garzena, 2023)

3.2.11 Observatoire photographique des Territoires du Massif Central (OPTMC)

Country	Scale	Organisational Structure
France	Local-national	The OPTMC is an association founded in 1999. It is specialized on photographic LOs and was created with the aim of recording the evolution of the landscape. The idea of a photographic LO was initiated by the French Ministry of Environment. The association is made up of about 60 people from different backgrounds, all working on a voluntary basis. The OPTMC maintains several photographic LOs for different projects in France.

Definition LO

"…the speciality of our association, is not just to observe the landscape, but each Landscape Observatory we created is linked with policy, with a project, with a territorial project. "– (Planchet, 2023, S.2)

Table 14: LO Function according to the ELC, OPTMC

Descriptive Function	✓	Landscape photographs are collected, analysed, and the landscape elements are described.
Exchange and Network Function	✓	OPTMC itself works as a network of many PLOs. The PLOs act on local level but the OPTMC is working nationally. To create a permanent link with the public authorities, the OPTMC aims to provide a platform for discussion between the population and political decision-makers.
Archive Function	✗	
Qualitative and quantitative Indicators	✗	
Data Analysis and Scenario Building	✗	
Other	✓	Various projects are designed to bring people closer to the landscape and to understand the change of landscape. Therefore, through the integration of citizens in their projects, awareness is raised.

Participatory Character

Participation is one of the core principles of the OPTMC. Several projects actively encourage community participation, whether through residents taking photographs or discussing and sharing the results. In addition, some projects record the landscape as perceived by local people. It is important to note that many projects involve not only local citizens but also other relevant stakeholders such as policy makers, scientists, and photographer. The OPTMC thus creates a platform to actively involve the different actors and to work together on the projects.

Source : (Planchet, 2023)

3.2.12 Observatoire photographique des Paysages - Parc Naturel des Plaines de l'Escaut

Country	Scale	Organisational Structure
Belgium/France	Regional	The photographic LO is part of the Plaines de L'Escaut Nature Park in Belgium and the Scarpe-Scheldt Regional Nature Park in France. The LO was developed as a superordinate structure for cross-border monitoring of the landscape. The project lasted for three years and has been suspended for the time being.

Definition LO

"The Landscape Observatory is a tool for monitoring and decision-making." - (Bragard, 2023, S.2)

Descriptive Function	✅	Over a period of three years, 60 sites were photographed and described.
Exchange and Net-work Function	✅	The photos were published on an interactive website.
Archive Function	❎	
Qualitative and quan-titative Indicators	✅	The photographs were analysed, using quantitative indicators to describe elements on the pictures. The perceived landscape was determined through interviews.
Data Analysis and Scenario Building	✅	The photographs were analysed, and trends were determined. A document was created, explaining possible scenarios for future landscape development.
Other	❎	

Participatory Character

The project placed particular emphasis on involving the inhabitants of the Wallonia region. The LO photographic project was launched with a competition in which the local population could take part. The task was to choose a postcard or an old photograph of the nature park and to repeat it in the present time. The idea was to make the changes in the landscape visible. This participatory approach allowed the local people to take an active part in the recording and documenting of the evolution of the landscape and to contribute their personal perspectives and memories.

Source : (Bragard, 2023)

3.2.13 POPP Breizh - Plateforme des Observatoires Photographiques du Paysage en Bretagne

Country	Scale	Organisational Sturcture
France	Regional	The Observatoire de l'Environnement en Bretagne is a public interest association, managed by the State of France, the region of Brittany and the member municipalities. Its main activity is to monitor the environment and to communicate the results to the public and the decision-makers. In addition to water and bi-odiversity, landscape is another focus of the observatory.

Definition LO

"A Photographic Observatory of the Landscape (OPP): imaging landscape transformations, showing what is invisible to human perception, overcoming landscape amnesia, creating images of everyday landscapes, creating a body for discussion with territorial governance.

Landscape Observatory : - Establish the state of landscapes at given periods;

- Develop quantitative and qualitative indicators on landscape policies;

- Provide information to help understand trends. "– (Guittet, 2023)

Table 16: LO Function according to the ELC, POPP Breizh

Descriptive Function	☑	They collect landscape-related data, both physical and perceptual, and build a landscape database.
Exchange and Network Function	☑	There is a lively exchange with stakeholders, authorities, and citizens. At a wider level, they are members of other landscape networks.
Archive Function	☒	
Qualitative and quantitative Indicators	☑	At the moment, they are in the process of developing a set of landscape indicators.
Data Analysis and Scenario Building	☑	A big part of the LO is putting the data collected into perspective and discussing future scenarios.
Other	☒	

Participatory Character

The Observatoire de l'Environnement en Bretagne is built on a foundation of participation. Each project within the Observatory must respond to local needs and has an operational dimension. Another focus is awareness-raising. Through newsletters, events, workshops, surveys, and participatory tools such as the Photographic Observatories, landscape-related issues are disseminated to different stakeholder groups.

Source: (Guittet, 2023; Observatoire de l'Environnement en Bretagne, 2023)

3.3 Categorisation of the European Landscape Observatories

The portraits of the European LOs display a broad variety in implementations. They differ in their objectives, functions, organisational structure, and activities. These differences are particularly evident when comparing the participatory character of LOs and their influence on local, regional, and national policies.

Participation in this context refers to the degree of involvement and integration of stakeholders and the population in an LO. First, a distinction is made between top-down and bottom-up projects (Fraser et al., 2006). A further distinction is made according to the number and diversity of groups involved in the participatory process. These can be stakeholders, experts, interest groups or social groups (M. S. Reed et al., 2018). A way to describe the degree of stakeholder/citizen involvement is Davidsons' (1998) Wheel of Participation, naming four forms of public engagement. The first form of public engagement is information, where information is shared, and plans are made available to specific groups. The second form is consultation, where stakeholders are targeted and asked for their input. Popular means of consultation are conferences or events to stimulate local dialogue, so stakeholders are deliberately approached and asked for their input. The third form is participation, which involves actively working with stakeholders to develop approaches and discuss ideas. A commonly used method is for example the round table. The highest level of involvement is the empowerment, which gives the participants a certain amount of power and control over the institution (Davidson, 1998).

The influence of LOs on policy and local, regional, or national authorities can have different levels. The first level is the independent work of the LOs without any connection to the authorities, as these LOs usually have other objectives such as raising public awareness. The next level is information exchange, which can for example take the form of an annual report prepared by the LO. The third stage is collaboration, where the authorities are firmly integrated into the LO and a two-way dialogue takes place. The final form is inclusion, where the LO is part of the authority structure and is always consulted and involved in decisions with implications for landscape development. In this case, the LO serves as a decision-making tool.

Based on these criteria, the LOs studied can be placed on a grid of participation and policy influence (see Figure 1). By placing the LOs in this grid, a distinction into different types is possible. Four different types of LOs emerge from this grid:

- Monitoring LO
- Platform LO
- Photographic LO
- Awareness LO

The categorisation is a synthesis of the gained knowledge from the LO interviews, which simplifies the understanding and comparison of the different LOs. Each type has distinctive characteristics and objectives that are reflected in the output of the LOs.

Figure 1: Categorisation of European LOs in a Participation and Policy Influence Grid. (Source: Synthesis of the LO-Interviews, for specific citations see chapter 3.2)

3.3.1 Monitoring LO

Description

The focus of this type of LO is on describing the landscape and recording its changes. The LO is seen here as a tool rather than a stand-alone institution. The main activity of this type of LO is the collection and processing of data, predominantly indicator-based data. They tend to be part of an existing institution and used as a tool. This institution is often a local, regional or national authority but it may also be part of an NGO.

Participation

Monitoring LOs are characterised by a low level of participation. They focus on the generation of physical landscape data and sometimes the perceived landscape is also collected through interviews or surveys. People may be involved in data collection, for example through citizen science projects. This is usually the highest level of participation within monitoring LOs.

Policy Impact

The fact that Monitoring LOs can be integrated as a tool in administrative bodies makes them effective and applied. The generated data can be used as a reference for developing new policies or revising existing ones. Such a system can also help to promote the integration of the landscape into other policy sectors, such as agricultural or spatial planning, and highlight its importance.

Challenges

One challenge in Monitoring LOs is to adapt the indicators appropriately. On the one hand, the indicators should always be up-to-date and adaptable to new circumstances e.g., policy needs and technological development, but still comparable to the indicators previously evaluated. In addition, a Monitoring LO can be costly, especially at the local level where financial resources are limited. This can slow down or even stop such projects. Further, the data storage can be challenging. Maintenance and upkeep of storage locations is complex and costly. It needs to be ensured that the different data captured is of the same quality and type. Ideally, they should be in a standardised format if one exists at national level. This would allow them to be used by other institutions. The data should be publicly available and mediated for society, which can be a challenge as well.

Examples

- LO de Serras do Socorro, Portugal
- LABES, Switzerland

Sources : (Alves, 2023; Kienast et al., 2015)

3.3.2 Photographic LO (PLO)

Description

PLOs use a more artistic/visual approach on landscape monitoring. A common method within PLOs is repeat photography, in which landscape photographs are taken repeatedly at fixed intervals. This is done to visualise and document changes in the landscape. Archival photographs, such as old postcards are used to generate data over long periods of time. PLOs are usually part of another institution or organisational unit, such as a nature park.

Participation

There are two main types of photographic LOs: In the first type, the photos are taken by professional photographers, ensuring high quality and accurate reproduction. In the second type, PLOs are set up as citizen-science projects and use volunteers or school classes to take the pictures. This also serves to raise awareness of landscape change in society. Other stakeholders are not included in PLOs, which keeps their participative character on a rather low level.

Policy Impact

The policy impact of PLOs is limited. Few opportunities have been found to publish or use the collected photos, in order to influence policy-making processes. As a result, they receive little attention from the public administration.

Challenges

The main challenge, as mentioned above, is the usage of the data. There are ways to analyse the images for elements and changes in the landscape, but they are inconsistent and not applied in each PLO. The photos are, if so, published on websites, and therefore reach only a limited audience. However, when published in an exhibition, they reach a larger audience and experiences showed success with this approach. A further challenge is to keep up the motivation of volunteers or to find new ones.

Examples

- LO Plaines de L'Escaut, Belgium
- LO du Parc Jura Vaudoise, Switzerland
- LO du Parc régional Chasseral, Switzerland

Sources : (Bragard, 2023; Guesdon-Annan, 2023; Khamissé, 2023)

3.3.3 Awareness LO

Description

The main task of the Awareness LO is to bring the landscape into the public discourse and to raise awareness of landscape issues in society. Various methods are used to raise awareness, such as eco-museums, events, workshops or involving citizens in monitoring programs.

Participation

Participation is at the core of the Awareness LOs. On the one hand, dialogue and interaction with the population is seen as important. As many people as possible should be confronted with issues concerning their environment and the surrounding landscape, and their interest in landscape issues should be increased. On the other hand, stakeholders are also involved and sensitized on their influence on the landscape. In some ecosystem management projects, relevant stakeholders are sought in order to pool their perspectives and knowledge and describe their influence on the landscape.

