InnoForESt

Smart information, governance and business innovations for sustainable supply and payment mechanisms for forest ecosystem services

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D 4.3: The emergence of governance innovations for the sustainable provision of European forest ecosystem services: A comparison of six innovation journeys

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Executive Summary

With this study we assess the process of developing novel niche innovations for sustainable forest ecosystem services governance. We chose a comparative qualitative analysis approach and conceptually built on, transfer and adapt insights from innovation research. In particular, we conceive of innovation as a process or a journey and not solely as a product. Our conceptual approach further acknowledges the need for taking into account the socio-ecological-technical context. We thus include a focus on the socially enacted interactions between niches that offer particularly fruitful innovation potential, established regimes as well as other socio-cultural, economic and political landscape developments and trends, against the background of which the more specific dynamics of particular regimes and niches evolve.

The Innovation Journeys are being reconstructed as an opportunity to get an overview of the mechanisms and dynamics of the innovation processes themselves. We proceed in an abductive manner, instead of a deductive-nomological logic. That is, both theoretical and empirical considerations flow into the structure and execution of the analysis. We emphasise that the methodology does not follow the theoretical assumptions, but the latter have developed in the light of the examination of the empirical material. The analytical categories for assessing and structuring our innovation processes have not been set in advance, but were developed with a view to the structure of the cases from the material analysis and partly, where appropriate, from the combination of different theoretical streams.

We find that (1) innovation development does not take place in isolated space. Rather, it is shaping and shaped by essential context conditions. (2) For innovation development the strategic orientation, i.e., the overarching aims and objectives are essential. (3) We highlight how regional innovations have been organized. (4) In the InnoForESt project, a process structure of measures was jointly developed, which provided for a number of measures to take place everywhere, such as three different types of CINA workshops. In addition, there were activities that were simply necessary to set the work process in motion in the regions. (5) Real world innovation development does not take place under ideal "laboratory" conditions. Rather it is shaped by problems, crises, stagnation and setbacks.

A closer look at the Innovation Journeys has revealed that (1) innovation processes have a rhythm, (2) which is very different depending on the local and historical situation in which it is embedded, (3) which is not simply going into the direction of the new, towards progress and (4) that stakeholder networks develop along with the rhythm of the innovation process. In addition, the role of the Constructive Innovation Assessment with its multi-phase approach became clearer.

Much has been achieved in the Innovation Regions during the course of the project by the Innovation Region Teams. In many cases, however, a quiet fading out was observable towards the end of the project, Partially due to the difficulties of meeting under Covid-19 conditions. At this stage it is up to the stakeholders themselves and the regional practice partners to decide whether they feel at ease or in a position to continue what they have achieved so far. The innovation work done is a good start, but still not enough for an innovation to fully take root.

In order to secure the legacy, stakeholders should initiate more meetings, either on invitation of the practice partner or of one of the stakeholders willing and able to organize an invitation and setup. Keeping in touch with the entire stakeholder network enables to stay up to date with further developments and with external relations and development influencing the innovation. At least regular meetings should enable to keep relationships vivid and to further debate on promising ways to secure achievements and ideally to keep on elaborating the innovation. The established digital platforms with its external and internal parts are ready to be used as technical support for information exchange and keeping the momentum alive.

For a web adapted version of this deliverable please see https://innoforest.eu/repository/d4-3-overview/

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Abbreviations

AC	Alpine Club
ANE	Academy for Sustainable Development Mecklenburg-Western Pomerania
ARGE S'HOIZ	Working group wood from the community of Sauwald
BO	Breeder Organisation
CINA	Constructive Innovation Assessment
CETIP	Centre for Transdisciplinary Studies
Čmelák	Čmelák Land Trust Association
CO2	Carbon dioxide
Covid-19	Corona Virus Disease 2019
D1.1	Deliverable and respective number
DS	Discussion Seminar
E-NGO	Environmental Non-Governmental Organisation
EAFRD	European agricultural fund for rural development
EKOTEKO	Habitaattipankki tutkimuskonsortio (Habitat Bank research consortium)
EU	European Union
EU H2020	Europen Union Horizon2020
FES	Forest Ecosystem Service
FFC	Finish Forestry Centre
FF	Freelance Forester
FFF	Fridays for Future
FG	Focus Group meeting
FIBS	Finnish organization; promoting sustainable business
FO	Forest Owner
FOCALI	Forest, Climate, and Livelihood research network
FOREST-SME	Forest related small-medium enterprises
FD	Forest District
FS	Forest Service
FSC	Forest Stewardship Council
GP	Green Party
HNEE	University for Sustainable Management Eberswalde
HA	Hunters Association
HO	Hotel Owner

Hybe	Hybe Land Association
IF	InnoForESt project
IKEA	Ingvar Kamprad Elmtaryd Agunnaryd
INNO-1	Innovation focus groups (1-4)
INTERREG	Program funded by the European Regional Development Fund
IR team	Innovation Region team
IREAS	Institute for Structural Policy
HSBC	Hongkong & Shanghai Banking Corporation Holdings PLC
L	Landscape
LEADER	Long-Term Social-Ecological Research platform Eisenwurzen
LTSER	Long-Term Social-Ecological Research platform Eisenwurzen
LUMACON	Lumacon Holztechnologie GmbH
METSO	Forest Biodiversity Programme for Southern Finland
MHC	Möbel und Holzbau- Cluster
MLP	multi-level perspective
Munic.	Municipality
NC	Nature Conservationists
NGO	Non-governmental organisations
NP	National Parks
PAT	Autonomous Province of Trento
PF	Private Farmers
PL	Private Landowners
REALIZE	Workshop facilitation organization
RBG	Role Board Game
SEC	Institute for Social Ecology
SETFIS	Socio-ecological-technical forestry innovation system analysis framework
SO	Sawmill Operator
SPES	Studiengesellschaft für Projekte zur Erneuerung der Strukturen
STUDIA	Study Group for International Analysis
SYKE	Finish Environmental Institute
TB	Tourist Board
UIBK	University of Innsbruck
Univ. Lund	University of Lund

UNITN	University of Trento
ÜBERHOLZ	Wood design training course "Überholz" at the University of Art and Design Linz
WEMAG	Westmecklenburgische Energieversorgung AG
WS	Workshop
ZALF	Leibniz-Zentrum für Agrarlandschaftsforschung

1 Introduction

European forests have multiple functions and provide a range of forest ecosystem services to society (García-Nieto et al., 2013; Plieninger et al., 2013; Saarikoski et al., 2018). However, during the past decades, the objective of professional forest management systems has mainly been focused on timber and biomass production with an emphasis on increasing the efficiency of forestry, resulting in standardized forestry practices and uniform forest structures, even when the policy goals have been more multi-functional (Puettmann et al., 2009; Sutherland and Huttunen, 2018; Aggestam et al., 2020). Coinciding with intensified primary production processes, climate change, biodiversity loss, increasing urbanisation and pandemics outbreaks, societal demand has grown for the broad range of benefits that forests provide, in particular regulating and cultural forest ecosystem services, such as habitat provision, carbon sequestration and recreation. This has resulted in shifting emphases in forest management approaches and policy objectives towards sustained flows of goods and services, beneficiaries' values and ecological functions (e.g., Bauhus et al., 2017; Grassi et al., 2017; Wolff et al., 2015).

The public good and common pool resources character of many forest ecosystem services (e.g., Farley and Costanza, 2010; Agrawal, 2007), institutional mismatch, different ownership structures, and insufficient information on demand and supply, governing the range of forest ecosystem services pose challenges for institutional adjustments. Furthermore, the forestry sector is shaped by a range of forest-related policies outside the forestry sector, such as agriculture, energy, biodiversity and nature conservation, climate protection, and rural development (e.g., Edwards and Kleinschmit 2013; Winkel and Sotirov 2016). These sectors and their formal systems of rules are only marginally aligned, leading to conflicts in objectives and management decisions for forest ecosystem services provision (Hauck et al., 2013). Overall, this calls for new and innovative approaches for actor and market coordination.

In the past decades, novel governance approaches emerged throughout Europe that support the provision of non-marketable forest ecosystem services, especially for regulating and cultural forest ecosystem services or bundles thereof. These include for example changing silvicultural practices to more close-to-nature management (e.g., Puettmann et al., 2009; Bauhus et al., 2017), the establishment of collaborative forest owner associations (Agrawal et al., 2008) or the setup of certification systems and the design of payment schemes for ecosystem services (Živojinović et al., 2015). Often these governance approaches emerge as pilot studies at local level. Some of them proved to secure conservation and social functions of forests, and were able to provide alternative income streams for forest owners (e.g., Živojinović et al., 2015), while for many other governance approaches a systematic evaluation of their design, implementation and outcomes are missing (e.g., Miteva et al., 2012; Vatn, 2009). In particular, it remains unclear how such novel and innovative modes of ecosystem service governance successfully emerged, which parameters constrain and enable their development process.

With this study we aim to contribute towards closing this knowledge gap by assessing the process of establishing / developing novel niche innovations for sustainable forest ecosystem services governance. We chose a comparative qualitative analysis approach and conceptually built on, transfer and adapt insights from innovation research. In particular, we conceive of innovation as a process or a journey and not solely as a product (Van de Ven et al. 1999; Kuhlmann, 2012). Our conceptual approach further acknowledges the need for taking into account the socio-ecological-technical context. We thus include a focus on the socially enacted interactions between *niches* that offer particularly fruitful innovation potential, established *regimes* as well as other socio-cultural, economic and political *landscape* developments and trends, against the background of which the more specific dynamics of particular regimes and niches evolve (Geels 2002; Geels and Schot 2007; Rip 2012; see section 3 for more detail).

The study is structured as follows: in the subsequent section we provide some background to the study context and the case selection, i.e., the EU H2020 InnoForESt project in the context of which forest ecosystem service governance innovations were (further) developed and assessed. In section 2, we state our case selection. In section 3, we describe our methodology. Section 4 details the Innovation Journey concept, i.e., it theoretical-conceptual foundations and the way in which we have further developed it. Section 5 then

presents the innovation processes analysis of our six cases, followed by a discussion of the transversal/cross-cutting findings in section 6. We discuss this in section 7 and provide an outlook in section 8.

2 The InnoForESt project and case selection

We conduct this study in the context of the InnoForESt project (https://innoforest.eu/). InnoForESt is a European Horizon 2020 funded -Innovation Action. Its objective is to stimulate governance innovations for the sustainable supply and financing of forest ecosystem services. The project supports the emergence, development and mainstreaming of new payment schemes and business approaches as well as novel actor constellations and networks for forest ecosystem services provision through multi-actor assessments, networking activities, prototyping of good innovation practices and transdisciplinary research. Its outcomes are directed to boost governance innovation activities and to support future forest policy making, management and business, from regional to EU level.

The project aims to facilitate the understanding, improvement, transfer and/or up-scaling of governance innovations for sustainable forest ecosystem services provision. Such innovations respond to a growing demand for sustainable governance of forest ecosystems steered by awareness-raising initiatives at the European and national levels. By demonstrating the functioning of alternative financing mechanisms and actor cooperation, incentives for forest owners and administrators to supply non-market forest ecosystem services are provided.

InnoForESt's is conceptually and methodologically rooted in innovation research, complex system thinking and multi-actor approaches. It accounts for, and acknowledges, regional differences with regard to forest ecosystems, ecosystem services provided, contributions to the economy as well as institutional landscape and stakeholder constellations. To take these context particularities into account, promising governance innovations are thoroughly analysed in a holistic way, optimised, maintained, and constructively put into future application scopes. The research and implementation is organised in six so-called *Innovation Regions (IR)*, situated in Austria, Finland, Germany, Italy, in both Slovak, and Czech Republics, and Sweden, each differing in social-ecological-technical forest and forestry conditions. The six Innovation Regions represent a range of biogeographical regions of European forests (i.e., Atlantic; Continental; Boreal; Alpine, Mediterranean), forest ecosystem services types (provisioning, regulating, cultural, and combinations of those), as well as forest governance and business environments. Being closely shaped by the regional settings, they serve as loci for learning for particular types of governance innovation. These governance innovations are either payments for ecosystem services (Forest Share or "Waldaktie", in Mecklenburg-Western Pomerania Germany; "Habitat Bank of Finland", Finland), new business approaches ("Value Chains for Forests and Wood", Eisenwurzen, Austria), or new actor constellations and networks ("Forest Pasture System Management", Trentino, Italy; "Collective governance of Ecosystem Services", Liberec region, Czech Republic and in Hybe, Slovak Republic; "Love the Forest", in the Gothenborg area, Sweden). Studying and assisting further innovation developments, InnoForESt cross-compares their co-designs' effectiveness and effects, and further developing strategies that smartly incentivise the provision of forest ecosystem services as bundles in a context-sensitive and desired, hence sustainable way.

InnoForESt project activities in each Innovation Region have been managed by a team consisting of a local science and practice partner. While the science partner focused on coordination of in-country implementation of research tasks, the practice partners have been responsible for the operational management of innovation activities. These include network formation and maintenance from local to national level, related data collection, innovation assessments, visioning and road-mapping. Innovation Regions function as central hubs for network formation, and to carry out innovation activities. The stakeholder networks and teams of science and practice partners in each Innovation Region have been connected to, and exchanged with, teams from further Innovation Regions. This provides the possibility to successively enlarge innovation networks to inter-regional, national and EU level for common exchange, learning and consultation. Over the project lifetime, they act as regional nuclei for extending the innovation approach and its application to other regions and levels of governance (interregional, national, EU).

As such, InnoForESt supports the development of sustainable business and network opportunities, diversifies the forest ecosystem based goods and services, and maximises their positive ecological, social and economic impacts. This will lead to the more coordinated, efficient and sustainable governance and financing of forest ecosystem services in Europe and therefore, to the well-being of EU citizens and the ecological integrity of forest ecosystems.

3 Methodology

In this study we proceed in an abductive manner, instead of a deductive-nomological logic. That is, both theoretical and empirical considerations flow into the structure and execution of the analysis. We emphasise that the methodology does not follow the theoretical assumptions, but the latter have developed in the light of the examination of the empirical material. The analytical categories for assessing and structuring our innovation processes have not been set in advance, but were developed with a view to the structure of the cases from the material analysis and partly, where appropriate, from the combination of different theoretical streams.

3.1 The reconstruction of the Innovation Journeys: data collection, analysis and visualization

For each Innovation Region Innovation Journey, the data collection was based on a four-stage approach: In phase 1, we reviewed all reports and other forms of documentation of the innovation processes that had been produced since the beginning of the project in October 2017 until the beginning of March 2020. This included the reports on the Constructive Innovation Assessment (CINA) workshops (Aukes et al. 2020), various project memos, audio recordings of project meetings and relevant existing interviews with practical and scientific partners (see Annex A-D). Based on this, in phase 2, we completed the data collection by designing and conducting open narrative group interviews with teams of each of our six Innovation Regions, consisting of scientific and practice partners (see Annex A for Interview schedules and participants). The interviews were carried out in April and May 2020. Due to the Europe-wide Covid-19 lockdown measures at that time, interviews were carried out via video conference platforms instead of the planned face-to-face interviews. In phase 3, based on the empirical information generated in the first two steps, we compiled a document that contained a preliminary chronology and categorization of relevant activities and events, and asked the partners in the regions to correct, complement and validate the resulting documentation. Furthermore, Innovation Region teams were then asked to highlight key activities and events. On this basis, we discussed the resulting changes with each Innovation Region team in another online meeting. Finally, in phase 4, this compilation was condensed into an analytical innovation Journey for each Innovation Region and validated by the Innovation Region Teams (see section 4 below). The latter process was combined with a graphical design of the innovation journeys, which resulted in a continuous alignment and reflection of the path development, the degree of innovation maturation as well as the platform development in the respective stages.

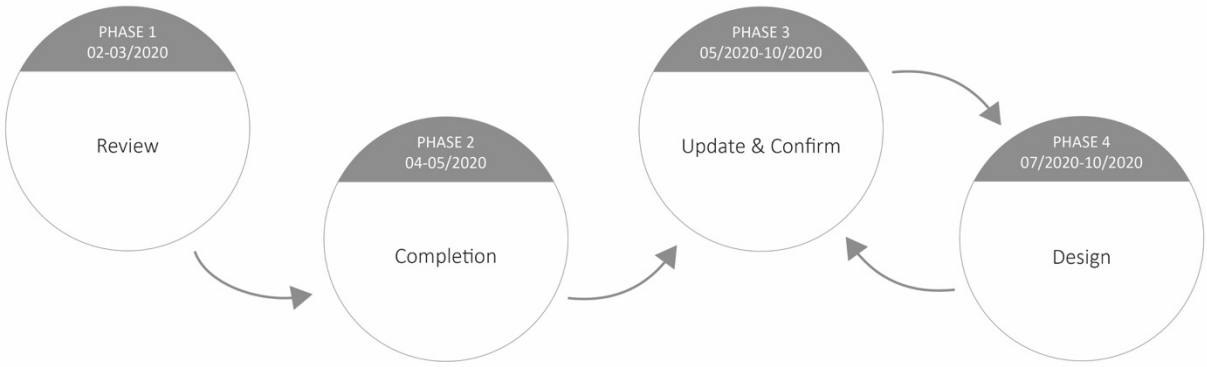


Figure 1. Stylized approach of data collection and analysis

3.2 Conceptual aspects

Our conceptualisation builds on existing frameworks for innovation journeys (Van de Ven et al. 1999; Voss 2007). We carefully adapted these concepts to our setting of forest ecosystem services governance innovation processes by probing categories from Van de Ven and Voss with one of our innovation cases, the Innovation Region Eisenwurzen, as a pilot. All categories have been further developed and tailored for our specific subject area (see section 3 below). This was again carried out in close collaboration with researchers of the Eisenwurzen Innovation Region Team and who had good knowledge about the details and dynamics of the innovation process. In comparison to Van de Ven et al. 199 and Voss 2007, this led to a more specific and expanded list of analytic categories. Our set of analytical categories takes into account the particular interactions between the innovation processes and their socio-technical contexts, which are characteristic of the respective innovation journeys (see Table 1 in section 3.2). As soon as the adapted heuristic (Abbott 2004; Kleining 1995) had become sufficiently detailed and helpful to structure and categorize all relevant activities and events and to arrive at a comprehensive result, we used it to interpret a second case, the IR Trentino, while further extending and refining it. This allowed us to further adjust our set of analytical innovation process categories. During the subsequent analysis of the remaining cases, we further fine-tuned the heuristic. Following an abductive research logic (Reichertz 2007) this ultimately resulted in a generalised heuristic for innovation journeys commonly applied to all our six cases.

4 Theoretical focus: the Innovation Journey concept

4.1 Starting points and basic assumptions

In research on corporate innovations, Van de Ven et al. (1999) developed the concept of an 'innovation journey' to make innovation more tangible: to view an innovation not solely as a product, but as a process (Kuhlmann, 2012). In their initial version, Van de Ven et al. (1999) proposed a list of twelve process events to categorize the – sometimes quite unpredictable – development of innovation processes. In innovation studies, the concept was then taken up and further developed in order to counter a crucial disadvantage of the concept in its original form: the disregard of the organizational environment and the restriction to a company-related, purely internal view of innovation (cf. also Geels 2014). The resulting multi-level perspective (MLP) added a socio-technical context to the business perspective by focusing on the socially enacted interactions between *niches* that offer particularly fruitful innovation potential, established *regimes* as well as other socio-cultural, economic and political *landscape* developments and trends, against the background of which the more specific dynamics of particular regimes and niches evolve (Geels 2002; Geels and Schot 2007; Rip 2012).

Complementary, Voss (2007) further focused his adapted concept of innovation journeys on the "duality of social process as captured in pairs of terms like design and dynamics, management and politics or planning and (co-)evolution" (Voss 2007: 5) with regards to policy instruments of "emission trading" and "network access regulation" that are "embedded in broader co-evolutionary processes" (ibid.). While forest ecosystem services governance develops and uses policy instruments and struggles with their revision, reinvention or replacement under often changing circumstances, our particular focus on the innovation journeys is a novelty. The concept of a journey in innovation has early been used only metaphorically by Lovins et al (1999), although not in a conceptual sense, for companies as "journeys toward natural capitalism" (Lovins et al. 1999: 148), and later by other authors speaking of journeys toward landscape sustainability (Wu 2013), community-based forestry (Paudyal et al. 2017), and social license to operate (Wang 2019). We suggest an elaborated innovation journey concept tailored to the field of forest ecosystem services governance.

With an approach, that emphasises the co-evolutionary character of the process and its context, we aim to avoid a common misunderstanding, i.e., that innovation processes are a matter of control, steering and management (cf. Van de Ven 2017) – the "command and control approach", as Rip (2010) puts it. Rather, when taking a closer look at the contingencies during innovation, retrospective attributions of success to certain approaches or persons often prove to be misleading. Thus, following Van de Ven, we suggest to imagine innovation as a journey into uncharted waters (van de Ven et al. 1999: 212). In order to achieve anything, managers and policymakers "are to go with the flow – although we can learn to manoeuvre the

innovation journey, we cannot control it" (van de Ven et al. 1999.: 213). For this reason, we developed an empirically grounded and theoretically informed conception of the innovation journey that "captures the messy and complex progressions" while travelling (van de Ven et al. 1999: 212-213). This allows us to capture the uncertain open-ended process by reconstructing precisely the open ends and uncertainties, the more or less organised social actions and negotiations, and to identify patterns and typical key components. At the end of the day, apart from its scientific contribution, this kind of information may be exactly what policy-makers and practitioners need when navigating along uncharted rivers in their own efforts to pursue a governance innovation.

While not going into detail of the original categories by Van de Ven et al. (1999) and the adapted categories by Voss (2007), in the following section (4.2), we briefly point out the specific features of our further developed set of innovation processes analysis categories.

4.2 The adapted innovation journey framework

With the help of two particularly dense and detailed documented innovation cases from our project portfolio (Innovation Regions Eisenwurzen and Trentino, see section 5 below), we adapted the innovation journey frameworks from Van den Ven et al. (1999) and Voss (2007) to the special features of our forest ecosystem services cases. Where necessary, we adjusted definitions of existing categories and introduced additional categories.[1] The aim of the category set for the innovation journey is to describe the spectrum of crucial structural events and relationships through generalisable and comparable analytical categories. The structural events and relationships were previously reconstructed empirically, as explained in the method section above (see section 3.1). There are numerous documentations of the innovation process elements and self-reflections by the Innovation Region Teams and others involved, that have been produced during the course of the project, i.e., since October 2017. The structure of the course of the innovation work and the circumstances of the same has been created on the basis of these sources and has been discussed intensively with the partners in the regions in order to be able to correctly assess relationships and include backgrounds. Table 1 lists the categories and their definitions from which the heuristic is made up. In the following, we have already included a number of examples from all six cases for better understanding. We have inserted a row with symbols for some categories as we have visualized with a figure for each of the resulting Innovation Journeys in section 4.

Table 1. The heuristic categories used to describe forest ecosystem service governance innovation journeys: Phases

Analytical category	*Definition (in the context of the InnoForESt project)*	*Symbol*
Phases		
Origins	*Pre-history of the innovation journey (prior to the preparation phase of the InnoForESt project)*	*(None)*
Gestation	*Initiation phase: informal beginning of the innovation project work (tentative during preparation phase starting with the proposal writing process until the formal project start in November 2017)*	*(None)*
Project progression	*Main innovation journey: formal innovation project work within the InnoForESt framework*	*(None)*

[1] Van de Ven et al (1999) has suggested the following key components of an innovation journey: gestation, shock, plans, proliferation, setbacks, criteria shift, fluid participation of organizational personnel, investors/top management, relationships with others, infrastructure development, adoption, termination. Voss (2007) has used the following innovation journey categories: origins, coupling, forking, shift, setback, phases, scenarios. Adapted to the completely different innovation context, we have modified some of these categories and added new ones. Table 1 shows an overview of these and they are explained in the text that follows immediately.

Table 2. The heuristic categories used to describe forest ecosystem service governance innovation journeys: Key action types

Analytical category	*Definition (in the context of the InnoForESt project)*	*Symbol*
InnoForESt key action types		
CINA workshops	*Workshops with a variety of stakeholders who act as the linchpin of innovation work; to articulate strategies and needs in crucial phases of regional innovation efforts; used both to probe alternative scenarios and to collaboratively find binding directional decisions that stakeholders are satisfied with*	*(None)*
CINA type 1	*Workshop to articulate needs and strategies with the aim of developing and deciding on viable and exciting options for innovation*	*(None)*
CINA type 2	*Workshop for the early review of how a selected innovation approach and object develops (in other places we also say: assessment of a prototype)*	*(None)*
CINA type 3	*Workshop in which strategies are developed in order to be able to continue the innovation work started even after the end of the project*	*(None)*
SETFIS interviews	*Opportunity to discuss the decisive factors influencing the innovation with key players (also the objective in the context of InnoForESt), which results in intense moments of reflection, stakeholders are actively involved and at the same time assessments of the situation from other Innovation Regions are offered for inspiration; can ultimately even contribute impulses to a reconfiguration of innovation in a region*	*(None)*
RBG	*Role-play with rational decision-making problems that have been used where appropriate to sensitize the stakeholders to key issues of forest use*	*(None)*
NetMap	*Interviews conducted at different moments in an innovation process to determine the actor constellations*	*(None)*

Table 3. The heuristic categories used to describe forest ecosystem service governance innovation journeys: Event types