Policy Impact

Awareness LOs typically have limited policy impact, although this would be desired and sought after. Their reach is insufficient to get the authorities attention, and achieving general recognition from the authorities is already considered a successful outcome. Also, they often do not collect any data which could simplify communication with the authorities.

Challenges

Financial resources are scarce in such institutions. They constantly have to look for additional funding, which can be time intensive. Due to the distance to the public authorities, they do not receive any financial support from them. Concerns were raised about the future development of the Awareness LOs. There is a lack of motivated people to take over the LO or to volunteer. Even if the positions in the LOs are partly paid or embedded in an institution, there is a lack of initiative and commitment.

Examples

- LO of Biella, Italy
- LO Örebro, Sweden
- LO Landschappen NL, Netherlands

Sources: (Elfström, 2023; Garzena, 2023; van Herwaarden, 2023)

3.3.4 Platform LO

Description

Platform LOs are characterised by high participation and strong policy influence. It's the most developed type of LO and its main function is to create a platform where knowledge about the landscape is collected, shared, and discussed. The focus is not on indicator-based knowledge, but on data relevant to a specific project. The perceived landscape is often recognized in Platform LOs, since it can be meaningful to the development of landscapes. Platform LOs strive to establish links between the population, science, authorities, and other stakeholders. They consider networking and participation as fundamental principles for sustainable landscape development. Platform LOs also have consulting and coordination functions. They mediate and organise collaborations between different stakeholders. Platform LOs can be project-oriented and accompany future projects that influence the local landscape.

Participation

Platform LOs value a high citizen and stakeholder participation. Through a vivid exchange, knowledge and expertise of different people and organisations are collected. The collected knowledge is used to create a holistic understanding of landscape issues and is applied to different projects. Also, Platform LOs can have a consulting function since they collect different perspectives and opinions on landscape issues.

Policy Impact

Platform LOs act closely with public authorities. Either they are part of a public institution, or they are commissioned by authorities to carry out projects. This results in a direct influence on political decision-making processes.

Challenges

Like many LOs, Platform LOs also contend with limited financial resources. Publicly affiliated Platform LOs must frequently justify the benefits of their work to secure funding. Conversely, other Platform LOs, which are not directly part of a public authority often rely on contracts or partial financial backing.

Exempels

- LO LaPAGE, Switzerland
- LO des Territoires du Massif Central, France
- LO Västra Götaland, Sweden
- LO Catalonia, Spain
- LO Bretagne, France

Sources :(Chowney & Guillaumont, 2023; Guittet, 2023; Nilson & Carlsson, 2023; Planchet, 2023; Sala i Martí et a l., 2023)

4. Landscape Management Engiadina Bassa / Val Müstair

4.1 Case Study Engiadina Bassa / Val Müstair

The Engiadina Bassa / Val Müstair is an alpine region located in the Canton of Grisons, Switzerland. The region is classified as a high-altitude mountain landscape of the Inner Alps (Bundesamt für Raumwentwicklung ARE et al., 2011). The Engiadina Bassa stretches from Zernez to the boarder of Austria and Italy. The valley was shaped by the River Inn and is surrounded by Alpine peaks reaching over 3000 metres in altitude (Verein Raetia, n.d.). The Val Müstair connects the Engiadina Bassa with Italy through the Pass dal Fuorn.

The prevailing climate in the region is a typical climate for the Inner Alpes, characterised by low temperatures in winter with long snow coverage and dry summers with low precipitation (Lanz, 2016).
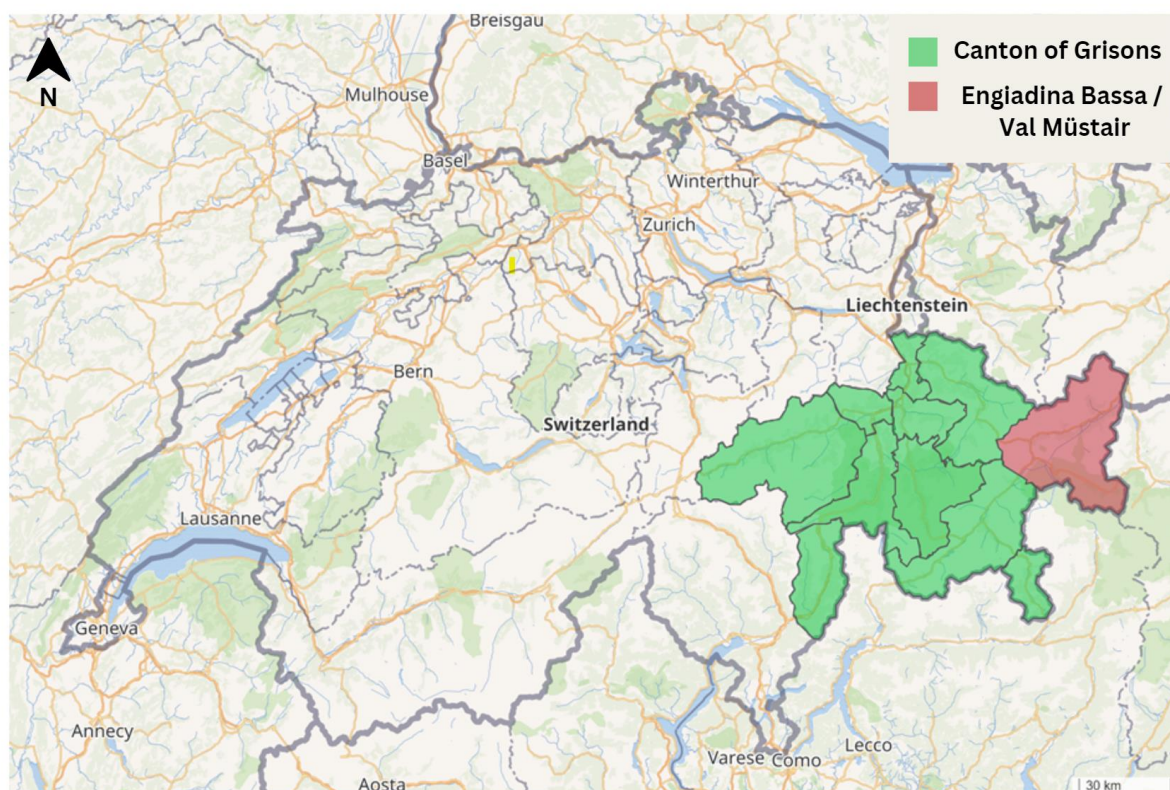
Figure 2: Map of Switzerland with the Canton of Grison (green and red area) and the region Engiadina Bassa / Val Müstair (red area) (Source: own modification of (OpenStreetMap, 2019)*)*

Agriculture in the Engiadina Bassa/Val Müstair is characterised by extensive farming (Amt für Raumentwicklung Graubünden (ARE) et al., n.d.). In recent decades, agriculture in the region has intensified (Graf et al., 2014). This includes the increased use of machinery and the use of larger machines in general (Interview 5, 2023). There have also been agricultural policy efforts to improve agricultural land through land improvement measures. This has been implemented predominantly in the form of irrigation systems (Graf et al., 2014).

Regional agricultural policy is often in conflict with nature conservation and the protection of the cultural heritage (Amt für Raumentwicklung Graubünden (ARE) et al., n.d.). For example, extensive,

species-rich meadows are lost to melioration, and with them important habitats for endangered species (Wirth & Horch, 2019).

The Engiadina Bassa/Val Müstair is a region of great cultural value. An important element of the regions culture is the Romansh language. Rhaeto-Romanic is one of four national languages of Switzerland and is spoken in the Engiadina Bassa/Val Müstair, among other places. The two dialects Vallader (Engiadina Bassa) and Jauer (Val Müstair) are represented in this region (Lia Rumantscha, 2023). Although only about 19% of the population of the canton of Grison speaks Romansh, it is an essential part of its culture (Regiun Engiadina Bassa Val Müstair (EBVM, 2023). It can be found in songs, literature, television and as the official language in some communities (Regiun Engiadina Bassa Val Müstair (EBVM, 2023). The language is anchored in the landscape through place names.

Another cultural element that can be observed in the landscape is the terracing of the hills. The terraces can be traced back to earlier forms of cultivation and provide valuable data on the settlement history of the region and the past agricultural system (Abderhalden-Raba et al., 2021).

The typical Engiadine houses are also part of the region's cultural heritage. They are characterised by historic hand-paintings also known as sgraffitos (Conzett, 2018).

Tourism is an important economic branch in the region. The focus is on nature-based and sustainable tourism. The region attracts tourists all year round with a wide range of activities. The main activities are sports, such as skiing and snowshoeing in winter and hiking and mountain biking in summer, as well as cultural activities, such as cultural institutions. The tourist offer is mainly designed for outdoor activities, therefore the landscape plays an important role for the value creation of the tourism sector (Gäste-Information Scuol, 2023).

As stated above, the landscape plays a central role in the economic value creation, the cultural identity and nature of the region and its inhabitants. In a survey on regional development, the importance of the landscape is once again emphasised. Here, 100% of the respondents stated that landscape and nature recreation were important to them personally (Zwicker-Schwarm, 2023) .

4.2 Current Landscape Management in the Canton of Grisons

Landscape management in the canton of Grisons rests on three pillars. Firstly, there are legal foundations such as the national and cantonal environmental protection laws, the nature and heritage protection laws, the agricultural laws, the water protection laws, and the forest laws. These laws are intended to regulate the legal treatment of the landscape. Secondly, there are binding structures for the authorities, such as the Swiss Landscape Concept or the National Inventories (Bundesamt für Umwelt (BAFU), 2022). Cantonal landscape management must comply with these regulations. Thirdly, another tool for landscape management is the Landscape Typology, which is a tool for integrating landscape into spatial planning policies (Bundesamt für Raumwentwicklung ARE et al., 2011). This typology has been refined at the cantonal level and has become the "Technical bases of the landscape Canton Graubünden"

(Fachliche Grundlagen der Landschaft Kanton Graubünden), which can be used as technical foundation for management questions regarding spatial planning and landscape (Kanton Graubünden, 2023).

In addition to the legal and administrative sector, other public legal institutions also have an influence on landscape management. In the case study area, this is mainly the UNESCO Biosfera with the National Park and the Parc da natüra Biosfera Val Müstair. Their objectives are also essentially related to landscape management, for example to preserve and enhance the nature and landscape (Kanton Graubünden, 2023).

In the expert interviews, it was mentioned several times that the landscape is an important subject of regional policy (Interview 1, 2023; Interview 4, 2023; Interview 5, 2023). The different demands on the land use lead to conflicts that are addressed at the political level. These can be conflicts between nature conservation, heritage protection, agriculture, and tourism (Interview 1, 2023; Interview 3, 2023; Interview 5, 2023; Interview 7, 2023). It is evident that the alterations in the landscape can influence political processes, and conversely political decisions can affect the landscape.