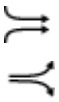
Analytical category	*Definition (in the context of the InnoForESt project)*	*Symbol*
Event type		
Planning	*Project plans are being developed (action), including decisions for future action; the emphasis is on the organisational character of the work*	
Exploring	*Acquisition of useful knowledge about the people and the region involved as a basis for further activities and to build relationships (action); includes any learning effort, that is newly to the innovation work at the specific point in time or by using existing stocks of knowledge or knowledge from other sources*	
Infrastructuring	*Building of the platform and network (action)* *Focus is on building / developing / stabilising the network, a meeting or a collaboration, i.e., the structure; extension or shrinking of stakeholder circle / network; inviting moderators*	
Collaborating	*Tackle/work/act together and set something in motion (action)* *Focus is on content: a regional team and other stakeholders take action* together and jointly *and do something that goes beyond the usual process that the innovation team organizes something* for *the stakeholders (action); more than just sitting together and talking with more or less agreement, or than organising a workshop or platform building*	
Docking ***Undocking***	*External events/projects/activities in relation to a given innovation effort temporarily join the innovation project for the time being, then either integrate or go separate ways again* *External efforts to hook up, such as the "satellite workshop" on a potential fourth innovation idea in Eisenwurzen; not yet integrated, or perhaps never will be*	
Forking ***Coupling***	*Development of two or more ideas for scenarios out of a more general idea* *Conjunction of scenario ideas (potentially scenario selection)* *This applies to Innovation Region Team or InnoForESt project internal integration or differentiation, the focus is on scenarios and ideas*	
Impulse	*Positive or negative event with an impact/impulse on the development direction* *Critical event, e.g., shock, crisis, push; incremental or radical, external or internal; only such of higher relevance*	
Shift	*Change of focus regarding criteria, problem framing, participating personnel, aims and objectives, etc. (not per se a change of maturation level)*	

Table 4. The heuristic categories used to describe forest ecosystem service governance innovation journeys: Process changes & Range of the event

Analytical category	*Definition (in the context of the InnoForESt project)*	*Symbol*
Process changes		
Setback	*Includes mistake, stagnation, crisis, severe doubt, deadlock, obstacles, and describes their effect due to both external or internal circumstances* *Focus on the innovation, which suffers from a setback: consequences of strong and various setbacks may degrade the level of maturation*	
Termination	*Any deliberate termination at any time on content level (actors leaving or kicked out, scenario/theme ending, plans/ideas, path break-up, etc.)*	
Convergence	*Aligning of new and old, or parallel projects, InnoForESt project and competitive projects*	
External Relations	*External actors come in/play a punctuated role; no continued collaboration, only selective mutual reference in action*	
Tensions	*Disagreement, mismatch, strongly drifting apart about knowledge or value basis, political/economic aims or interests (e.g., with external actors or others)*	
Range of the event / happening		
Regime	*When a niche process or event interacts with the incumbent regime development*	*R*
Landscape	*When a niche process or event interacts with the broader landscape development*	*L*
Level of maturation	*Relative degree / level of the specific innovation tendency in terms of progressive, constant (stagnation), or regressive development of the entire configuration of relevant actors and other elements (resources, commitment)*	*(None)*

We observed three circumstances of giving direction to the process:

- First, we have identified a number of **'events'** that give direction to an innovation. These can be strategically significant actions or events in the narrower sense, i.e., occurrences that relate to a point in time.
- Second, we distinguish a number of **'process changes'** associated with these events. This means which direction the innovation work is taking, which obstacles arise, and how this work relates to other innovations that take place in the relevant area but do not belong to the project.
- Thirdly, we divide each innovation process into chronological **'phases'**, during the course of the project (project progression) and the previous developments (origins, gestation).

The analysis focuses on the niche, in which the innovation happens. Having said that, we also take into account the fact whether changes and events relate purely to the niche area of innovation or the narrower context (regime) of the innovation or its wider context (landscape). This approach is taken from work on the multi-level dynamics of the regime transformation (Geels and Schot 2007) and it refers to the range of an occurrence.

Categories that capture **'event'** types, i.e., what happened in the course of innovation work, are the following:

- On the one hand, plans are made (**'planning'**), and, on the other hand, options and alternatives are explored (**'exploring'**), how the plans can be concretised or implemented, or which plans are

sensible and desired at all. **'Exploring'** refers to the acquisition of useful knowledge about people and regions as a basis for further activities and building relationships.

- We differentiate between types of stakeholder interactions. **'Infrastructuring'** refers to a platform and network building action, such as efforts for setting up an innovation platform and networks, targeted events and regular meetings, training opportunities and the like. The focus is on (a) stabilising/destabilising the network of stakeholders, for instance, through a meeting; or (b) consolidating or changing, developing and extending, or shrinking the stakeholder circle; also inviting a moderator for a workshop. In the case of the Eisenwurzen, for example, this became the core idea for the innovation of ecosystem governance in the region: to build an infrastructure for further collaborative innovation in more targeted, product-specific respects. In other cases, this was an accompanying topic that was supposed to open up an arena for negotiation and development to more specific innovations.
- Internally **'collaborating'** in contrast to **'infrastructuring'** is about working together, when, for example, regional teams and stakeholders take action together and do something together that goes beyond the normal process the core team carries out with the stakeholders.
- The categories **'docking'** / **'undocking'** refer to external efforts to hook up with content-related intentions, for example, in Eisenwurzen a group of actors (some from outside the project) used the project framework and the impressive list of participants as an opportunity to present a new pyrolysis technique, which could possibly have become another prototype for the project, and to test it out with the participants (docking). Ultimately, this did not result in a new initiative in the project itself (undocking).
- With respect to scenarios used in the innovation process as a means to pinpoint specific innovation options, we used the categories **'forking'** / **'coupling'**. Forking, on the one hand, means the development of two or more ideas for scenarios out of one more general idea. The conjoining of scenario ideas, on the other hand, is a case of coupling. Both apply in most cases to IR team / InnoForESt project internal integration or differentiation of scenarios, but can also be the result of a workshop and stakeholders' decisions on what to further pursue.
- A wide variety of internal and external signals and events that appear inevitable we call **'impulses',** because they are not simply negatively connoted shock events (cf. Van de Veen et al. 1999; Geels and Schot 2007). These could, e.g., be a group discussion during a workshop with a significant effect on the further innovation work. Impulses can also be rather critical events like new insights, push, shock, crisis, rather incremental or radical – for instance, the bark beetle crisis in some regions, the forest fires in Sweden, or the Vaia storm causing damage in the Trentino and Eisenwurzen regions.
- By contrast, with **'shift'** we indicate that something is moved to another level or area, be it actor roles, participating personnel, criteria for taking decisions, or problem perceptions or framings, aims and objectives. This is not a question of maturation per se, but of the perceived and conveyed interpretation of a problem around which the innovation work revolves.

When we look at the journeys, we collect various "moments" in which something decisive happens in order to peel out the cornerstones of the overall context. If we were to discuss individual actions or measures, we could call them actions. But we do not. Looking back, we observe that a special moment of cooperation has arisen; that forking or docking took place; etc. What exactly is behind it as an action, we cannot consider or "resolve" in so much detail. Therefore, we use the term 'events'.

Categories for **process changes** are the following:

- A **'setback'** is a step backwards or difficult obstacles that cannot be bridged on the innovation development path. What has already been achieved is questioned or lost, for example, a mistake that does not immediately lead to constructive impulses for continuation, a stagnation when that halts the innovation development flow or a deadlock when the innovation efforts come to a temporary standstill. This is about at least difficult obstacles that cannot be bridged (for now). This category is further used to describe their effect. Consequences of strong setbacks degrade the level

of maturation. The analysis records a setback when it can be observed that it is not about the permanent end of an effort or a scenario or a course of action.

- **'Termination'** addresses the permanent end of an effort, an innovation option or a sub-process, or actors leaving or a scenario/theme ending (cf. Stegmaier et al. 2014).
- **'Convergence'** means the approximation or alignment of something within the innovation project and something from outside, such as elements of innovation entering the general policy in a sector or vice versa that what generally happens fits well with activities in the innovation project. An example is the state forestry policy in Trentino, which was pursued far after the start of the project. The policy relies on participative forms that fit well to the interaction with stakeholders in the project. Thereby the project suddenly acts as a pilot for major politics. Convergence also includes the fusion of the innovation with something that already exists outside of the project.
- **'External relations'** refers to eventually or occasionally taking action together with external actors, such as entertaining close links to interest groups, a research institution, or potential but not (yet or anymore) participating stakeholders without direct and formal project participation.
- **'Tensions'** address disagreement with internal or external actors about the knowledge or value basis, or political and/or economic aims or interests. The category refers to the occurrence of tensions with internal or external actors – for example, when criticism comes from outside an innovation project, but with a certain impact on the project, i.e., a political party or NGO that speaks out against the compensation strategy pursued in the project.[2]

The above defined 'event' and 'process changes' categories do not imply a judgement about the maturation of an innovation idea or a prototype. The question of changes in maturation levels is an empirical one and thus answered for each incidence in the individual cases. A tension, setback or termination does not have to be bad per se for the progress of the innovation efforts, neither a convergence or external relation only positive, but can sharpen the focus, give new impulses, trigger clarifications, or pool forces.

In addition, there are analytical categories that characterize the event in terms of the direction and scope in which the innovation comes into play. We introduce two categories that do not describe individual events, mechanisms or activities, but serve to mark the context of the innovation. The first indicates the degree of maturity an innovation has reached - this happens in purely qualitative and relative terms, without numerical ranking, while the second group refers to the multilevel consideration according to Geels and Schot (2007):

- With **'maturation'** we depict the degree of an innovation development in qualitative terms, as a step up to more and a step down to less matured innovation ideas, or remaining on the same level when either of both is the case. This is a judgement we make for each event or activity in the context of the innovation process. It will be clear from the narratives in the individual innovation journey sections below (see 5.1).
- We refer to the context of the **'regime'**, when a niche process or an event interacts with the incumbent regime development (e.g., the wood price drop in Trentino after the Vaia storm, or the new compensation regulation in Finland which was pending for quite a while and thus, some private sector stakeholders tended to wait before engaging more). 'Regime' stands for the immediate (endogenous) context to which the innovation relates to. In relation to the 'regime', innovation is to be understood as a niche process. This enables events to be shown in conjunction with the development of the established regime.
- When a niche process or event interacts with the broader landscape development, we refer to the context of **'landscape'**. Landscape stands for other indirect circumstances (exogenous context). In these contexts, we have found that events etc. such as impulses or setbacks can also occur. In relation to innovation as a niche process and 'regime', 'landscape' refers to events and trends in a broader context, such as climate change and related policies, framework laws at EU level.

[2] Here we have further differentiated the category 'relationships with others' of Van den Ven et al. (1999), while Voss (2007) does not focus on actor relationships at all, but only looks at the process structure. However, we have always looked at different actors (including as stakeholders) with their interests, goals and relationships with one another.

Finally, we differentiate phases of innovation development that are important in the analysis of innovation processes. We use the term **'origins'** (cf. Voss 2007) to capture the pre-history of an innovation effort in a region prior to the preparation and formal start of the project. 'Origins' are the earlier innovation efforts, policy initiatives, legal changes, or bio-physical developments that precede the actual project. During the phases, all kinds of activities and events can occur. **'Gestation'** (cf. Van de Ven et al. 1999), by contrast, addresses the initiation period of the new innovation effort: the more tentative initial efforts undertaken during the preparation phase until the formal start and first period of actual project work: explorations with stakeholders, analyses assessing the situation and scanning of the horizon.

In the analyses of our regional cases, we noticed that the ecosystem services governance innovations sometimes look back on a long tradition and early attempts to start again, and that some existing formats already have an extensive history. In these situations, the history of the innovation needs to be well understood to be able to assess existing continuities and discontinuities. This includes pathways that may (need to) be continued or interrupted, and actor constellations that have to be critically assessed beforehand, when something is no longer functioning well, or where successful cooperation requires future oriented adjustments. In addition, InnoForESt was often not the only research or EU project initiative that ran in a region. Therefore, it is important to review this to be able to learn lessons from available knowledge or at least not to make mistakes again. The fact that InnoForESt as a EU Horizon 2020 Innovation Action started, does not imply that ongoing forms of service change automatically or that stagnant or non-existent potential suddenly opens up. Thus, a close look at what happened before the innovation work in the project context started is needed to understand the development of the innovation process.

5 Empirical Innovation Journeys

With the categories of the above adapted innovation journey framework we analysed each of our six regional innovation processes. In the following, we present the results of applying our innovation processes analysis categories to each Innovation Region in a coherent narrative. The pivotal points - i.e., the main results and structural changes in the innovation process and the stakeholder networks involved are furthermore visualized in a comprehensive process and network figure for each innovation journey.

Both the narrative and graphical representation of the innovation processes must subsequently compress and stretch the strictly taken time. If something happens, it is discussed and shown, if nothing happens, it is not. The x-axis is therefore not the time, but the sequence of events that are important for innovation work. If more happens in a workshop than over the months between the workshops, then the density of events is also zoomed in. This makes it clear that the workshops are in many cases decisive moments in the negotiation between the stakeholders.