4.3 Stakeholder Mapping

Eleven key stakeholders and stakeholder groups that influence the regional landscape management have been identified. Figure 3 shows the stakeholders in a Power-Interest Grid, according to Ackermann and Eden (2011) (see chapter 2.2). The Power-Interest Grid is a tool to represent the stakeholders in their relation to landscape management. The x-axis shows how interested they are in landscape management and how important it is for them to consider the landscape in their activities. Interest in this context does not mean the general interest in environmental issues, but how much landscape management per se is addressed and whether the focus of the institution is directly on landscape management (Ackermann & Eden, 2011). The y-axis shows the influence on landscape management, i.e. the extent to which stakeholder activities can bring changes in regional landscape management (see Figure 3). Only stakeholders acting on a regional scale were considered in this SA. The information in this chapter is a synthesis of literature research and the stakeholder interviews (Interview 1, 2023; Interview 2, 2023; Interview 3, 2023; Interview 4, 2023; Interview 5, 2023; Interview 6, 2023; Interview 7, 2023; Interview 8, 2023; Interview 9, 2023; Interview 10, 2023).
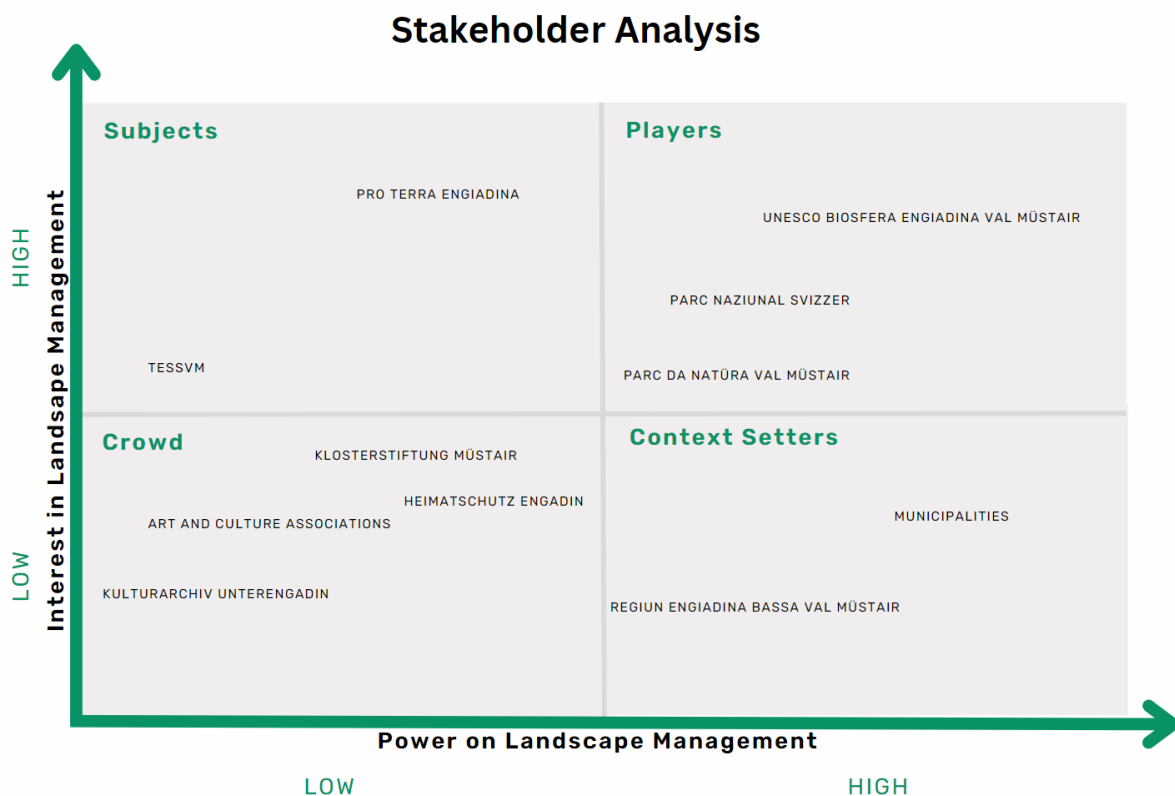
Figure 3: Power- Interest Grid of the Stakeholder relevant for a potential LO in the region Engiadina Bassa / Val Müstair.
Source: Adapted with own data; according to Ackermann & Eden, 2011

Context Setters

Stakeholders in this category are characterised by high influence on landscape management, however landscape is not the primarily focus of these institutions. In view of a potential LO, it is important to involve these institutions early on and thus ensure their support (Interview 2, 2023). The five municipalities in the region (Zernez, Scuol, Valsot, Samnaun and Val Müstair) have a great influence on the development of the landscape through their ability to influence legislation. The Regiun Engiadina Bassa Val Müstair is a regional administrative unit that deals with supra-municipal issues. This also includes regional development, which is central to the future development of the region's landscape (Regiun Engiadina Bassa Val Müstair (EBVM, 2023).

Crowd

The stakeholders in the "Crowd" category are characterized through a low interest and low power regarding regional landscape management; the landscape is not the main focus of these institutions. However, they can be interesting for collaborations with a potential LO.

Art and cultural institutions, such as the Fundaziun Nairs, the Chasa Jaura Val Müstair or Somalgors could be interesting collaboration partners for projects aiming to raise awareness or communicating landscape-relevant issues. They have the potential to reach out to new circles of people and thus extend the reach of a LO. Furthermore, they would open up new perspectives on the regional landscape through artistic activities or cultural-historical knowledge.

The Cultural Archive Unterengadin collects documents that are relevant to the culture of the region. Volunteer archivists take care of new arrivals and the maintenance of the archive. Among the documents collected, there are for example, recording on nature reserves, old maps, documents on place names, herbaria or documentation of historical pathways (Kulturarchiv Unterengadin, 2023).

The Engadin Heritage Society is an association concerned with the building culture of the Engadin, the development of the settlement area and the conflicts associated with it. They are involved in various projects related with the protection of the local heritage. They offer activities, such as educational events and conferences (Heimatschutz Engadin, n.d.).

The Fundaziun Nairs describes itself as a unique synthesis of artists' house, art gallery and cultural laboratory. Nature and the landscape are amongst other things part of their work, and the Fundaziun Nairs offers a different approach to nature (Fundaziun Nairs, 2023).

The Chasa Jaura association is a platform for cultural knowledge in the Val Müstair. With the museum and various events, they convey the historical and cultural knowledge of the valley to the local citizens and external visitors. History is closely linked to the landscape and therefore provides interesting information about its development (Chasa Jaura Val Müstair, 2023).

The monastery of St. Johann in Müstair has an archaeological archive and a building archive. Both collect and preserve important cultural and historical artefacts related to the monastery, which also includes objects relevant to describe the landscape. The archaeological department of the monastery also

studies geophysical processes, old river courses, terraces, and pathways (Convent of St. John Müstair, 2022).

Somalgors74 is an example of a cultural institution, that is involved in several creative projects that deal with, among other things, the perception of the landscape. One of these projects deals with the question of how one can perceive the landscape through the nose (Somalgors 74, 2023).

Subjects

Stakeholder in the Subject category are interested in the landscape management, however, have a limited power on landscape management. The Fundaziun Pro Terra Engaidina and the Tourismus Engadin Scuol Samnaun Val Müstair AG (TESSVM) share an interest in the regional landscape management, especially the Fundaziun as a foundation dedicated to the protection and promotion of nature and landscape could share important insights on stakeholder dynamics and the ongoing projects in the region. Their main function is the provision of a platform for launching new projects or supporting existing ones that are committed to sustainable tourism or cultural and landscape protection. All the municipalities are represented on the foundation's board, as are the cantonal authorities and other stakeholders in nature conservation and tourism (Fundaziun Pro Terra Engiadina, 2023). The tourism sector, such as the TESSVM, is generally interested in the landscape management, however more on the economic landscape services. They provide services for tourists as well as for the regional tourism offers, focussing on the three pillars of sustainability (Gäste-Information Scuol, 2023).

Players

The stakeholder in this category are active players in the regional landscape management, therefore sharing interest and influence. The UNESCO Biosfera as umbrella institution of the Parc Naziunal Svizzer and the Parc da natüra Biosfera Val Müstair, is a leading institution in the regions landscape management. UNESCO biosphere reserves are exemplary regions for the sustainable use of natural resources and the protection of species and habitats. The UNESCO Biosphere Engiadina Bassa Val Müstair has a research mandate and also provides environmental education (Parc Naziunal Svizzer, 2023b).

The Swiss National Park is part of the UNESCO Biosfera Engiadina Val Müstair. The National Park's mission is to protect nature, to research the processes taking place in the National Park and to raise awareness among visitors. The area is subject to strict protection regulations laid down in the National Park Act and the National Park Ordinance. The National Park is an important entity for the landscape, as it protects and manages a large part of the landscape in the region (Parc Naziunal Svizzer, 2023).

The Biosfera Val Müstair Regional Park is a public institution, that is active in nature conservation, research, regional economic development, and the tourism industry in the valley. The Park also supports the preservation of the cultural heritage. The Park is an important contact point for tourists and residents of the valley (Gäste-Information Val Müstair, 2023).

Other potential stakeholders can be found on a larger scale. At the cantonal level, there is the agricultural association (Bündner Bauernverband) or the organic farming association (Bio Grischun). National acting stakeholders with projects in the region include environmental organisations, such as Pro Natura, WWF or Vogelwarte Sempach.

5. Potential of a Landscape Observatory in the Engiadina Bassa / Val Müstair

The potential of a LO in the Engiadina Bassa / Val Müstair was determined by comparting the state of landscape management and monitoring now and the desired state in the opinion of the stakeholders and landscape experts (see chapter 2.2) (Interview 1, 2023; Interview 2, 2023; Interview 3, 2023; Interview 4, 2023; Interview 5, 2023; Interview 6, 2023; Interview 7, 2023; Interview 8, 2023; Interview 9, 2023; Interview 10, 2023).

5.1 Current Monitoring Activities

Among the identified stakeholders it was analysed, which functions of a LO (see chapter 3.1) were already fulfilled to some extent in the case study region. The Figure 4 shows the five functions of an LO and which regional stakeholders already fulfil one or more of them.

Figure 4: LO Functions according to the ELC, which are to some extent performed by regional stakeholder (Source: own figure based on the sources used in the stakeholder mapping process (see chapter 4.3))

Descriptive Function

The Parc Naziunal Svizzer and Biosfera Val Müstair conduct research projects to monitor the current state of the landscape in the parks. For example, in the Parc Naziunal, they monitor the presence of certain fauna and flora and a research about soundscapes is ongoing (Parc Naziunal Svizzer, 2023). The Biosfera Val Müstair focuses more on the monitoring of tourism and citizen well-being (Biosfera Val Müstair, 2023b). The Regiun Engiadina Bassa Val Müstair is responsible for regional development and can therefore also provide information about the state of the landscape, but above all about the citizens' relationship to the landscape, which was surveyed as part of a regional survey (Regiun Engiadina Bassa Val Müstair (EBVM, 2023; Zwicker-Schwarm, 2023).