5.1 Eisenwurzen Forest-Wood value network, Styria/Lower Austria/Upper Austria, Austria

Origins

In Eisenwurzen, efforts towards a sustainable regional development with emphasis on stakeholder participation, nature conservation, and value creation go back to the 1990s. In 2004, a Long-Term Social-Ecological Research platform Eisenwurzen (LTSER) was established with the Study Group for International Analysis (STUDIA) as coordinator for the Upper Austrian region. This LTSER platform is a network of research institutes, national parks (NP), and other organisations that has already hosted a range of research projects, including on nature conservation and sustainable ecosystem management *(impulse, infrastructuring,* regime ↑*)*. Between 2011 and 2013, an EU-funded INTERREG project "Modular furniture from National park regions" and international art and design colleges, also coordinated by STUDIA, explored the connection of regional joinery handicraft and contemporary design in Eisenwurzen. Despite these efforts, however, the stakeholder network along the forest-wood value chain in the region remained rather fragmented before the start of InnoForESt *(infrastructuring, regime)*. At that time, innovation primarily

depended on individual action[3]. Furthermore, activities started in the INTERREG project petered out after the project ended. In particular, regional stakeholders like joineries did not feel sufficiently integrated in the project and appeared somewhat discouraged and reluctant to engage in similar project-related activities again. However, the network established during the INTERREG project has arguably remained intact regardless, albeit dormant *(setback ↓)*.

Gestation

During the preparation of the proposal for InnoForESt, one scientist who became part of the Innovation Region Team on behalf of the University of Innsbruck (UIBK), Christian Schleyer, was affiliated with the Institute for Social Ecology (SEC)[4] - a founding member of the LTSER platform Eisenwurzen and host of the LTER Austria[5]. The institute's contacts were used to reach out to the then scientific coordinator of the LTSER platform, Andrea Stocker-Kiss (Environment Agency Austria), when exploring options for an Austrian Innovation Region. Consequently, STUDIA was invited to participate in InnoForESt as a practice partner due to their good connections to both practitioners (e.g., through the INTERREG project) and scientists (e.g., LTSER platform) in the region *(infrastructuring, impulse)*. As STUDIA had been involved in and coordinated the INTERREG project on Modular Furniture, joined InnoForESt, initially seeing the project as an opportunity to reinvigorate that idea *(planning ↑)*. Further, the InnoForESt network was enriched by inviting actors from the LTSER platform to become affiliated partners. This included the LTSER platform's scientific coordinator, Ms. Stocker-Kiss (LTSER), and Mr. Wölger (NP Gesäuse) acting as two of the InnoForESt platform's key nature-conservation related partners *(forking)*.

Project progression

Conducting a stakeholder and governance system analysis

When InnoForESt started[6], the general aims of the project team were to bring out stakeholders' already existing but often hidden innovation activities and ideas and to promote those to enable bottom-up innovation *(planning)*. In particular, since there was only little information on how the results of the INTERREG project had been perceived by the regional stakeholder, it was unclear at first, whether pursuing the modular furniture idea was at all promising and whether stakeholders, who had previously participated in the INTERREG project, would be willing to engage in this matter once again. This potential - or at least anticipated - reluctance on part of stakeholders in the region also informed STUDIA's initial cautiousness about InnoForESt's chances. To resolve this, remove some of the uncertainties, and explore 'alternative' ideas, the scientific partner UIBK conducted a comprehensive stakeholder analysis in the first half of 2018 to learn about the regional actors interests, visions, and concerns *(exploring, infrastructuring)*. In these interviews, but also in further bilateral talks, both scientific and practice partners engaged with stakeholders to (a) introduce the stakeholders to the project aims, potential benefits, and applied methods, (b) establish a spirit of Eisenwurzen as an Innovation Region, and (c) explore who else could contribute to the innovation process. Additionally, the interviews established contacts and fostered stakeholder commitment to participate in the upcoming InnoForESt-related events *(exploring, infrastructuring, impulse ↑)* (see D5.1, 5.2). Overall, this led to a better understanding of stakeholders' expectations and ideas, for example, fostering forest education, and involved stakeholders in the innovation process right from the start. Insights gained from the stakeholder analysis informed the IR team's decision to pursue several - instead of only one - forest-related governance innovation ideas in parallel; at least for the time being and only as long as a sufficient number of stakeholders showed interest. This decision represented an evolution of the initial

[3] In 2017, for example, a covered wooden bridge intended as a prime example of what could be achieved with regional wood as a construction material for public buildings, was initiated and realized by the regional carpentry Holzbau Bammer (Scharnstein), whose owner joined the InnoForESt platform later.

[4] In the gestation phase of the Austrian Innovation Region, the Institute for Social Ecology (SEC) was part of the University of Klagenfurt. In March 2018, the institute became part of the BOKU, Vienna.

[5] LTSER-Austria (Austrian Long-Term Ecosystem Research Network).

[6] When Christian Schleyer moved to his new affiliation, UIBK, and took with him the Austrian part of InnoForESt, the SEC's regional expertise was considered too valuable to lose. Thus, although SEC ceased to be an official InnoForESt partner, Veronika Gaube, who also serves as secretary (Schriftführerin) of the LTSER platform Eisenwurzen, was formally and effectively incorporated in InnoForESt and the Austrian IR team as an SEC representative.

project idea *(shift)*. Instead of immediately committing to one innovation idea, such as modular furniture, the IR team opened up to allow for even more new ideas and input from the stakeholders. As a result, three first main innovation ideas (furniture and design, mobile wooden (tiny) houses, and tours to experience the forest) emerged early on *(planning, forking)*.

Focus groups and InnoForESt General Assembly in Trentino

In October 2018, a set of three focus groups (see D4.2) - one per innovation idea - brought together the mostly different[7] stakeholder groups *(infrastructuring ↑)*. This was an essential probing of the three previously collected ideas which were sufficiently interesting to the stakeholders and prepared both the project team and the stakeholders for the CINA workshops. During each of the focus groups (INNO-1, INNO-2, INNO-3), participants elaborated on various aspects of the respective innovation idea, such as potential results/outcomes/effects or obstacles, but also identified other stakeholders/organisations that would need to be included in further activities *(exploring)*.

In October 2018, the first annual InnoForESt General Assembly meeting took place in Trento, Italy. At this meeting, amongst others a focus was put on presenting the outcomes of the Governance Situation Analysis, the Stakeholder Analysis and the discussion of scenario drafts among all InnoForESt project partners *(exploring)*.

The first CINA workshop - Introducing the three innovation ideas

Based on the outcomes of the three focus groups, the IR team started the preparation of the first CINA workshop. Apart from deciding to continue to feature all three innovation ideas, in particular STUDIA followed up on the list of stakeholders to be encouraged to join the CINA workshop by calling more than 60 regional stakeholders and inviting them to the workshop, but also approaching (non-regional) experts who could provide some input *(exploring, infrastructuring, planning)*.

The first CINA (1.1) workshop, which took place in February 2019, brought together a broader range of regional, but also non-regional stakeholders (see D4.2). This was partly due to the extensive communication efforts on part of STUDIA including not only personal phone calls but also the public announcement of the workshop in regional newspapers and other media outlets. In the first part of the workshop, for each of the three innovation ideas (1. Furniture, design and region (INNO-1), 2. Mobile wooden houses & tourism (INNO-2), 3. Experiencing forest and wood (INNO-3), one member of the project team and one regional stakeholder gave input presentations *(exploring)*.

In the second part of the workshop that featured some extensive group work, for each innovation idea it was explored what each individual stakeholder could contribute, what interested him/her with respect to the innovation idea, what specific opportunities and obstacles were, and how the idea could be promoted. The engaged discussions of all three innovation ideas showed that most stakeholders were keen on connecting and pursuing two or more of those ideas *(exploring ↑)*.

Triggered by the plenary discussion on the innovation ideas, but also by an impulse presentation by Veronika Müller on the wood design training course "Überholz" at the University of Art and Design Linz and the successfully established wood-related stakeholder platform 'Werkraum Bregenzer Wald' in Vorarlberg (Austria), workshop participants reiterated the importance of platform and network building *(external relations)*. This was perceived as even more important since stakeholders expressed the wish to create synergies between different separated innovative activities and to strengthen relations within the region but also to increase visibility and to motivate other stakeholders to join the network and to get public funding *(infrastructuring, impulse)*.

Until the second CINA (1.2) workshop in May 2019, many activities were undertaken by the IR team, such as smaller-scale meetings with regional stakeholders but also analysing and discussing the results of the first CINA workshop, to keep the innovation process running and to plan the workshop *(exploring, planning)*. Legal issues for implementing tiny houses continued to appear unsolved. Regional tourism associations as

[7] There were a few overlaps, i.e., stakeholders attending more than one focus group (that took place consecutively in the same location).

an important partner for a planned pilot realisation began an internal reorganization process and therefore stopped their involvement, which provoked one of the major protagonists for tiny houses (SPES) to pull out from platform activities (*setback).*

As a result of the continued high interest in all innovation ideas, the IR team decided that all of them should be pursued further and that the idea of establishing an innovation platform forest-wood should be picked up as well as an organisational construct that could, among others, allow for integrating the three already existing innovation ideas as well as enabling and facilitating stakeholder exchange in general. This innovation platform was conceptualised and introduced as a fourth, complementary innovation idea *(shift, forking ↑).*

The second CINA workshop - Introducing the fourth innovation idea
This second CINA (1.2) workshop took place in a different location, the neighboring Enns valley, to better reach potential stakeholders (especially forest related small-medium enterprises) from the province of Styria (see D4.2). In general, it proved to be difficult during the workshop to account for the high number of stakeholders who did not attend the first CINA workshop, which was to a large extent caused by the change in location. While the new ones needed to be 'filled in' with respect to previous discussions, 'old' stakeholders perceived this as being too repetitive (*setback ↓).* The workshop started with an external input from Gabriel Gruber presenting the wood-related innovation success story of the work group ARGE s'Hoiz ("Working group wood") as an illustrative example of an organised stakeholder network/platform *(external relations, impulse)*. The following parts of the workshop were structured in a way that was intended to activate stakeholders - partly working in smaller thematic groups - and create a sense of ownership for one or more of the innovation ideas. To that end, the stakeholders had to present the results of respective group work themselves *(exploring, infrastructuring).*

Contentwise, the necessary steps towards implementation of the three existing innovation ideas plus the added fourth idea on the innovation platform forest-wood were discussed. With regard to these innovation ideas, the stakeholders expressed concerns that bureaucratic and administrative obstacles will hamper their implementation. Some stakeholders questioned the economic viability and competitiveness of a focus on regional wood *(setback)*. Further, actors from the forestry sector pointed out that so far they did not feel the innovation ideas were connected to their interests and that forest owners were not sufficiently represented in the workshops *(setback ↓).* Concerning the establishment of a platform, it turned out that some stakeholders first wanted to decide on which concrete innovation idea to pursue further before they felt able to decide on the organizational form of the platform. On a more general level, in comparison to the first, rather enthusiastic CINA workshop, the stakeholders expressed more skepticism about the continuity and sustainability of the project as such and raised fundamental questions regarding the actual goal of InnoForESt, the role of InnoForESt in the region, how the self-organization of stakeholders should work, and especially the continuity of the innovation ideas after the end of InnoForESt *(setback).* Adding to this, the establishment of a digital platform which was very broadly introduced as an idea during the workshop did not attract much interest among stakeholders.

The first Task Force meeting, InnoForESt-supported workshop, and planning an excursion
Following the second CINA workshop and the rather limited progress regarding the individual innovation ideas, the IR team decided to look for 'champions' of strongly motivated and committed stakeholders for - ideally - all three thematic ideas, so that further work on the individual innovation ideas could be organised in smaller groups and would become more (regional) stakeholder-driven with fixed responsibilities among stakeholders. To identify those 'champions' and to discuss the overall strategy of further developing the innovation platform, the IR team approached potential 'key' stakeholders and invited them to join a task force meeting *(planning).*

Some weeks before the task force meeting, Josef Lumplecker (LUMACON Holztechnologie GmbH), who took part in the second CINA workshop, initiated an InnoForESt-supported workshop (June 2019) as a small satellite event where a concept of a business park was presented and discussed with local forest owners, forestry companies, and employees of the municipality of Weyer, and representatives from the LEADER region (*docking*). The park's operative purpose is beech wood processing for construction in combination

with pyrolysis of residues (for energetic use), and thus tackles a major unused forestry potential of the region Eisenwurzen. The initiative was developed outside InnoForESt, but needed InnoForESt as a neutral platform to gain further confidence in the region and among business partners. As this project relied on investments of private forest owners and public co-financing, the idea is further pursued by these partners.

At the task force meeting that took place in July 2019, purpose, objectives, and principles of the innovation platform (INNO-4) were discussed including the option to develop a 'Memorandum of Understanding' for all interested regional stakeholders to sign at the next CINA workshop and beyond (see D4.2). Further, the idea of organising an excursion to Vorarlberg to visit, among others, the successful wood-related platform 'Werkraum Bregenzer Wald' and to learn from this 'best-practice'-example was very welcomed *(impulse, infrastructuring, exploring)*. In contrast, the first rough mock-up of the regional InnoForESt digital platform was presented, yet - in this form and without progress on developing the physical platform - not perceived as an essential keystone for establishing the stakeholder network (setback).