Archive Function

The three institutions mentioned in the figure 4, are archives for cultural or archaeological purposes. However, within these archives a lot of information on past landscapes and their management are stored. This data is not directly available, because it is not categorized, therefore if information on the landscape is wanted, a time intensive research in the archives needs to be conducted.

Indicator Assessment

As mentioned above the Parc Naziunal Svizzer and the Biosfera Val Müstair hosts several indicator-based monitoring programs (Biosfera Val Müstair, 2023; Parc Naziunal Svizzer, 2023). These monitoring efforts focus on ecological or socioeconomic indicators. However, the ELC also provides for the assessment of indicators of the effectiveness of landscape policies. This is not yet done specifically in the region.

Exchange Function

The Park Naziunal Svizzer and the Biosfera Val Müstair have several instruments for exchanging information about the landscape management and protection, such as websites, information centres, and events/activities (Gäste-Information Val Müstair, 2023; Parc Naziunal Svizzer, 2023). Further, the Pro Terra Engiadina fosters exchange between public and private actors in the region and encourages projects regarding the regional landscape (Fundaziun Pro Terra Engiadina, 2023). Arts and culture organisations are important in communicating environmental and landscape issues. They provide a different perspective on landscape issues and lead to new approaches in engaging with these issues. For example, the cultural institution Somalgors74, which works with smelling the landscape, or the Fundaziun Nairs, which hosts exhibitions with aspects of nature and landscape (Fundaziun Nairs, 2023; Somalgors 74, 2023).

Scenario Building

The monitoring efforts of the three mentioned institutions build a good foundation for analysing trends in the landscape. The Regiun Engiadina Bassa Val Müstair even actively works on future scenarios with their work on the Agenda 2030, a regional development strategy (Regiun Engiadina Bassa / Val Müstair, 2015). Landscape was so far not actively addressed in the regional development strategies but the Regiun Engiadina Bassa Val Müstair is aiming to change that for the upcoming Agenda 2030.

5.2 Gaps in the current Landscape Monitoring and Management

The gaps in the current landscape monitoring and the issues that could be addressed in a regional LO were collected through the qualitative interviews with stakeholder and experts (see chapter 2.2). Specific topics were suggested that could be subject of the LO.

Fundamental issues, such as different understandings of landscape could also be assessed (Interview 8, 2023). The concept of landscape is still abstract to people and so lot of questions arose during the stakeholder/expert interviews: What is landscape? What does it mean to people? How is it perceived? The integration of the arts could play a vital role in this theme. Art could also play an important role in the mediation of landscape.

The interest on the landscape per se is high in the case study region and a large number of stakeholder act in landscape. With these different stakeholders, different expectations on the landscape management arise, resulting in a complex web of diverse claims on the landscape. Resulting from this situation, one interest is to record and map the different interests and claims on the landscape of the Engiadina Bassa and Val Müstair (Interview 3, 2023; Interview 8, 2023). This could be done by mapping the landscape characters more precisely than it is already done and with citizen involvement. In a further participative approach, development goals with corresponding management strategies can be defined. To this end, the methodology of the Catalan Landscape Catalogues could be used (Nogué i Font et al., 2016).

The reprocessing of historical management forms is also mentioned several times (Interview 2, 2023; Interview 3, 2023). The Engiadina Bassa and Val Müstair have an important and well-preserved cultural history which should also be part of the LO. This can involve old irrigation networks, traffic routes or "place names" (Interview 7, 2023). Another suggested idea for historical documentation is the collection of oral history (Interview 9, 2023). By systematically conducting and archiving oral history interviews, valuable informations on the landscape can be gathered, interpreted and archived.

The wish for participation and integration of different stakeholders and citizens is also seen as important. Stakeholders and the public should be involved in the landscape management and actively motivated to take part in participatory processes. However, several interviewees expressed concern about an already saturated level of participatory projects in the region (Interview 2, 2023; Interview 4, 2023; Interview 8, 2023). People seem to be tired of participating in new projects and as the region is rather small and not densely populated, many participatory projects involve the same stakeholders. Therefore, an opening of the stakeholder circle is desired (Interview 2, 2023).

5.3 Potential LO-Types in Case Study region

In a four of the interviews a prototype testing was conducted (see chapter 2.2). The results of the LO analysis with its four types were presented to the stakeholders/experts of the Engiadina Bassa / Val Müstair. For each of the four types they were asked to take a position and share their opinion as to

whether or not this could be beneficial to the region and why. This subset was made because not all participants were familiar with landscape concepts and the ELC wherefore the method of Landscape Observatories was very abstract to them.

Table 17 shows in which types of LOs the interviewees saw potential and in which they did not. The green ticks and red crosses symbolise the number of interviewees actively mentioning the type as having potential or not seeing it as having potential. The yellow tick symbolises a positive attitude towards a LO type but with some reservations.

Table 17: Prototype Testing of the 4 LO types (Quelle Interviews 1-4), the ticks and crosses represent the response of an interviewee where the tick is a positive attitude towards the LO type and the cross a negative attitude. In the "Explanation" section it is described why the interviewees argued for or against the LO type.

LO-Type	Potential	Explanation
Photographic LO	☒☒	The absence of a direct benefit for the landscape is criticised here. A PLO can be an interesting tool for awareness raising purposes, but its policy impact is estimated very low. In addition, similar projects are already active or completed in the region, such as a project by the Val Müstair Regional Park. They made an exhibition in which archive images were compared to preset pictures.
Awareness LO	☑☑☒☒	The opinions are divided regarding an Awareness LO. Proponents argue that a continued necessity exists for more awareness-raising and that an Awareness LO represents an opportunity to move landscape closer to the political dialogue. The opponents argue that the existing institutions sensitise society and stakeholders to landscape-related issues already. The benefit of raising awareness is also acknowledged by opponents, but the potential is restrained.
Monitoring LO	☒☒	Monitoring LOs are perceived as unproductive, as it is not clear how the collected data is applied or used. The region is saturated with indicator-based monitoring projects and already overwhelmed by the amount of data produced.
Platform LO	☑☑☑☑	The Platform LO is considered an interesting approach to improve the dialogue between different stakeholders and to put the focus on the landscape. It is also seen as a form under which different sub-projects could run and thus promotes cooperations. However, a Platform is still perceived as an abstract tool, and a methodology must be provided in order to make it more tangible.

6. Implementation Recommendations

6.1 Platform LO Engiadina Bassa / Val Müstair

Based on the results presented above, I conclude that the most suitable LO type for the case study region Engiadina Bassa / Val Müstair is a Platform LO. The region of Engiadina Bassa / Val Müstair already has a large number of institutions working with the landscape (see Figure 4) and the authorities have certain tools to include the landscape in policy-making (see chapter 4.2). It is therefore ideal to aim for a highly developed type of LO. All these institutions are resources that a LO can draw from. Furthermore, during the prototype testing, the platform LO was considered to be the type with the most potential for the region.

In my understanding, the LO should ideally result in a platform that enhances the exchange on landscape related issues. It should be able to accompany projects in an advisory capacity. The aim is to become well-known and used as point of contact for all landscape-related questions. This chapter explores how a Platform LO could be implemented in the Engiadina Bassa / Val Müstair, and I propose recommendations on its organisational structures, aspects to consider, contents and participation strategy.

6.2 Organisational Structure

The LO should cover the region of Engiadina Bassa and Val Müstair, however in my opinion, it should also be able to act at a very local scale. Certain issues that could be addressed are not on a regional scale, but on a local scale. Arising from the discussions with the LOs, there is also a strong international demand for a networking function, so the LO should follow existing networks such as CIVILSCAPE and get in touch with other European LOs to exchange experiences and knowledge.

The question of members of the LO remains open. I argue that it is advantageous to affiliate the LO to an existing organisation, as is the case with most European LOs. The UNESCO biosphere reserve as an umbrella organisation or a public administration would be suitable for this. Based on the experiences of the European LOs, I argue that this gives a LO more stability and enhances effectivity (Nilson & Carlsson, 2023; Sala i Martí et al., 2023). Additionally, it should be carefully discussed who will take the leading position in this institution.

For the financing of a LO, it would be advantageous to make a permanent agreement, if this is possible. Project-based funding strategies are also popular among LOs, but not recommended, as the effort to take care of funding can take a lot of time (Elfström, 2023; Garzena, 2023). I suggest that national or cantonal administrations be approached. Alternatively, the Landschaft Fonds Schweiz is an institution that provides financial support for landscape conservation projects, however only project-oriented or financing as start-up aid (Fonds Landschaft Schweiz (FLS), 2023).

6.3 Aspects to Consider and Challenges

Several uncertainties and possible challenges when implementing an LO were raised in the discussion with the stakeholder. The issue that a LO should serve the landscape and bring a benefit to the community at the same time is raised several times (Interview 3, 2023; Interview 4, 2023; Interview 8, 2023).

There must be a clear added value for both the landscape management and the people involved. It helps to always be clear who the audience of the LO is, and such an institution should be managed accordingly (Interview 8, 2023). Otherwise, it may be difficult to achieve a lively engagement. Furthermore, the public administration should be involved in the activities of the LO (Interview 2, 2023). This would guarantee a policy impact of the LO, which is of importance.

6.4 Implementation Strategy

I suggest, that the Platform LO should strive to address all five functions described by the ELC. Concluding from the results, a clear objective and a target-oriented methodology are a necessity (Nilson & Carlsson, 2023; Sala i Martí et al., 2023). Other LOs in Europe have taken up to three years to develop a precise and target-oriented methodology that suits their purpose (Sala i Martí et al., 2023). In the following table 18, I propose different methodologies that could be applied in a Platform LO. The different methods are inspired by already existing projects and LO methods and were aligned with the stated needs of the stakeholders. I argue that this set of methods are target-oriented, fit in the already existing monitoring network and could be of great benefit for future landscape management. I present the table 18 as a synthesis of the LO interviews, stakeholder interviews and internet research.