While the task force meeting had essentially failed to identify 'champions' for any of the three thematic innovation ideas and to initiate substantial progress here (setback). Further, the discussions during the meeting introduced 'beech wood' as 'topic' that seemed to be relevant for all three thematic innovation ideas and which could have some integrating function *(exploring ↑)*.

As an outcome from the task force meeting, activities planning the excursion to Vorarlberg in early autumn 2019 intensified (planning), yet due to a lack of substantive interest it was first postponed and later merged with an initiative by MHC, planning to visit the same sites in Vorarlberg (docking). As a second outcome of the discussions, exploring options of an appropriate organizational form of the innovation platform were initiated (planning).

In September 2019, a SETFIS interview with members of the scientific team took place. It had no discernible effect on the innovation`s development.

The InnoForESt General Assembly in Schlierbach: Market place and excursion
On the occasion of the InnoForESt-Consortium Assembly (October 2019) in Schlierbach, a 'market place' was organised as a side event. Here, regional stakeholders were invited to learn from the other IRs in InnoForESt and exchange with the respective IR teams. This event was complemented by an excursion 'Forest-wood-value-chain Eisenwurzen' the following day where InnoForESt members were given insights into the forest-wood value chain of the Eisenwurzen region and some of the regional stakeholders had the opportunity to communicate innovative approaches to and to exchange experiences with an international community *(external relations, impulse, exploring, infrastructuring ↑)*. Both events triggered the regional stakeholders' awareness of the importance of getting organised in the form of a stakeholder platform/network and the positive feedback from the other IR teams encouraged the participating regional stakeholders to continue along this path.

In November 2019, a SETFIS interview with the leader of the practice team took place. It had no noticeable effects on the development of this innovation, but was very helpful for the overall project in order to keep an overview of the regional developments.

The third CINA workshop
At the third CINA (2.1) workshop (January 2020), the main focus relied explicitly on the platform development and on discussing options of - and thus further developing - the organizational form of the innovation platform to ensure their sustainability/permanence after the end of InnoForESt (*shift*) (see D4.2). Further, Gabriel Gruber once more presented the work group ARGE s'Hoiz as best practice example, focussing here on organisational features *(external relations, infrastructuring, impulse)*.

Based on fact sheets on three organizational forms (ARGE-work group, Association, and Cooperative) that had been prepared by the IR team beforehand, benefits and disadvantages of different organizational forms were elaborated discussed in detail with respect to pros and cons as well as fit to the needs of the 'Innovation Platform Forests-Wood' during some group work at the workshop *(exploring)*. Although interesting and engaged discussions - somewhat hampered, though, by the fact that 25 students from a regional (Raumberg-

Gumpenstein in the Styrian part of the Eisenwurzen) forestry related vocational training class had joined the workshop who were otherwise not directly involved in the innovation process (external relations) - there was no clear preference among the stakeholders, although a work group seemed - for the time being - the most cherished idea. It still remained unclear who of the stakeholders would take responsibility in any of these organisation forms. When the question was addressed, stakeholders reacted reserved, possibly because they could not yet agree upon a goal of the platform (*setback*).

The third CINA workshop highlighted that there is a strong need to create a common vision and a concrete goal among the stakeholders to ensure a continuation of the innovation platform development and related activities after the end of InnoForESt. Thus, the IR team planned to organize a second task force meeting in March 2020 to decide on a joint vision/set of objectives, but also to hand over responsibility to the stakeholders *(planning)*.

A rescheduled Task Force meeting and outlook

Due to the Covid-19 pandemic, emerging in early March 2020, first, the planned task force meeting had to be postponed until June 2020. Second, between March and June 2020, it was also difficult to keep up contact with the stakeholders and the possibilities for exchange were restricted because of the reduced capacities of the IR team and most regional stakeholders during this phase of the pandemic *(setback/L ↓)*. This is particularly problematic as the last nine months of InnoForESt were supposed to be used to hand over responsibilities for furthering the innovation process to the regional stakeholders.

For the second task force meeting (June 2020) (see D4.2), which was carried out as a hybrid event with some of the stakeholders meeting in Schlierbach, and other stakeholders and members of the IR team joining via Zoom, the IR team had compiled and clustered the main statements related to common objectives made by stakeholders during all previous meetings and smaller-scale discussions. During the task force meeting, which also functioned as a road mapping CINA-Type-3 workshop, the main objectives and the clustered subordinate objectives were discussed, detailed, modified and complemented by all participants *(infrastructuring, exploring*). While there was some form of consensus with respect to the more general objectives (creating appreciation of wood from the region for the region; linking innovation, ecosystem services and region), there remained a greater variety of opinions and preferences with regard to the sub-goals and their operationalisation among the participants. Compared to the first task force meeting, a smaller number of participants joined the - Covid-19 induced - hybrid-virtual format (*setback/L*). Eventually, however, no individual or groups of stakeholder(s) stepped forward proactively taking the lead in continuing organizing further meetings of the platform or the (further) development of the platform in general beyond the end of InnoForESt in December 2020 *(termination ↓)*. One effect of the platform activities relates to the planned construction of bus shelters made of local wood from the Almtal region. Some participants from this subregion of the Eisenwurzen, who were involved in most of the workshops and activities, decided to leave the platform and continue to develop projects independently from the InnoForESt platform *(termination)*. Due to ongoing Covid-19 restrictions, another final meeting of the InnoForESt platform is very unlikely. However, the regional management and two LEADER Local Action Groups (Nationalpark Region Oberösterreichische Kalkalpen, Traunviertler Alpenvorland), who have been involved in the InnoForESt platform from the beginning, stated that the promotion of the value chain forest/wood is expected to stay on the regional agenda.

In retrospect, one can see the innovation journey of the Eisenwurzen Forest-Wood value network characterized by a strong, intensive start and main part, as well as a comparatively less progressive late phase mainly due to the reluctance of stakeholders to take the further operation of the platform into their own hands, and on top of that the difficulty of meeting under Covid-19 conditions.

No concrete further activities have been planned. There is still the idea to find post-Covid-19 an opportunity for the scientific team to present the results of InnoForESt, including those from other Innovation Regions.

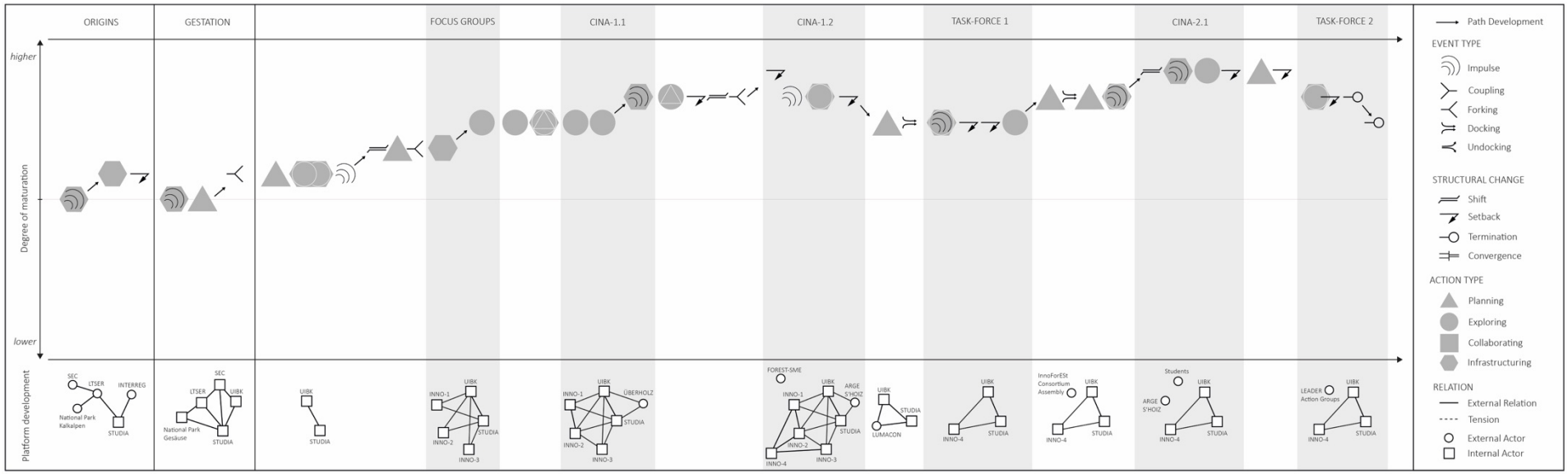


Figure 2. Innovation Journey Eisenwurzen Forest-Wood value network

Abbreviations: *ARGE S'HOIZ = Working group wood from the community of Sauwald, FOREST-SME = Forest related small-medium enterprises, INNO-1 to INNO-4 = Innovation focus groups (1-4), INTERREG = Program funded by the European Regional Development Fund, LTSER = Long-Term Social-Ecological Research platform Eisenwurzen, LUMACON = Lumacon Holztechnologie GmbH, SEC = Institute for Social Ecology, STUDIA = Study Group for International Analysis, ÜBERHOLZ = Wood design training course "Überholz" at the University of Art and Design Linz; UIBK = University of Innsbruck*

5.2 Habitat Bank of Finland, Helsinki, Finland

Origins

The idea of using economic instruments for steering biodiversity compensation had already arrived in Finnish forest governance years before InnoForESt launched: from 2002 onward, a national scheme called "METSO" provided Finnish landowners with monetary payments for voluntarily implementing biodiversity conservation measures in forest areas, which would then be protected either temporarily or even forever. This also included the idea of compensating for lost biodiversity values, paid by those who cause the loss. METSO laid the groundwork for stakeholders' general acceptance of the idea of receiving monetary payments for conserving biodiversity in their forests *(impulse ↑)*. The stakeholder networks already in place because of METSO were fertile ground for SYKE, the Finish Environmental Institute and later science partner of InnoForESt, to show the idea of the Habitat Bank of Finland, which is envisioned as a market mechanism for the conservation of biodiversity *(infrastructuring)*.

In 2015, SYKE and University of Helsinki enrolled the idea of Habitat Bank of Finland ecological compensation in a research impact competition called the "Helsinki Challenge". Later also the University of Jyväskylä joined, along with several stakeholders. Their idea "Biodiversity Now!" succeeded in obtaining seed funding, which initiated the collaboration *(collaborating ↑)*. At that time, the idea of ecological compensation had also gained momentum due to EU stimuli such as the habitat restoration target or the No Net Loss policy *(impulse)*. Through "Business and Biodiversity" trainings, SYKE and a Finnish organization promoting sustainable business (FIBS) also sensitized private companies for the topic by suggesting options to realize corporate social responsibility activities *(infrastructuring)*.

SYKE intensified its work on a voluntary biodiversity compensation scheme and acquired funds for developing the Habitat Bank of Finland concept in an at the time of writing ongoing project called "EKOTEKO", which is devoted to developing a calculation method for the ecological value of areas with deteriorated biodiversity and potential compensation sites that will make these sites comparable *(planning)*. EKOTEKO, which is led by the University of Helsinki, and what would become InnoForESt, which is led by SYKE, are meant to cross-fertilize each other *(docking)*. The aim was to test the feasibility of ecological compensation and to develop a pilot project that should promote cooperation between business and administration.

The emergence of the Habitat Bank of Finland occurred in a broader context of a discussion on biodiversity offsetting. In this discussion, the concept of "ecosystem services" with all its facets remained relatively less important. From 2016 onwards, ecological compensation climbed up the political agenda: the Ministry of the Environment commissioned and funded studies on biodiversity offsetting *(external relations, impulse ↑)*. They picked up offset payments as a way to involve private actors in ecological compensation schemes.

Gestation

The InnoForESt proposal was closely linked to existing ideas about the Habitat Bank of Finland and the EKOTEKO project. The Habitat Bank of Finland was introduced in InnoForESt as an innovation idea of organising private sector habitat banking to compensate for the ecological harm its activities cause. From the start, there was no specific limitation to the kind of activities or businesses to be included, as long as they were eligible for compensation.

The Finnish IR team members complemented each other well in terms of scientific and practitioner background. Due to previous collaborations, the science partner SYKE and the practice partner Finish Forest Centre (FFC) were well-positioned for the work on the Habitat Bank of Finland. This included the activation of the relevant forest stakeholder networks and the awareness of stakeholders' interests *(infrastructuring, exploring)*. The work of the IR team, therefore, did not need to concentrate on building new networks, but on operationalising and piloting the Habitat Bank of Finland *(planning)*. An important step was to link supply and demand of ecological compensations, bringing together companies intent on collaborating with forest owners.

Project progression

Laying the groundwork

In the first six months of 2018, the main focus of numerous meetings organized by the IR team was to create a shared vision and knowledge base among the key stakeholders, including forest-owners (Central Union of Agricultural Producers and Forest Owners), the Centre for Economic Development, Transport and the Environment of Central Finland and representatives of the city of Jyväskylä *(infrastructuring, exploring)*. In particular, the IR team's strategy was to meet with each stakeholder or organisation individually to create an atmosphere in which the stakeholders could freely express their thoughts and requirements. The general attitude towards innovation was positive at those meetings, but it quickly became clear that two preconditions were considered necessary for the implementation of the pilot project. First, a kind of intermediary or broker would be required to manage the remuneration agencies and finances. Second, the exact compensation criteria and mechanism needed detailed elaboration to convince companies to commit. This led to three rough scenarios for those mechanisms: an authority-driven mechanism, a voluntary contract scheme, and a nature value bank *(planning, forking)*. Among others, these rough scenarios were based on a stakeholder analysis and governance situation assessment undertaken as an InnoForESt activity *(exploring)*.