Table 18: Proposed tools targeting different ELC functions within a LO in the case study region of Engiadina Bassa / Val Müstair

Descriptive Function	- **Interactive Maps**: Interactive Maps can be participatory tool to describe the landscape with a spatial relation. The map can contain the basic data, such as the landscape typology. Other spatial relevant data can be brought together on this platform, and it can function as a database. It is participatory in the way that new data can be uploaded which was collected by different institutions or even citizen. An example of such a project is the "Ipermappa di comunita", applied in the Val Poschiavo (Incolab & Polo Poschiavo, 2021). - **Policy Mapping**: Physical and perceptual indicator monitoring is already taking place in the Engiadina Bassa / Val Müstair (see chapter 5.1). However, political decisions and how they influence the landscape have not been monitored. It would be interesting to work out how policy decisions change the landscape, whether physically or perceived. Knowing how past landscape policies have changed the landscape can help future policy decisions better address landscape issues. - **Blog**: The LO needs a platform to disseminate information to the public. This can take the form of a blog, for example, where current landscape issues are addressed, or which simply collects and bundles current information or ongoing events about the landscape in the region. This would help to make information more easily available and treat the landscape from different perspectives. An example for a platform to disseminate information is the newsletter system of the LO of Catalonia (Sala i Martí et al., 2023) (see chapter 3.2.5).
Archive Function	- **Historical Database**: Historical data is stored in several archives in the case study region. It would be of interest to further evaluate

	which of this data is landscape relevant and think of how it can be used and how it can be made accessible. The same idea is applicable to the data created through indicator-based monitoring.	
	- **Oral History**: A lot of landscape related knowledge is still not documented. The collection of historical knowledge of former landscape management practices could give valuable information on the state of today's landscape.	
Network/Exchange Function	- **International Seminar**: The implementation of a new LO is a good opportunity to revive the international network of LOs. One can benefit from the experiences of the other LOs and maybe even seek collaborations.	
	- **Collaborative mapping of landscape services**: The concept of landscape services can be introduced in the region. In a participative process these landscape services can be evaluated, which enhances discussions between the participants and therefore has an awareness-rising effect. Further, the definition of landscape services can contribute to the landscape understanding and simplifies to incorporate landscape in policy-making.	
Indicator Assessment	- **Accessible Database:** The question of what to do with all the data already collected and how to put it to practical use remains unanswered. A central point to make more out of all the data is to store it on one platform and make it as easily accessible as possible. A database could be created that brings together all the monitored data in the region, and a tool could be created to make it easier to navigate through the database. Another approach would be to make use of an existing monitoring system and consolidate it regionally in order to benefit from an existing database. Handling the data was seen as a major challenge in several other LOs (Guesdon-Annan, 2023; Némithy, 2023; Planchet, 2023).	
Scenario Building	- **Participative Scenario Building:** As a continuation of the collaborative mapping of landscape services, objectives for the landscape shall be named in a participatory approach. These objectives can be used as a planning tool. A similar method has been applied in the LO of Catalonia (Nogué i Font et al., 2016).	

6.5 Participation

Based on the results of the interviews with European LOs and regional stakeholders/experts from Engiadina Bassa/Val Müstair, I conclude that participation should be an important aspect of the regional LO. As a basis for the implementation of a LO, I have created a participation planning matrix, showing which stakeholders should be involved in the implementation process, to what extent and at what point in time (see table 19).

The table 19 shows four stages in the implementation process of a LO in Engiadina Bassa / Val Müstair. As mentioned above, I argue that a clear methodology for the implementation of a LO is inevitable. The next step would be to decide who should be involved in this project and to what extent. The third step would be to actually implement the LO and the last step is to carry out the designed methodology and start the monitoring activities. Bryson (2004) declares five different ways to approach stakeholder. To inform a stakeholder about the activities of a LO is the weakest form of participation. Followed by

consulting the stakeholders, which means listening to their input and inform them whether and how they changed the output of the LO. Involving stakeholder means to work with them and integrate them in decision-making within the LO. To collaborate with stakeholders means to ask for stakeholders' advice and incorporate it as much as possible. And the highest form of approaching a stakeholder is the empowerment, which means that the stakeholders' input will certainly be implemented (Bryson, 2004).

Table 19: Stakeholder Participation Planning Matrix for a regional LO in the Engiadina Bassa / Val Müstair. The horizontal categories describe to which extent the stakeholder should be involved (informed, consulted, involved, collaborated, or empowered). The vertical categories in what stage of the LOs' implementation process the certain stakeholder should be involved. (adapted from: (Bryson, 2004))

Strategic Management Function or Activity	Stakeholder to Approach by				
	Inform:	Consult:	Involve:	Collaborate:	Empower:
Developing a methodology for the LO	-Art and Culture Associations	-Regiun Engiadina Bassa Val Müstair -Pro Terra Engiadina -TESSVM	-Parc Naziunal Svizzer -Biosfera Val Müstair	-UNESCO Biosfera -Municipalities	
Organizing & Initiating Participation			-Municipalities -Regiun Engiadina Bassa Val Müstair -Art and Culture Associations	-UNESCO Biosfera -Parc Naziunal Svizzer -Biosfera Val Müstair -Pro Terra Engiadina	
Implementation of the LO			-Municipalities -Regiun Engiadina Bassa Val Müstair -Parc Naziunal Svizzer -Biosfera Val Müstair		
Monitoring activities within the LO	-Municipalities -Regiun Engiadina Bassa Val Müstair -TESSVM	-Parc Naziunal Svizzer -Biosfera Val Müstair -UNESCO Biosfera -Art and Culture Associations	**-Citizen Involvement**		

The Participation Planning Matrix can be used to systematically involve stakeholders into the establishment of an LO in Engiadina Bassa / Val Müstair. At this point it should be noted that the matrix is not rigid but can be adapted at any time, i.e. stakeholders can be added, removed or moved.

7. Discussion

7.1 Why Definitions Matter

The first research question of this study asked how the ELC was implemented in Europe and what form of LOs exist. The analysis revealed a wide variability of institutions operating under the name "Landscape Observatory". The categorisation of LOs developed in this thesis provides an insight into the different approaches to European landscape monitoring and their link to participation and policy-making (see chapter 3.3). The four types are the Monitoring LO, the Photographic LO, the Awareness LO and the Platform LO (see Table 20). While all LO types are related to describing the landscape, raising awareness of landscape issues and the sustainable development of landscape management, they differ in their implementation.

I assume that this variability of LOs is due to the broad definition given by the ELC. All the interviewed LOs work with the ELC, but with different approaches. The ELC provides a definition and five functions of a LO, but without concrete examples or suggestions for implementation, which leaves a lot of room for manoeuvre in terms of implementation (Council of Europe, 2000).

In my view, this broad definition can have the advantage of making LOs a more flexible tool and more applicable to different settings and scales. In the context of an international convention, it seems important not to prescribe too narrow action strategies. This ensures that possible measures can be implemented in a site-specific manner and can be adapted to different, in this case, national landscape management strategies. Provided that all measures are consistent with the overall objectives of the Convention, I argue that their implementation does not need to be specifically defined.

On the other hand, I would say that the initial implementation of a LO is made more difficult by the broad definition. Without specific recommendations for action and communicated examples, there is a lack of guidance for those responsible. It also makes international cooperation and exchange more difficult. When LOs differ in such extent from each other, it is difficult to share common methodologies or discuss challenges during the implementation process. For example, a Photographic LO has different objectives, uses a different methodology and faces different challenges than a Monitoring LO. It is therefore also difficult to exchange information on the results and outcomes of the LOs. If, for example, different indicators were measured consistently across European LOs and shared on a common platform, this would open up new forms of international cooperation and it would provide relevant data for landscape studies. These new forms of international cooperation between LOs could be of great benefit as the demand is high and the intended network, the CIVILSCAPE, has recently remained inactive and unused (Sala i Martí et al., 2023).

During the SA in the Engiadina Bassa / Val Müstair, I experienced another interesting perspective on the definition of the LO concept. As shown in Figure 4, several institutions in the case study region already fulfil more than one of the functions envisaged by the ELC. The question arose: where is the

difference, for example, between the activities of the Val Müstair Regional Park and of a potential Landscape Observatory?

What I also observed is that the definition of a LO was perceived as very abstract difficult to imagine for stakeholders who were not directly familiar with the ELC (Interview 2, 2023; Interview 8, 2023). In general, the term "observatory" seemed misleading to some stakeholders and associated with visual and passive observation of the landscape rather than monitoring and actively trying to influence the policy-making process and promote awareness-raising.

In conclusion, the LOs in Europe are diverse in nature, and by analysing their participative character and their proximity to public authorities, LOs can be classified into four types. This helps to get an understanding for the LO landscape in Europe and highlights different approaches of monitoring the landscape. The diversity of LOs can be explained by the broad definition given by the ELC, but it is clear that all LOs follow the overarching objectives of the ELC by applying their own methods. Monitoring LOs, Photographic LOs, Awareness LOs and Platform LOs all aim to increase the awareness of landscape issues and to increase the visibility of landscape within political decision-making processes, by using the ELC as the foundation and applying individual approaches to achieve the objectives. Taking the case study into account, I find that a clear definition is important for potential collaborators of a LO, in order to reduce the complexity of the term LO and to make it more tangible. Especially when working with stakeholders who are not familiar with the ELC, it seems that working with the proposed typology (Monitoring LO, Photographic LO, Awareness LO, and Platform LO) is beneficial and improves the understanding of what a LO is.

7.2 Holistic Landscape Monitoring in Switzerland

The second research question asked, what form of LO, in line with the Integrated Landscape Approach (ILA), would expand the current landscape monitoring network of Switzerland. Landscape management and monitoring is a topic already addressed and regulated in the Swiss legislation (BAFU, 2020). With the national indicator-based monitoring programme LABES, two regional PLOs, a newly emerging regional LO in Geneva and several organisations carrying out landscape monitoring, it is evident that several approaches are already being pursued (Chowney & Guillaumont, 2023; Guesdon-Annan, 2023; Khamissé, 2023; Kienast et al., 2015).

Given the transdisciplinary nature of landscape, a holistic approach to future landscape management is needed (Jones, 2007). This should also be reflected in the Swiss legislation. The fragmentation of the landscape into nature conservation, agriculture, spatial planning, and heritage protection leads to an insufficient flow of information (Interview 1, 2023). This fragmentation can also be observed in Switzerland which can lead to conflicts that take place in the landscape (Interview 1, 2023). Based on these findings, I suggest that political decisions and their impact on the landscape should be monitored. In this way, the processes between political decisions and landscape changes can be better understood and conflicts due to the legal questioning of the landscape can be prevented.

In the sense of the ILA, social, ecological, and economic demands should be raised through the stakeholder involvement and integrated approaches to sustainable landscape management should be found (Reed et al., 2015). I suggest that mapping the different demands and giving them a spatial context would be a suitable tool for stakeholder involvement and to enhance the dialogue. Furthermore, it would respond to the desire to put the landscape more into the focus of the region, which was expressed in several stakeholder interviews (Interview 5, 2023; Interview 9, 2023).