First CINA workshop and landmark decisions

The first CINA workshop equivalent to type 1 took place in September 2018. It brought together stakeholders (for details of the CINA workshop participants, please see Aukes et al. 2020), almost all of whom were related to the forestry sector and known from the time of the Helsinki Challenge, to discuss the three scenarios for a new ecological compensation mechanism *(exploring)*. During the workshop, stakeholders were asked to contribute to the scenarios. Favourable factors concerning the different scenarios were identified as well as the need to create a digital platform that reconciles the supply and demand of compensation sites. The workshop once again emphasized the importance of specifying the innovation with regard to piloting and developing the remuneration of compensation before further issues could be discussed and before stakeholders could commit to participating in the compensation scheme. Based on the results of the first type 1 CINA workshop, the IR team decided to continue only with the voluntary contract scheme idea and integrate some relevant aspects from the other scenarios that were terminated *(planning, termination, coupling ↑)*. Apart from that, the IR team realized that inviting a broader range of hitherto underrepresented interest groups, such as potential buyers of compensation or representatives of public administration, would also have led to different results including a rise of conflict potential.

Between the first type 1 CINA workshop and the type 2 workshop in May 2019, several developments happened simultaneously. First, the IR team stayed up-to-date about EKOTEKO's work *(exploring)*. Second, the IR team went on an excursion to Central Finland together with EKOTEKO staff to assess potential sites that private landowners could make available for compensation *(collaborating, exploring)*. There was no chance to meet with the landowners themselves and the IR team was unable to find a pilot site that matched the requirements of a potential project developer in the vicinity. To supplement this information, the team conducted ten forest-owner interviews over the phone to clarify forest-owners' knowledge needs. Based on these needs, an info-sheet was prepared to communicate the innovation to forest owners in a targeted fashion. Another important idea emerged during the excursion: since finding interested private parties presented a difficulty as long as compensation remained voluntary, including the public sector, such as municipalities, became a serious option *(setback, impulse, shift, forking ↓)*.

During the first annual general assembly of InnoForESt in October 2018, which focused on peer-to-peer sharing between the InnoForESt Innovation Regions, the Finnish innovation team agreed with other innovation teams to organize a trip to visit other Innovation Regions, given that it was impossible at the time to visit the Trentino Primiero region due to the recent Vaia storm. In January and February 2019, a NetMap exercise was carried out by InnoForESt Work Package 4 and the Finnish innovation team. SYKE participated in one exercise and FFC in another. The purpose of the exercise was to reconstruct the chronological development of the innovation, including its variegated events, actors and processes. The impact on the further innovation work can be described as a reflection on the past process *(exploring)*.

Second CINA workshop and adjustments

Preceding the first type 2 CINA workshop in May 2019, the IR team decided to change the stakeholder constellation to focus on potential contracting parties, i.e., landowners with potential offset sites and businesses from the construction, extraction and gravel industry interested in voluntary compensation *(planning, infrastructuring, shift)*. The workshop had two objectives. First, unresolved practical aspects were to be elaborated for the voluntary compensation scheme as developed at the first workshop. Second, during the workshop the IR team enabled a landowner-company pair to simulate confidential negotiations on the conditions under which they would participate in compensation *(exploring, collaborating)*. Business representatives who joined the innovation process for the first time during this workshop, for example from the construction, extraction and gravel industries, are forerunner companies who already have more ambitious goals for social responsibility. Their participation resulted in a creative atmosphere and a spirit of progress *(impulse)*. Although progress was made on how to award contracts, some issues remained unsolved including how to match destroyed and ecologically valuable sites as well as how to calculate the offsetting cost *(stagnating setback)*.

After the workshop, some of the companies, which had previously been very interested in compensating, became hesitant *(setback, tensions ↓)*. Neither of them wanted to be the first to come out as responsible for biodiversity loss. Several companies perceived it as more convenient to finance compensatory measures on their own land rather than to offset on third-party land.

Meanwhile, political developments, which had been emerging since 2018, became more concrete and influenced the InnoForESt innovation process: the government had revived its interest to advance ecological compensation by commissioning several studies. In June 2019, a newly-elected cabinet with a stronger environmental orientation explicitly included in its program a pilot project for an offsetting scheme limited to nature values protected under the Finnish Nature Conservation Act and EU Birds and Habitats Directives *(impulse, external relations)*.

A role board game exercise was held in Turku in June 2019. The innovation team - i.e., SYKE and FFC - and EKOTEKO staff played the game. It proved how complex it is to simulate decision making. The game should have really been tailor made to each innovation case to get more out of it (*exploring, collaborating*).

In October 2019, a SETFIS interview with the science partner leader took place. It aimed at clarifying the innovation process to colleagues. Its impact on the innovation work can be described as further illustrating the conceptual novelty of ecological compensation. The idea that the focus is on the shifting responsibility to the actors causing biodiversity loss, and forest owners having just an instrumental role in providing offsets seems to remain novel. In November 2019, another SETFIS interview with the practice partner representative took place. It aimed at re-narrating the story of the innovation, in which the practice partner described quite broadly, how and which stakeholders were contacted. Its impact on the innovation work can be described as a potentially useful reflection exercise (*exploring*).

Emerging uncertainties and outlook

In early 2020, the uncertainty and complexity of this situation, which prevented both private landowners and businesses from committing to voluntary private contractual agreements, led the IR team to refrain from further cooperation with those two stakeholder types *(planning, termination ↓)*. Now, the IR team attempts to initiate a pilot with Lahti municipality, which is interested in compensating for the construction of a large residential project *(shift, collaborating, infrastructuring ↑)*. Contacts with Lahti were established through partner project EKOTEKO, which also interviewed municipal representatives. As current green capital of Europe, Lahti is particularly interested in a successful pilot project, but two known core problems persist *(stagnating setback)*. First, Lahti prefers the implementation of compensatory measures on own land instead of another party's land. Second, the ecological value lost through the residential project should be balanced in a single compensation site. When the Covid-19 pandemic struck, the negotiations the IR team had begun with the municipality grinded to a halt *(exploring, setback ↓)*. However, this did not withhold Lahti from looking for suitable offsetting sites. On the whole, the market for biodiversity compensation in Finland currently looks disenchanting and stakeholders are waiting for new developments *(setback ↓)*. The

Innovation Region Team will host its first type 3 CINA workshop at the end of October 2020 focusing on municipalities, research and business and the concrete actions that have taken place regarding offsetting *(planning)*. The workshop will explore what these actors in particular can do regardless of government inaction or slowness in development of national guidelines for offsetting.

SYKE continues to work on biodiversity offsetting by applying for new projects to support research on ecological offset criteria matching and institutional development, and actively interacting with the ministries pushing the political and legislative aspects forward. SYKE has also explored the possibility to become the verification entity for offsets, if mainstreaming occurs. Other cities, such as Jyväskylä in collaboration with Jyväskylä University, are also proceeding with piloting offsetting in land-use and testing an idea of No-Net-Loss in cities. SYKE and FFC may contribute to this effort.

The general concept of the innovation – the Habitat Bank of Finland – had been pre-defined from the start and much of the innovation process was devoted to developing the details of this concept. Nevertheless, several setbacks and stagnations led to a shift in the innovation's target group. Despite the threat a looming governmental compensation program poses for the continuation of the InnoForESt innovation, the generally supportive climate and the various projects to promote ecological compensation could help the innovation to persist even after InnoForESt has ended.

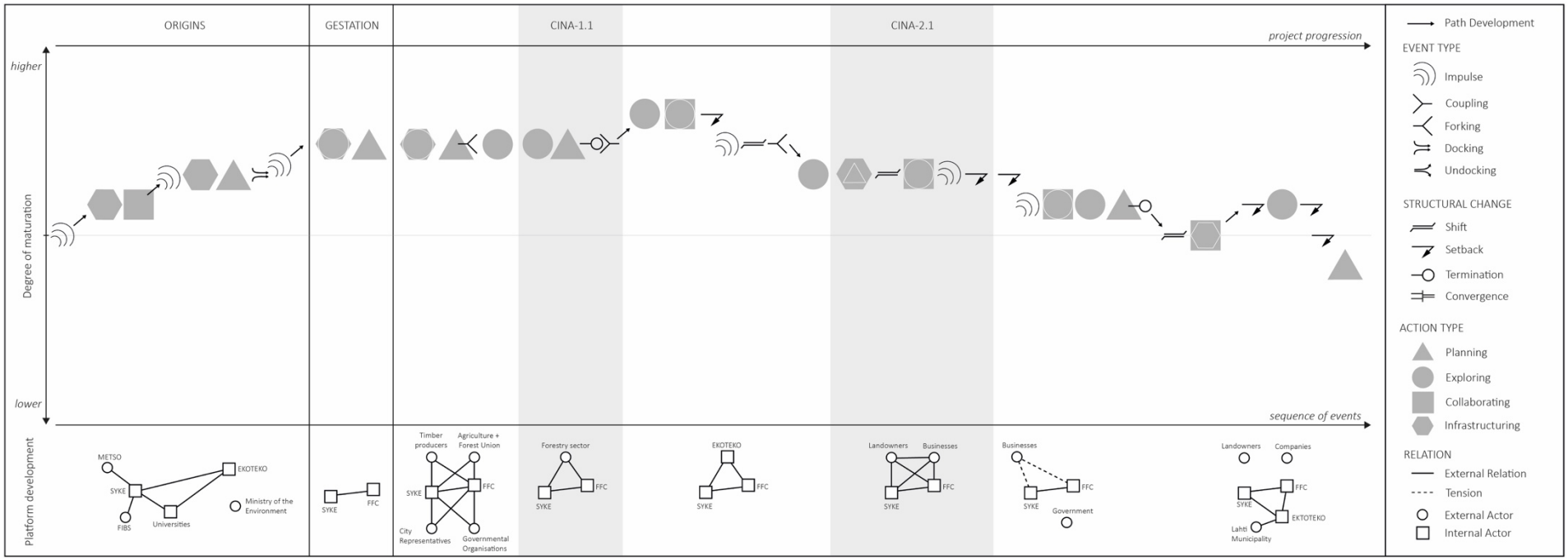


Figure 3. Innovation Journey Habitat Bank of Finland

Abbreviations: *EKOTEKO = Habitaattipankki tutkimuskonsortio (Habitat Bank research consortium); FFC = Finish Forest Centre; FIBS = Finnish organization; promoting sustainable business; METSO = Forest Biodiversity Programme for Southern Finland; SYKE = Finish Environmental Institute*

5.3 'Love the forest' educational competition, Gothenburg, Sweden

Origins

Historically, forests have always played a key role in the Swedish economy. However, it is a challenge to manage forests in a way that they are economically viable, meet the demand for forest biomass and at the same time provide other ecosystem services, including regulating and cultural ecosystem services. While the Swedish Forestry Agency tries to balance production-oriented activities and environmental goals, there is a tendency in the forestry sector that economic interests dominate efforts to foster ecological functions of forests.

To create more awareness for the environmental significance of forests, the initiative "Love the forest" ("Älska Skog", in the following Love the Forest 1.0) was developed in 2015 by Universeum, a Swedish science center in Gothenburg. Universeum relied on a solid network of teachers that had been built throughout roughly 15 school projects. The core idea of the initiative was to have school children from 5th and 6th grade (11-13 years of age) entering a competition with their own projects geared towards creating an understanding of the ecological functions of forests. The underlying ambition was to motivate the school children to visit forests more often and to increase their likelihood to start careers in the forest sector. Universeum approached a large set of potential partners, including land and forest owners, such as the "Southern forest owners", a diversified industrial forest corporation owned by about 52,000 members, a state-owned forest company (Sveaskog), Church of Sweden; a cooperation network and consulting cluster (Swedish Forest Society); civil society actors (FSC); public administration (Swedish Forest Agency); scientific organizations (Gothenburg University, Chalmers University of Technology); recreational users (teachers & students). A dialogue with these potential partners on how to achieve the greatest desired impact of the Love the Forest 1.0 initiative found great interest and led to a three-year commitment of financial and in-kind contributions by the partners *(exploring, infrastructuring)*.

Gestation

Between 2016 and 2018, two runs of Love the Forest 1.0 took place. Universeum regarded the integration of Love the Forest 1.0 into InnoForESt as an opportunity to gain leverage for the initiative, for example, by extending the existing network. To successfully re-design and implement a new initiative "Love the Forest 2.0" (in the following Love the Forest 2.0), Universeum needed to find support on several levels. First, the Love the Forest 2.0 initiative had to be of interest for existing partners from the forestry sector *(impulse/R)*. Second, the content of the initiative had to fit into the fixed curriculum of schools, and thus depended upon the teachers' willingness to cooperate *(impulse/L)*. As these were crucial prerequisites for the functioning of the future Love the Forest 2.0 initiative, Universeum fostered establishing a strategic relationship with the Gothenburg City School Board, to facilitate the fit to school curricula *(collaborating, infrastructuring)*. To balance the different interests of schools on the one hand and the forestry sector partners on the other, representatives of the FOCALI network (Forest, Climate, and Livelihood research network), which amongst others included representatives of the Swedish science partner University of Lund and the University of Gothenburg acted as project steering committee members in Love the Forest 1.0 *(infrastructuring, collaborating ↑)*.

Project progression

Transition from Love the Forest 1.0 to 2.0

The final event of Love the Forest 1.0 took place in May 2018. At the event all involved school classes (altogether 450 students and 35 teachers) presented their projects. The event was used to get in touch with the teachers and the partners to explore and discuss potential involvement of these stakeholders in a redesigned Love the Forest 2.0 under InnoForESt *(termination, impulse, convergence, exploration, infrastructuring↑)*. Further, in August 2018 interviews were conducted with core members of the Love the Forest 1.0 and focus group sessions with two different schools (students) participating in Love the Forest, to explore how they value different forest ecosystem services. The feedback from the interviews was very positive, exhibiting demand for additional runs and creating motivation to re-design the initiative to turn it into a recurring program.

In Love the Forest 2.0, the IR team's scientific partners throughout the innovation process provided a scientific basis on the role of the ecosystem services concept for forests. The importance of non-timber forest ecosystem services such as regulating and cultural services was particularly emphasised. This introduced a novel view on forests beyond the traditional focus on forests as production sites *(shift)*. The IR team's contribution was also important to allow for and steer towards a more nuanced and less emotional discussion, detached from public debates on climate change and forest management in general, as these themes have a high potential for turning into politicized or polemic discussions. At the same time, the researchers had to be careful not to deter partners and potentially interested stakeholder groups, as this could have negatively influenced standing relations, networks and future cooperation between stakeholders and the practice partner Universeum *(exploring, planning)*.

IR practice partner Universeum played a strong role in driving the innovation process. It actively involved different stakeholder groups and different schools in the process. Universeum met with representatives from other regions in regular meetings and frequently lobbied for the project to create commitment among the partners. However, this strong role of Universeum also created a dependency on Universeum's activities, which had a downside to it as exogenous events showed: A heatwave and drought in summer 2018 led to a low number of visitors at Universeum, and consequently fewer financial resources available. In this situation, it was hard for Universeum to engage fully in the innovation activities as the organization had to focus on an emergency strategy including budget cuts and decisions about which staff to keep and lay off *(setback)*. Those who remained had to partly engage in new work and projects based on the restructuring. Despite this impediment, several preparatory meetings, workshops and phone calls took place to settle financial and organizational arrangements and to prepare content development *(planning, exploring, infrastructuring)*.

While preparing for the initial CINA type 1 workshop the IR-team involved the external, professional workshop facilitation organization REALIZE in the planning process. REALIZE got familiar with the CINA method, facilitated the first workshop and continued this work for the CINA type 2 workshop. With their expertise in the creation and implementation of innovations, the organization enabled an efficient use of both workshops *(collaborating)*.

In October 2018, the first annual InnoForESt General Assembly meeting took place in Trento, Italy. At this meeting, amongst others the project partners focused on presenting the outcomes of the Governance Situation Analysis, the Stakeholder Analysis (which had been conducted since August 2018) and the discussion of each IR's scenario drafts *(exploring)*.

First CINA workshop

In November 2018, the first CINA workshop (type 1: innovation options) was conducted. The workshop content was based on the feedback and experiences that had been collected throughout Love the Forest 1.0. By doing so stakeholders' expectations were already known beforehand and enabled a head start. The main goal of the workshop was to develop two themes as the basis for Love the Forest 2.0 scenarios *(exploring)*. These themes were "climate", which covered the interactions between forests and climate (including climate change impacts on forests as well as forests' and forestry role in climate mitigation and climate adaptation); and "integration", which covered the use of forests as a platform for improved integration of migrants according to a model of nature-based integration. Three requirements were set for the scenarios based on these themes: 1) Students had to work with real cases to achieve motivation; 2) Tasks had to take place in the forest (not just in the classroom); 3) Incentives for the teachers to join the project were needed. These requirements were applied to the two themes and, thus, resulted in six different potential directions forward, i.e., three different scenarios for the "climate" and three for "integration" *(forking ↑)*. Besides scenario development, creating stakeholder commitment was crucial, as part of the stakeholders were also potential funding partners for a re-designed initiative. At the workshop it was decided to aim for a governance structure for Love the Forest 2.0 which pretty much resembled that of Love the Forest 1.0: a project driven by Universeum, directed towards 5th and 6th grade students and teachers, and funded by partners from the Swedish forest industry private sector, as well as municipality and governmental agencies *(planning ↑)*.

Between the first and second CINA workshop, the time was used to plan how to proceed with the scenarios developed at the first CINA workshop, taking into account material collected during previous activities. For the workshop, it was aimed to conceptualize and further develop the selected scenarios towards a prototype, which included a reduction of scenarios and depicting a step towards specifying the topic and the target group of Love the Forest 2.0 *(planning)*. By merging the six scenario sketches developed at the first CINA workshop, the following three scenarios were agreed upon: "Wild Kids" and "Certified Outdoor Guide" were linked to the integration theme; Scenario "Climate Challenge" captured the climate theme *(forking)*.

The second CINA workshop

At the second CINA workshop in April 2019 (type 2: prototype assessment), these new scenarios were discussed. According to a first scenario students would plan a day trip for challenged children ("Wild Kids"). Another scenario included letting students identify a "climate challenge" in their neighborhood and develop a solution for it. A third scenario was planned ("Certified Outdoor Guide"), but not discussed during CINA-2 due to an insufficient number of workshop participants. Again, this was a participatory process, as the most important stakeholder groups for future implementation, teachers and potential funders, could give input on the design of the initiative *(exploring)*. Unfortunately, stakeholders representing big companies of the forest industry did not show up and consequently could not provide their interests for the decision on the scenarios to finally choose from for the prototype development *(setback)*.

Between April and December 2019 the IR team interacted with different science partners from the InnoForESt project. In April 2019, the InnoForESt science partner ZALF conducted a ProcessNetMap interview with the IR team. The interview aimed at reconstructing and analysing the history of the innovation, in particular with regard to the relevant actors and their roles as well as the important events in the innovation development in the period leading up to InnoForESt (see D4.1 by Sattler 2019). This intense interview setting allowed the IR team to reflect on their process *(exploring)*. In October 2019, the IR team together with university (master) students from Lund University engaged in a role board game designed and facilitated by the InnoForESt science partner CETIP to test influencing factors of forest policy interventions *(exploring)*. In September and December, the scientific partner HNEE carried out interviews with the IR team to elaborate and reflect on the application of the social-ecological-technical-forestry-innovation systems analysis framework (SETFIS), which had previously been developed by HNEE to identify most relevant factors influencing the niche innovations. The interview raised awareness amongst the team members about, and fostered a critical in-depth reflection on, the different factors and the role they played in moving the innovation forward *(exploring)*. Furthermore, in October, the second annual InnoForESt General Assembly meeting took place in Eisenwurzen, Austria. At this meeting, amongst others experiences of the different InnoForESt IRs with their niche innovations were exchanged *(exploring)*.

Internal Innovation Region Team Meeting: Decision on prototype scenario

Ahead of the third CINA workshop - planned as type 3: road mapping, in early 2020 - an internal IR team meeting took place at Universeum, in October 2019 *(planning)*. During this meeting, the IR team decided to focus on further developing the "Climate challenge" scenario into the final prototype of the innovation. The other scenarios "Wild Kids" and "Certified Outdoor Guide" were not further pursued *(termination ↑)*. This was due to high stakeholder interest and the salience of climate change in the societal debate. The meeting highlighted the complexity of forest-climate-interactions. In order to stick to the planned curriculum integration of Love the Forest 2.0 it was therefore decided to focus the innovation prototype on students in their second or last year of high school and to integrate the initiative into their 'gymnasiearbete', a mini-thesis conducted before graduation *(shift, impulse ↑)*. As Universeum in general, and Love the Forest 1.0 in particular had addressed younger, i.e., 5th and 6th grade students before, the entire concept of the initiative had to be re-written to match the older target group. In the light of adolescents' globally rising engagement in climate activism, and the need for climate related knowledge and action in society at large and also amongst school children an educational program focusing on climate and (forest) ecosystem services seemed suitable and promising to get integrated in the curriculum of public schools *(impulse/L)*. Potential donors had previously indicated to support such a new direction, because it considered the interest of the forestry sector which is to engage the youth in forest-related topics and possibly educating and 'pre-

recruiting' future employees. At this point, a big step was made to advance from Love the Forest 1.0, as the redesigned initiative now addressed a broader range of topics, and students of a different age group.

Third CINA workshop

The third CINA workshop (type 3: road mapping) was held in February 2020, at Universeum. Besides the IR-team, participants included high school teachers of schools in Gothenburg. The purpose of the workshop was to understand the conditions making the final prototype attractive and realizable for students and teachers. This final prototype was offering senior high school students in their third year real forest cases and other cases conceived by the participating partners as topics for their final thesis. The initiative would include learning opportunities for both teachers and students on the relationships between forestry and climate change provided by the participating organisations (universities and others). Finally, general knowledge on research methods and scientific writing skills should be developed. For this prototype, two scenarios were outlined to showcase two options for organizing the relationships between the actors involved such as students, teachers, scientists, case study partners and Universeum *(exploring, forking)*. Participants expressed a clear preference for the student focused scenario, which now forms the basis for the final version of Love the Forest 2.0 *(termination, planning)*. The workshop revealed additional adjustments and clarifications needed regarding the governance mode of the prototype: (a) shifting funding partners from exclusively forest stakeholders to a broader range of companies;[8] (b) involving additional "case partners" that would be contributing with a range of real-world case studies and mentorship rather than funding; (c) the more active involvement of scientists as a stakeholder group in the project.

Covid-19 and outlook

With the re-written concept, Universeum intended to start fundraising in spring 2020. However, the occurrence of the global Covid-19 pandemic impeded these efforts *(setback ↓)*. The pandemic more generally challenged Universeum with a decrease in visitor numbers resulting in budget constraints, also reducing available resources for the implementation of Love the Forest 2.0. As a response to the pandemic, ideas were developed to conduct most of the initiative's activities online (fundraising, project-related meetings, but not initial Love the Forest 2.0 activities), which could help to better reach the target group: students in their last year of high school *(exploring, planning)*.

At the time of writing, several developments indicate that Love the Forest 2.0 is a promising approach worth pursuing: With increasing engagement of adolescents in climate change issues, young people's interest and awareness for forests increased and many of them are motivated to explore what the governmental administration and the forestry sector do to create sustainable forests. The initiative in its redesigned format, has raised interest not only in the forestry sector, but also other industries are keen on transferring the concept to their field, even though it is clear that an organisation like Universeum with its resources, pedagogic experience, network and fundraising skills is necessary to push such a replication. The experience made during the innovation process also showed that the interests between the target group and funders might diverge. While the young people are highly interested in societal values of forests beyond their production function, parts of the forestry sector are more conservative, following short-term economic goals and aiming at an intensification of production in a way that follows an ecological modernisation approach. This highlights the importance to mediate the interests of the involved groups.

Crisis measures notwithstanding, Universeum is still struggling with low visitor numbers and thus large revenue losses due to the Covid-19 situation. But both Universeum and the city and region of Gothenburg are in an exciting development phase, investing in sustainable community building, citizen dialogue and increased public awareness which gives hope for the implementation of projects such as Love the Forest.

With its focus on education of young people, Love the Forest substantially differs from the other forest governance innovations. The concept seems promising to improve awareness for sustainability issues, as children are representing future generations and can also act as multipliers of sustainable thinking in their

[8] Many larger companies are based in Gothenburg including car manufacturers and other industrial businesses that increasingly need to engage in climate and sustainability issues.

families. Being sensitized in an early age might also have an effect on societal values and future behaviour of the participants.

From the beginning on, the innovation was focused on adapting a prior existing program. Initially it was thought to only adapt content, yet with changing content it was realized that the target participant group also needed adjustment. The innovation benefited a lot from the pre-existing stakeholder network and the positive attitude of these stakeholders towards the idea - as it had proved successful in Love the Forest 1.0. However, several setbacks occured due to the temporarily limited management capacity of the practice partner Universeum. These limitations had their origin in major external events such as the drought summer 2018 and the Covid-19 pandemic in 2020. Despite these setbacks, the CINA workshops were carried out in the planned sequence and facilitated the innovation development successfully, resulting in a prototype that is awaiting its implementation.