Furthermore, I argue that there should be a strong focus on monitoring landscape perceptions and their change, particularly at the regional level. By monitoring human intentions, feelings, and perceptions of the landscape a more holistic understanding of the regional landscape is promoted which can promote sustainable development (Mahan & Mansouri, 2017). During the stakeholder interviews, I observed that the understanding of the landscape in the Engiadina Bassa / Val Müstair region is strongly influenced by the idea of "natural beauty". The narrative of "natural" as a way of describing landscape and its beauty is still widespread, but it has been criticised, especially in terms of legislation and landscape planning (Selman & Swanwick, 2010). This narrative was again observed when the stakeholders were asked about observable changes in the landscape. Almost exclusively negative aspects were mentioned. For example, changes related to climate change, such as the shifting forest line and an increased frequency in mountain movements, or changes related to land use, such as intensified agriculture and the expansion of built-up areas (Interview 1, 2023; Interview 3, 2023; Interview 5, 2023; Interview 7, 2023; Interview 8, 2023). Similar results were found by Davenport and Anderson (2005) in relation to the perceptions of river development. However, they emphasise that it is necessary to look beyond the advantages and disadvantages of change and that the origin of these views must and can be sought in the identification of place meaning. This should be recognised by planners and discussed in participatory processes (Davenport & Anderson, 2005). Negative attitudes towards landscape change are related to threats to place identity (Peng et al., 2020). Place identity is influenced by changes in the landscape and whether they are top-down or bottom-up permitted. It is often observed that the status quo of the landscape is preferred, and change is more reluctantly desired (Scott, 2002).

I argue that a regional and participatory LO could be a valuable tool to assess different understandings of landscape and to monitor perceptions of the landscape and its change. I believe that the regional scale and the platform function of the LOs could enable close cooperation with citizens and stakeholders. This would lead to a better understanding of the peoples' response to landscape change. Also, the fragmentation of the landscape policy into several other disciplines (spatial planning, agriculture etc.) could be addressed in a regional LO and would provide important insights into the link between landscape and policy-making processes. I expect that these insights can be used to create targeted measures for the sustainable development of the landscape that can be directly incorporated into policy-making.

7.3 LO Engiadina Bassa / Val Müstair

7.3.1 From yesterday's knowledge into today's policies

The third research question aimed to analyse the current landscape management and monitoring efforts in the region Engiadina Bassa / Val Müstair. Subsequently, the expectations for future landscape management and for a potential LO were collected. The LO potential was then determined by comparing the actual and target status of landscape management in the region Engiadina Bassa / Val Müstair.

The region's landscape is closely linked to cultural heritage. Resulting from the stakeholder interviews and the literature review, I conclude that cultural heritage is of great importance in the region and should be well preserved in the future. The UNESCO World Heritage Convention describes such landscapes as cultural landscapes and defines them as places who "testify to the creative genius, social development and the imaginative and spiritual vitality of humanity. They are part of our collective identity" (UNESCO, 1992). Cultural landscapes have an important identification function for the local population, which is also defined in the ELC (Council of Europe, 2000). The consideration of landscape identity in policy-making is important for successful landscape management. Although landscape identity has not been widely researched, it should be considered in decision-making to avoid conflicts. Ramos et al. (2016) refer to tipping points, which can lead to the loss or shift of landscape identity if the landscape changes too much and too fast. These tipping points can also be of social origin. It is therefore relevant for landscape management to take the landscape identity into account (Ramos et al., 2016).

Part of the cultural landscapes is their history. Old forms of cultivation are often still visible in today's landscape and contain a lot of data and information, therefore historical knowledge of the landscape should be brought together. (Interview 1, 2023; Interview 5, 2023). By collecting this data, we can contribute to the understanding of our own landscape and provide important information for future landscape management. Antrop (2013) states that there is already a lot of knowledge about the future landscape, but future management is unpredictable and challenging. Nevertheless, the study of past landscape management and its influence on the landscape development can provide valuable information on the relationships between management and landscape change that would be valuable in a future perspective (Antrop, 2013).

The stakeholder interviews in the case study region revealed a need for more discourse on landscape management and the need for an institution where landscape is at the centre (Interview 2, 2023; Interview 4, 2023; Interview 7, 2023; Interview 9, 2023). Landscape should become a central issue in social and political debate. I argue that if the landscape gains more recognition in society, it is likely to become more dominant in policy-making, but it is inevitable to actively strive for more recognition of landscape issues in the local policy-making. According to a study by Primdahl et al (2013), landscape strategy making is a promising tool to bridge the gap between landscape issues and decision-making, especially for rural areas. In the landscape strategy making, common landscape objectives are to be discussed at the local level. In this way, the policy outcome should be better adapted to the local landscape and the

people living in it, leading to greater acceptance and effectiveness of the landscape policies (Primdahl et al., 2013). Another proposed approach to facilitate the integration of landscape into the policy apparatus is the introduction of landscape services. The concept introduced by Termorshuizen and Opdam (2009) is similar to ecosystem services but differs in its interpretation. Ecosystem services describe the goods provided by nature in terms of their function (provisioning, regulating, supporting and cultural services), whereas landscape services are defined in terms of their spatial extent. It describes the services provided by a landscape, i.e., the ecosystem and the people who live in it. In practice, this concept should help to overcome the barrier of transdisciplinarity and lead to a simpler understanding between stakeholders, which should manifest itself in a simplified way in local landscape management (Termorshuizen & Opdam, 2009). In line with Willemen et al. (2012), I therefore propose that the regional LO should use the tool of landscape services and explore the different demands on the landscape in order to develop target-oriented measures for a sustainable landscape development (Willemen et al., 2012).

Based on the prototype testing, I conclude that a Platform LO, as described in chapter 3.3.4, would be most beneficial for the region Engiadina Bassa / Val Müstair. A Platform LO would ideally address the need for more exchange and different projects addressing historical knowledge, mapping demands on landscape can be addressed within it. These topics can not only be addressed but also discussed and projects and measures for future development can be discussed in a participatory approach involving regional stakeholders and citizens. Another advantage of a Platform LO could be, if implemented in such way, could be its proximity to public authorities. I would propose to involve the public authorities, as described in the Participation Planning Matrix (see chapter 6.4), in the participatory processes and dialogues to ensure that the outcomes of the LO are taken into account in policy-making processes.

7.3.2 LOs as community projects

The representatives of the European LOs all emphasise the importance of involving the population, stakeholders, and the public administration in the activity of the LO, which is why participation should also be an important part of the LO Engiadina Bassa / Val Müstair. As the LO in Geneva explains: "I don't think there's a way of doing this landscape approach or observatory without (…) being as participatory as possible. So definitely it's an objective." (Chowney & Guillaumont, 2023, S.6&7).

The European LOs are divided into bottom-up and top-down institutions, which influences their participatory behaviour. As the representative of the LO Biella explains: "Because what we would like is that the landscape is transformed. But in a very, as I said, sustainable way and in a democratic way. So it has to be shared. The idea of transformation, it has to be a shared one. It doesn't have to be imposed by somebody to somebody else, but must be shared. And it has to be a bottom-up process." (Garzena, 2023, S.3). Although bottom-up institutions are characterised by a strong participatory behaviour, the top-down LOs studied are also participatory in nature as a high level of participation is described as a goal and desirable (Alves, 2023; Nilson & Carlsson, 2023). However, top-down monitoring approaches tend

to overlook locally specific issues, and lead to less involvement of local communities (Fraser et al., 2006). This mechanism was not observed in any of the LOs; the top-down LOs in this study tried to integrate participatory approaches in the sense of bottom-up processes or plan to do so in the future (Alves, 2023; Nilson & Carlsson, 2023; Sala i Martí et al., 2023).This approach of combining a top-down approach with bottom-up methods is promising as it strengthens citizen engagement and provides the framework of an organisational system (Eicken et al., 2021). Scott (2011) also highlights the importance of individual approaches to landscape management and a careful balance between top-down and bottom-up processes. Due to the shift from qualitatively surveyed physical landscape to the consideration of landscape as perceived by humans through qualitative methods, it is essential to incorporate participatory tools into landscape management (Scott, 2011).

Although participation seems to be desirable, as stated by the European LOs, there are many challenges involved. Promoting participation in LOs can be time and resource consuming (Elfström, 2023). Another challenge is to find and keep motivated volunteers for citizen science monitoring projects or to participate in the management of a volunteer-based LO (Garzena, 2023; Planchet, 2023; van Herwaarden, 2023).

Stenseke and Jones (2011) identified four main challenges for participation regarding the implementation of the ELC (Jones & Stenseke, 2011).

1. Challenges related to Indifference: If there is a lack of interest in landscape management from the governments side or no already existing structures in landscape management it is difficult to initiate participation.
2. Challenges for Political and Administrative Structures: Participation needs a certain trust of the people in the government, otherwise the effort seems useless. Also, to reach the people local governmental structures need to act.
3. Challenges Diverging Perspectives: Sometimes there are different perspectives form stakeholders and experts on the perception of landscape. That makes it hard to find a common ground and elaborate participation.
4. Challenges of Democratic Settings: This raises the question on how to make participation equal without any biases. Also, for rural or low-populated regions it is difficult to find representing participants.

I conclude that these challenges need to be recognized in a potential LO, but I stand by the statement that despite the challenges of participation, a LO in the Engiadina Bassa / Val Müstair region must be participatory. As mentioned above, landscape cannot be defined by objective elements alone. It is defined "as perceived by people" and thus on the subjective view of all people (Council of Europe, 2000; Jones, 2007). Every landscape has a meaning for people, and this can be very different. It is therefore

essential to seek community participation in order to have a holistic understanding of the landscape. However, during the stakeholder interviews it was mentioned that the people living in the region seem to be tired of an oversupply of workshops, round tables, surveys and other projects (Interview 2, 2023). Therefore, in the case study region the problem remains of how to motivate the stakeholders and citizens to participate. It is mentioned several times, that the benefits of the participation must be evident to the participants (Interview 2, 2023; Interview 8, 2023). This is also stated by the LO Plaines de L'Escaut: "The valorization of the work done by citizens is essential, regardless of the type of valorization (exhibition, publishing, press, ...)" (Bragard, 2023, S.3). Another way of encouraging citizens to participate is to make society aware of developments in the landscape, which will help them understand the challenges and encourage them to cooperate (Nogué i Font et al., 2010)

Considering all the results from the LO interviews, the stakeholder interviews, and the literature review, I conclude that a Platform LO is the most appropriate type to promote a high stakeholder and citizen participation. Combining the mentioned needs and the experiences of European LOs, I propose to discuss the described implementation strategies (see chapter 6.4) in a participatory approach, involving the identified key stakeholders. This bottom-up approach should lead to a high level of participation and be used to carry out monitoring efforts which are adapted to the region. Another important aspect from my point of view, is the involvement of the local population. In this way, the LO would strengthen its platform function and the resulting projects should address important issues that are still missing in the existing monitoring network, such as the mapping of demands. The Platform LO should become a place where local people, authorities and scientists can meet, discuss and exchange experiences.

7.4 Limitations of the Study Design

For the analysis of LOs in Europe in this study, only institutions that explicitly call themselves "Landscape Observatories" were considered. Although the aim of this study was to focus only on LOs, this limited the relevant institutions, as many of the functions envisaged by the ELC are also carried out by institutions with other names. The inclusion of other monitoring programmes and institutions would have provided a more detailed insight into the interplay between participation and policy impact of landscape management institutions. In addition, the criteria-based selection of interviewees introduced a potential sampling bias. As the aim was to represent the diversity of LOs, interview partners were selected according to how different they initially appeared to be from each other.

A stakeholder analysis and a prototype testing were carried out to make a potential analysis for a regional LO in the Engiadina Bassa / Val Müstair. Unfortunately, it was not possible to interview all the relevant stakeholders which were declared during the stakeholder mapping process. By interviewing all stakeholders, the potential of an LO could have been discussed from more different viewpoints and more opinions could have been captured. Furthermore, the qualitative interviews in the case study were conducted not only with stakeholders, but also with people who live, care and work with the landscape in the Engiadina Bassa / Val Müstair. These people were considered as landscape experts for the case

study region. A sharper distinction between stakeholders and landscape experts could have been made, in order to better prepare the interview guide. In general, the interview guides for the potential analysis were adapted according to the function of the interviewee or the institution represented. This led to uneven interview conditions and is one reason why the prototype testing was only carried out with four interviewees. The prototype testing would be more meaningful if it would have been made in an open discussion, involving several stakeholders rather than one at a time.

To fully assess the wishes and expectations of the population in the case study region for future land-scape management, the amount of data collected was too small and not quantitatively significant. It is suggested that a quantitative survey should be carried out as a further step, as such data do not yet exist and would be of great importance for a potential LO.

8. Conclusion and Outlook

This study provides insights into the European landscape monitoring network and the ELCs implementations. A categorisation of implemented LOs has been made, which can facilitate the exchange of information between existing LOs. Specifically, LOs can be contacted for cooperation or exchange of experiences. Furthermore, the categorisation can facilitate the implementation of new institutions and thus promote the implementation of the ELC.

The case study showed how the categorisation can be used as a way of prototype testing. In this way, the potential for a regional LO in Engiadina Bassa / Val Müstair could be identified. The results of the case study show a list of landscape-relevant stakeholders, as well as the wishes and challenges for a potential LO in the region. As a result, it was possible to formulate implementation proposals that can be adopted in practice. The results of the case study are directly applicable in practice and can be used as a basis for the implementation of a new LO.

The results of the study describe the interaction of European LOs with the local population, stakeholders, and the local administration. However, knowledge about the interaction between participatory institutions and policy-making in different political systems in Europe could be deepened. More insight into this interaction could be relevant, not only for future landscape management, but also for general sustainable development and environmental issues. As participatory approaches are currently in vogue and generally recognised as important, more research on the interface with policy-making would be relevant. Another issue that needs to be addressed in relation to landscape monitoring is the usage of the data produced. The issue of data overload and the lack of ways to use or communicate it was raised several times. As the state of the art in monitoring is quite advanced, it would be of further interest to analyse how landscape data can be stored and analysed, and how it can be communicated to the public and decision-makers.

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Appendix A – Interview Guide European LOs

Master Project: Landscape Observatory in Switzerland
Julia Murer

Interview Guide

Name of In-terviewee	Name of LO	Loca-tion	Date	Time	Anony-misation	Reference Code	Recording
					☐ Yes ☐ No		☐ Yes ☐ No

Interview Guide – Landscape Observatories

1. **Method (semi structured guided expert interview)**
   a. **Welcoming words**
   b. **Preview on what will follow**
   c. **Consent form**
   d. **Introduction in the topic**
   e. **Questions**
   f. **Thanks and prospect of my study**

Introduction		**Timing:** 5min
Welcoming words	Hello, my name is Julia. First of all, I would like to thank you for taking time to talk to me. First, I am going to give you a brief overview on what we are doing to-day. So, I am studying Environmental Sciences at ETH Zürich and I am currently working on my Masters Thesis.	
Introduction to the project	This thesis aims to create an overview on the currently implemented land-scape observatories in Europe. The goal is to categorize them and lay the focus on the participative character. My study aims to find out the current state of art in regional landscape monitoring and its potential of having a participatory character. The results of this analysis will further be used to create a potential analysis in the Engadin (an alpine region in Switzer-land). The Engadin thrives to implement a new landscape observatory apart from the already existing national observatory. With the results of the interviews, different approaches of landscape monitoring will be gath-ered and compiled and applied on the Engadin.	
Methodology	To collect the data needed, several European Landscape Observatories were contacted to collect as many samplings as possible. Guided expert interviews will be conducted.	
Anonymisation, Re-cording and consent	The interview will last around 45 minutes, feel free to interrupt and leave if you fell the need to do so. -Did you bring the consent form? -Do you want to be anonymized or is it okay for me to use your name in the report? Data is only used for scientific purposes and held under strict confidentiality -Do I have your consent for recording this conversation?	

	-Would you like to receive a copy of the transcribed interview? And would you like to receive a copy of the finalized report (September 2023), even though it will be in German?

General information on the landscape observatory

- What is your position in this institution?
- What is your definition of a landscape observatory?
- What is the scale of the observatory (local, regional, national)?
- What is the history of the landscape observatory? When was it initiated and why?
- How did your landscape observatory develop over the years?
- What functions does the landscape observatory fulfil? (Proposed by the ELC are:)
  - Describe the condition of the landscape at a given time
  - Exchange information on policies and experience concerning protection, management, planning, public participation & implementation on different levels
  - Use & compile historical documents
  - Draw up quantitative & qualitative indicators to assess the effectiveness of landscape policies
  - Furnish data leading to an understanding of trends and forecasts or forward-looking scenarios
- What is the output of your landscape observatory? What happens with the collected data?
- How does the landscape observatory contribute towards more sustainability?

Participation

- How would you describe the stakeholder involvement in your institution? What actors and institutions are involved, and in which processes?
- Would you describe your landscape observatory as participatory?
- What instruments are used to increase or initiate stakeholder participation?
- How is the network to other Landscape observatories? National and international?

State of art and potential

- What are the current challenges concerning landscape in your region?
- How are they taken up/addressed in the activities of the landscape observatory?
- What would it further need to address these problems?
- What would you consider the biggest challenge regarding your landscape observatory?
- What would you consider the biggest success of your landscape observatory?
- Do you consider the landscape observatory in general a good and sufficient tool to address non-sustainable development in landscape?
- Do you have ideas to improve the concept of landscape observatories towards addressing more current landscape sustainability challenges?

Master Project: Landscape Observatory Engiadina Bassa / Val Müstair
Julia Murer

Interview Guide

Name	Institution	Ort	Datum	Zeit

Methode (semi-strukturierte Leitfadeninterviews)

- **g. Begrüssung**
- **h. Einleitung**
- **i. Konsens**
- **j. Fragen**
- **k. Danksagung**

Fragen

1. Bezug zu Landschaft (Ist-Zustand)
   a. Wie lange leben Sie/ sind Sie schon tätig im Engiadina Bassa/Val Müstair?
   b. Was bedeutet Landschaft für Sie?
   c. Welchen Einfluss hat die Landschaft auf Sie/Ihre Institution?
   d. Welchen Einfluss haben Sie/Ihre Institution auf die Landschaft?
   e. Denken Sie die Landschaft im Engiadina Bassa/Val Müstair ist ausreichend im politischen/gesellschaftlichen Dialog verankert?
      i. Welche Formen gibt es bereits und welche braucht es noch?
      ii. Wie ist die Vernetzung und der Informationsfluss zwischen Institutionen/Stakeholdern, Verwaltung und Gesellschaft?
   f. Denken Sie die nachhaltige Entwicklung der Landschaft im Engiadina Bassa/Val Müstair ist momentan gewährleistet?
      i. In welchen Aspekten schon? In welchen nicht?
      ii. Was braucht es, um diese nicht-nachhaltigen Aspekte zu verändern?
      iii. Welche Herausforderungen sehen Sie in der Zukunft?
      iv. Welche Chancen sehen Sie in der Zukunft?

2. Vorstellung Landschaftsobservatorium (Soll-Zustand)
   a. Wie soll zukünftiges Landschaftsmanagement aussehen?
   b. Kennen Sie das Konzept/die Methode des Landschaftsobservatorium?
      i. Falls ja: Was ist ihre Definition davon?
      ii. Falls ja: Welche Anforderungen haben Sie an ein potenzielles LO?
      iii. In beidem Fall: Vorstellung des Konzepts Landschaftsobservatorium
   c. Welche Funktionen soll ein Landschaftsobservatorium ihrer Meinung nach erfüllen?
   d. Welches Potential sehen Sie in einem Landschaftsobservatorium im Engiadina Bassa/Val Müstair?
   e. Welche Herausforderungen könnte die Implementierung eines LOs mit sich bringen?

3. Partizipation (Ist/Soll-Zustand)
   a. Wie ist die momentan die Zusammenarbeit/Kommunikation zwischen Wissenschaft, Gesellschaft, Institutionen und Verwaltung in Bezug zur Landschaft?
      i. Finden Sie das ausreichend?

b. Können sie Sich vorstellen sich an einem potenziellen LO zu beteiligen?
    i. Falls ja: in welcher Form?
    ii. Falls ja: welchen Mehrwert sehen Sie darin?
    iii. Falls nein: wieso nicht?
c. Wer oder welche andere Institution wäre auch wichtig in einem solchen Projekt dabei zu haben?

Proposal to the ETH Zurich Ethics Commission

Project title

Landschaftsobservatorium als Real-world Lab in der Schweiz

Principal Investigator (PI)

Name	Title	Group / Chair / Institute	University
Julia Murer	Bsc	D-USYS	ETH Zürich

Involved Researchers

Name	Title	Group / Chair / Institute / Industry	University
Christian Pohl	Prof. Dr.	Dep. Umweltsystemwissenschaften	ETH Zürich
Matthias Bürgi	Prof. Dr.	Landschaftsdynamik WSL	WSL & Uni Bern

General Information

Type of project	☐ Research ☐ PhD thesis ☒ Master thesis ☐ Bachelor thesis ☐ Other:
	Student applications (BA/MA): I, Julia, confirm that my supervisors Matthias Bürgi and Christian Pohl reviewed this application ☒
Start	*03.2023*
End	*09.2023*
Method(s) of data collection (check all that apply)	☒ Interviews (☒ in person ☒ phone ☒ online) ☐ Survey (☐ in person ☐ phone ☐ online) ☐ Focus groups (☐ in person ☐ online) ☐ (Experimental) Behavioural study (☐ in person ☐ online) ☐ Social media (☐ observation ☐ intervention) ☐ Physiological measurements ☐ Mobile App (☐ incl. tracking) ☒ Photo-/video-/audio recording ☐ secondary analysis of personal data ☐ Student records/data[i] ☐ Other methods:

Number of participants	Minimum: 5 Maximum: 30
Source(s) of funding	No source of
Liability Insurance	☒ ETH Zurich ☐ Other:
Responsibility Kantonale Ethikkommission	☒ Not Clarified ☐ Clarified (declaration enclosed)

Field or lab research abroad	☒ No	
	☐ Yes	Country: Local ethics approval: ☐ Enclosed ☐ Handed in later ☐ Not obtainable:
Clinical trial abroad	☒ No	
	☐ Yes	Risk Category: Sponsor resp. Sponsor-Investigator: Responsible local institute: Local PI: Local ethics approval: ☐ Enclosed ☐ Handed in later Registration: Liability cover has been confirmed: ☐ Yes ☐ No

Proposal

1. Abstract

This Master Thesis aims to find out more about landscapes observatories and how they can be implemented as a real-world lab in Switzerland. Landscape observatories are institutions to monitor landscape, to sensitize the society on landscape related topics and to facilitate landscape related policy-making processes.

The term landscape observatory was introduced by the European Landscape Convention and promoted as an effective approach to raise awareness and to approach more sustainability concerning landscape. Since then, different European countries implemented such observatories. However, the term landscape observatory was interpreted in various ways throughout Europe. This study aims to get a clear grip of what is understood by a landscape observatory and aims to categorize the different implementation strategies of different locations.

The online information about these landscape observatories is very limited. Therefore, expert interviews should be conducted to get more precise information on the different aspects of landscape observatories. The interviews will last approximately one hour and will mostly be conducted online via Zoom or Teams. In some occasions they can also be held in person. Prior the interviewees will be contacted via email and informed about the objective of the thesis.

The second part of this Masters' Thesis aims to explore the potential of implementing a landscape observatory in the Region Engiadina Bassa/Val Müstair. The Engiadina Bassa/Val Müstair is an alpine region with exceptional landscape value. To sufficiently map the potential and to create implementation recommendations the area needs to be understood properly and all the actors/stakeholders who have an interest in landscape quality and landscape development should be known and

understood. Therefore, a stakeholder-mapping and prototype testing will be conducted by interviewing local stakeholder.

There are no risks for the participants.

2. Project

2.1 Study Objective

According to the European Landscape Convention, landscape observatories are an important method for recording changes in the landscape. They provide a space for monitoring landscape changes and thus serve as a platform for information exchange. Furthermore, landscape observatories should fulfil the description of a landscape at any given time, as well as exchange information and experiences regarding landscape protection, management and planning. They should encourage participation and promote exchange and implementation at all levels. Landscape observatories also serve as a place to store historical knowledge, evaluate current landscape policies, and develop future scenarios. Such observatories are important meeting points of science, public agencies, and the wider society (Council of Europe, 2019).

With the Landscape Monitoring Programme, LABES (Landschaftsbeobachtung Schweiz), Switzerland has an instrument that can be described as a landscape observatory at the national level. LABES evaluates the physical characteristics of the Swiss landscape based on geodata analysis and the perceived landscape on the basis of population surveys (Bundesamt für Umwelt (BAFU), 2010). Despite the already good coverage of the LABES, Switzerland could benefit from further landscape observatories at regional and local level. It is precisely these regional landscape observatories that enable participatory processes and encourage joint learning. In this way, fundamental questions of sustainability and transformation are addressed. Landscape observatories designed in this way correspond to Real World Labs for rural areas.

This work aims to identify the current gaps in the Swiss landscape monitoring network at regional and local level and to analyse the potential of a further landscape observatory. Furthermore, the transdisciplinary and participatory character of landscape observatories in the form of a Real World Lab will be discussed and concrete implementation proposals for an implementation in the Engadin will be formulated.

The research questions are:

- What form of landscape observatory would expand Switzerland's current landscape monitoring network in the sense of the Integrated Landscape Approach (ILA)?
- How could a landscape observatory be implemented as a real-world lab in the Engadin?

2.2 Methods and Study Design

The interviews with the LOs will be guided semi-structured expert interviews (see Appendix A). Hence, there will be open questions which allow a discussion of certain points if they are considered

important. The interview guide will be following the instructions of Rubin and Rubin (2012). The main interest of the Interviews is to get to know the Interviewees expertise and viewpoints on landscape observatories and participatory processes. Therefore, there will be no incomplete disclosure of information or deception of participants.

The interviews will be held online via Zoom or Teams and last approximately one hour. In certain cases, it will be considered to hold the interviews on site (at the location where the landscape observatories are located).

The interviews will be recorded to enable a transcription and a qualitative evaluation. For transcription the software TRINT will be used.

For the second part of the thesis, a stakeholder-mapping in Endigadina Bassa/Val Müstair will be conducted. For this purpose, some main stakeholders will be contacted, and guided interviews will be held on their perception and influence on the landscape (see Appendix 4). Further, their expectations on a landscape observatory in this region will be analysed and different types of landscape observatories are discussed. The method of prototype testing will be applied. All the contacted people will further be asked whether they know other people who would be interesting to interview in that context. By using this snowball method all the important actors/stakeholder in the region will be contacted.

The participants will be contacted mainly via E-Mail. The interviews will be held in person if that is not possible via Zoom. The interviews will not be recorded since a summative transcription method will be used to gather the results.

An interview guide will be used to slightly structure the interview and can be adapted to better fit the individual stakeholder. However, there is going to be plenty of room for discussion to really gather the points, that the interviewees want to make.

2.3 Participants

The number of LOs interviewed will be between 5 and 15, depending on the rate of answers on the invitation email. Participants must have signed the consent form.

The following list will show the landscape observatories which shall be contacted. A representative of these observatories will be the interviewee. If other interesting landscape observatories will be mentioned during the interviews, these might be contacted as well.

Landscape Observatory Catalonia	Spain
Osservatorio paesaggio Arco Latino	Italy
Observatoire photographique Transfrontalier des paysages	France & Belgium
Observatoire photographique du paysage de Montreuil	France
L'Observatoire photographique de la Montagne Sainte-victoire	France
Cotract de Rivière Semois-Chiers	Belgium
Observatoire phorographique des territoires du Massif Central	France
Observatoire du paysage en Barbant Wallon	Belgium

Landscae Observatory of the Local Protected Area of the Serras do Socorro e Archeira	Portugal
Observatoire photographique du paysage – Parc Chasseral	Switzerland
Landschaftsobservatorium Landschappen	Netherlands
The Landscape Observatory of Scania	Sweden
Observatorio y Archivio de los Paisajes de Anda-lucia	Spain
Osservatiorio biellese beni culturali e paeseggio	Italy
Osservatorio locale del paesaggio lucchese	Italy

It is possible for further observatories to be contacted if they get referenced in prior interviews.

There will be five stakeholders contacted. Further stakeholder will be gained after the exchange with the initial ones. The five stakeholders for initial contact in Engiadina Bassa/Val Müstair will be:

1. Biosphera Engiadina Bassa/Val Müstair
2. Park Naziunal Svizzer
3. Kulturarchiv Unterengadin
4. Fundaziun Pro Terra Engiadina
5. Heimatschutz Engadin

2.4 Project Schedule

2.5 Project Partners and Funding

This study is part of the Master's Thesis of Julia Murer, supervised by Prof. Dr. Christian Pohl of the Department of Environmental System Science ETH Zürich and Prof. Dr. Matthias Bürgi, Head of the research unit Landscape dynamics at the Swiss Federal Institute for Forest, Snow and Landscape Research WSL.

There is no external funding for this project.

3. Ethical Aspects

3.1 Informed Consent and Debriefing

Participants will be contacted via email or telephone. The contact data of the institutions will be taken form the internet or if mentioned in prior interviews. In the email the participants will be informed onthe purpose of the study and the usage of the collected data. The participants must fill out the consent forms before the interview can start. The consent forms will be kept by Julia Murer for 5 years.

The report of the study will be shared if there is an interest from the participants.

3.2 Data Protection and Publication

Since expert interviews are done, the names of the participants will, if interviewees agree, not be anonymized. If interviewees don't agree, their statements will relate to the person by a code. Only the PI and the two involved researchers will have access to this code. Other personal data, like contact information will be held under strict confidentiality. In the publication the names of the institution of the interviewees will be indicated, as well as names of the interviewees who agreed to be named. If a participant wishes to be anonymized, this will be granted and they will not be mentioned in the publication

There will be no further personal data asked.

The transcribed interview files will be stored at the TdLab at ETH Zürich for one year after the end of the Masters Thesis. The audio files will be deleted after transcription.

For the stakeholder mapping in the region Engiadina Bassa/Val Müstair the interviews will not be recorded. The transcription will be summative.

3.3 Compensation

There is not going to be any sort of compensation.

3.4 Risks and Countermeasures

The atmosphere of the interview shall be held as casual as possible and as professional as necessary. Therefore, there are no physical and psychological risks expected.

3.5 Risk-Benefit Analysis

The interviews would give unique insights in different implementations of landscape observatories in Europe and an excellent chance to disentangle this topic. The interviews would allow to give insights to make a necessary categorisation before proposing the implementation of a landscape observation in Switzerland. With the results from the stakeholder mapping, the implementation proposal can be appropriately directed and precise.

There are no risks related to this study.

4. References

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Appendix D - Declaration of originality

ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Eigenständigkeitserklärung

Die unterzeichnete Eigenständigkeitserklärung ist Bestandteil jeder während des Studiums verfassten Semester-, Bachelor- und Master-Arbeit oder anderen Abschlussarbeit (auch der jeweils elektronischen Version).

Die Dozentinnen und Dozenten können auch für andere bei ihnen verfasste schriftliche Arbeiten eine Eigenständigkeitserklärung verlangen.

_____

Ich bestätige, die vorliegende Arbeit selbständig und in eigenen Worten verfasst zu haben. Davon ausgenommen sind sprachliche und inhaltliche Korrekturvorschläge durch die Betreuer und Betreuerinnen der Arbeit.

Titel der Arbeit (in Druckschrift):

Landscape Observatory Engiadina Bassa / Val Müstair - Monitoring and Participation

Verfasst von (in Druckschrift):
Bei Gruppenarbeiten sind die Namen aller Verfasserinnen und Verfasser erforderlich.

Name(n):	Vorname(n):
Murer	Julia

Ich bestätige mit meiner Unterschrift:
- Ich habe keine im Merkblatt „Zitier-Knigge" beschriebene Form des Plagiats begangen.
- Ich habe alle Methoden, Daten und Arbeitsabläufe wahrheitsgetreu dokumentiert.
- Ich habe keine Daten manipuliert.
- Ich habe alle Personen erwähnt, welche die Arbeit wesentlich unterstützt haben.

Ich nehme zur Kenntnis, dass die Arbeit mit elektronischen Hilfsmitteln auf Plagiate überprüft werden kann.

Ort, Datum	Unterschrift(en)
12.09.2023	*J. Murer*

Bei Gruppenarbeiten sind die Namen aller Verfasserinnen und Verfasser erforderlich. Durch die Unterschriften bürgen sie gemeinsam für den gesamten Inhalt dieser schriftlichen Arbeit.

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[i] Please refer to the guidelines "Educational Research".