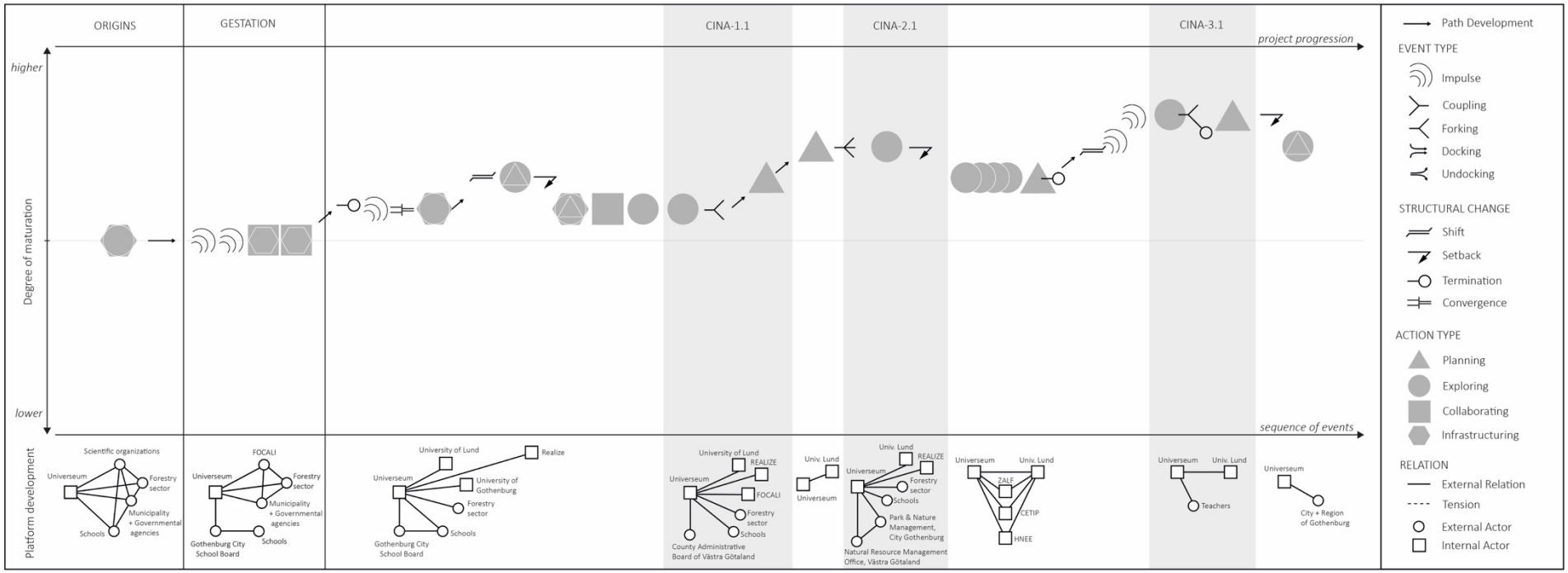


Figure 4. Innovation Journey Love the Forest

Abbreviations: *FOCALI = Forest, Climate, and Livelihood research network; REALIZE= Workshop facilitation organization; Univ. Lund = University of Lund; ZALF = Leibniz-Zentrum für Agrarlandschaftsforschung; CETIP = Centre for Transdisciplinary Studies; HNEE = Hochschule für nachhaltige Entwicklung Eberswalde*

5.4 Forest share payment scheme, Mecklenburg-Western Pomerania, Germany

Origins

The forest share – a payment that finances planting and maintenance of forest area to compensate for emissions – was developed around 2007/2008 by a subunit leader of the Ministry for Agriculture, Environment and Consumer Protection in the federal state of Mecklenburg-Western Pomerania *(infrastructuring)*. Consequently, the idea and its implementation is closely tied to him. From the beginning the idea was in a conflicting field between politics and nature conservation. While the Minister of Agriculture, Environment and Consumer Protection of Mecklenburg-Western Pomerania supported the idea which was an important precondition for its implementation, nature conservationists and the green party criticized the concept of compensation arguing pollution should be avoided in the first place *(relations/L, R)*. The forest share was first implemented in 2008 by the State Ministry for Agriculture and Environment, the State Forestry Management Agency and the tourism association of the federal state of Mecklenburg-Western Pomerania, with the objective of sensibilising the society in relation to climate change, and climate change events such as droughts and forest fires, as well as approaches to adapt to them and for climate change mitigation. Since then 85,000 shares were sold which enabled the realization of 80 ha "climate forest". The initial idea was that tourists could compensate for their travel emissions, but actually a local energy supplier bought more than 50% of the issued shares. This fact again triggered criticism among nature conservationists that the forest share was used for greenwashing *(relations/L)*. The general critics from conservationists are: more release of CO_2 if you afforest a pasture/agriculture area into a forest than the forest could save CO_2 afterwards - especially in relation to wetlands, which could have been counter-augmented by the forest share stakeholders. After its initial success attracting a lot of interest and winning awards for the concept, the share sales stagnated after 2015: It became increasingly difficult to find new areas for reforestation and the price did not reflect the actual costs anymore *(setback/R ↓)*. Aspects like the payment method, logistics and marketing were also in need of an update and the tourism association of the federal state of Mecklenburg-Western Pomerania who had been responsible for selling the shares wanted to pass on this task to another institution *(setback/R ↓)*. It was also difficult to receive a "Erstaufforstungsgenehmigung" (first time approval to aforest an area) from the nature conservation authority, because of similar criticisms as given by nature conservationists *(setback/R ↓)*. Meanwhile, in other regions of Germany, the approach was copied without acknowledging where the initial idea came from *(setback/R)*. Thus, a re-invention of the forest share was considered to be necessary to adapt to current market conditions with regard to people's perception of nature conservation and the current market conditions of compensation *(planning)*.

Gestation

The initiator of the Forest Share from the Ministry therefore linked the forest share concept with the InnoForESt proposal. The idea was that the forest share would gain momentum again and attract new shareholders *(infrastructure, impulse ↑)* by improving the previously mentioned factors that lead to stagnation. In addition, there was motivation to use the popularity of the forest share to develop a share that offers those interested in financing a wider range and larger number of ecosystem services, which could contribute to a higher level of complexity than the CO2 compensation already used.

The Academy for Sustainable Development Mecklenburg-Western Pomerania (ANE) took on the role as practice partner in InnoForESt. ANE is funded by private donors who expect the state government to support their cause as well, which creates a potential source of tension *(external relations/R)*. Compared to the previous forest share version, ANE became the new forest share manager, replacing the tourism association, who had been conducting this task before without sufficient resources as the forest share was not self-sustaining due to its price scheme *(impulse, shift, collaborating ↑)*. ANE also contributed additional know-how as they already supervised two other compensation certificates financing climate and biodiversity protection *(infrastructuring, convergence ↑)*.

Project progression

The scientific InnoForESt team was mainly to provide an outside view on this already long-established network of actors and to support the innovation process by contributing new impulses and challenging the

existing structures and motivating the actors to be innovative *(impulse, infrastructuring ↑)*. In turn, the main stakeholders regarded including the forest share in an EU project as prestigious and as an opportunity to improve its visibility on a supra-regional level by utilizing InnoForESts network and the publications that would be produced throughout the project *(infrastructuring)*. Both were the reasons why it was possible to get the main partners at the table again with a specific intention to work.

In the beginning, several efforts were necessary to reactivate and motivate the already existing network to break up the existing structures and to introduce innovative thinking. This was challenging as the main actors who had first introduced the forest share had different motivations and goals while each of them also had individual problems to tackle. The State Forestry Management Agency still struggled to acquire additional land for afforestation and there was discontinuity in the position responsible for the forest share *(setback ↓)*. The tourism agency had to cope with budget cuts *(setback ↓)* and had gotten less interested in promoting the forest share as they did not want to be associated with the main shareholder WEMAG who was criticized for using the shares for "greenwashing" *(setback, external relations ↓),* mainly by the tourism agency, with the argument that a private company is not part of the target group of the forest share. This was solved internally and WEMAG was kept as the biggest customer of the forest share.

Therefore, the practice partner ANE first had to build trust with the main stakeholders individually, before joint meetings or workshops were possible. It was important to take small steps in order not to alienate old and new actors but also to continuously signal to the old actors that the aim is to leave already established practices and thoughts behind, first bilateral and later with the whole group of main stakeholders *(infrastructure, impulse ↑)*. In March 2018 a first case study meeting between ANE and the main stakeholders took place to set an agenda for general responsibilities, strategies and workflows. Also content for upcoming strategic workshops and ideas for the Forest Share 2.0 such as the quantification of ecosystem services or possible marketing improvements were discussed *(exploring, planning, infrastructuring)*. In a second case study meeting in June 2018, two possible development paths were identified as alternative scenarios and respective advantages and disadvantages were explored *(planning, forking ↑)*.

First CINA workshop

Based on these paths, the first CINA workshop (type 1: innovation options) took place in March 2019 to check on the current status of the forest share and to jointly develop the new features to improve the already existing concept. Despite the previous networking efforts with old and new actors, only a few, well-established stakeholders who already were familiar with each other and the forest share were invited to this workshop *(infrastructuring)*. After analysing strengths, weaknesses, opportunities and threats of the forest share (*exploring ↑),* the present stakeholder groups, the State Ministry for Agriculture, Environment and Consumer Protection, the tourism association of the federal state of Mecklenburg-Western Pomerania and the State Forestry Management Agency decided that it was promising to further pursue the idea *(planning, impulse)*. However, the scenario to link the forest share with the two other ecological compensation shares managed by ANE was abandoned *(termination)* due to the high complexity of calculating the benefit and price of securities for combined ecosystem services.

In June 2019, a first SETFIS interview with the practice partner took place. It aimed at identifying influencing factors, which are important for the development of the innovation in order to analyse it better and provide information on the factors for the RBG, CINA and other related work packages of the project. Its impact on the innovation work can be described as an explorative process, on the scientific part of the project as well as an instrument to the Innovation Region to reflect on certain aspects they would have not thought about before (*exploring*).

In October 2018, the first annual InnoForESt General Assembly meeting took place in Trento, Italy. At this meeting, amongst others a focus was put on presenting the outcomes of the Governance Situation Analysis, the Stakeholder Analysis and the discussion of scenario drafts among all InnoForESt project partners *(exploring)*.

A role board game exercise was held in Eberswalde at HNEE in December 2019. Stakeholders took part as well as people from ANE, and students. Its impact on the innovation work can be described as little since the necessity of a very complex approach as needed for the further development of the Forest Share was not represented by the RBG (*exploring*).

Second CINA workshop

The second CINA workshop in December 2019 (again type 1 on innovations options) brought the main stakeholders together again (*infrastructuring*). Just like in the first workshop, the development of the forest share pricing was the main obstacle. The existing price did not reflect the actual costs of compensation and marketing *(setback)*. The State Forestry Management Agency also did not want to subsidize the price anymore, due to the criticism that companies use the shares for greenwashing *(setback)*. Representatives of Fridays for Future and WEMAG were invited, but only WEMAG showed up and was included to share their interests and overall positive position to the plans of forest share 2.0 *(infrastructuring, exploring)*. Therefore, in-between and during the workshops a lot of discussions were induced by the practice partner to collect ideas on how to cover the real costs of the activities around the innovation *(exploring)*.

However, the most important breakthrough was achieved right after the end of the workshop. The three main stakeholders who were most motivated to continue the forest share and also represented crucial institutions (State Ministry for Agriculture and Environment, State Forestry Management Agency and tourist agency) for the implementation met behind closed doors. The previous discussions and workshops had induced a new way of thinking and the three representatives agreed that the forest share should from now on reflect the real costs of ecosystem services and that buyers should also be educated about them *(planning, convergence ↑)*. This realization went well together with the increasing societal awareness on climate change and the respective public interest in complex human-nature interrelations emphasized by a severe drought and forest fires (*L*) in the region and a political discourse on obligatory compensation *(impulse/L + R)*.

Covid-19 and outlook

So by the beginning of 2020, agreements on the most important issues were accomplished and the ground was prepared for the implementation of the reinvented forest share. However, the increased high public interest in forests and climate, also visible through Fridays For Future, led Minister Backhaus of the state government to take its own measures as well. In January 2020, plans for a state-funded foundation maintaining forests became public (*impulse*), after many forest fires and droughts hit the region of Mecklenburg-West-Pomerania. So far, the exact details of the foundation are not clear, but it could have a severe impact on the forest share, because public compensation payments might be difficult to justify if the state government spends money on the same purpose. As long as the functioning of a possible forest foundation is not clarified, it is difficult for the InnoForESt team to make plans with the stakeholders *(setback/R)*. In February 2020, a second SETFIS interview with a stakeholder from forest administration took place via an online call. It had the same intention as the first interview, but had a bigger influence on the interviewed stakeholder via critical self-reflection than the first SETFIS interview (*exploring*).

This situation is reinforced by the occurrence of the Covid-19 pandemic that adds general insecurity *(setback/L)*. Little by little, there are first signs that the Ministry is including the forest share in the new afforestation plans (*collaborating, R*).

Overall, the innovation journey in the German case study strongly relied on an already successfully implemented concept and the stakeholders who were responsible for it. This created dependencies both on a regime level (state ministry) and on individuals which sometimes created tension and hampered the re-start of the forest share. This could suggest that a completely new idea would have been less burdened with already existing ties and interests

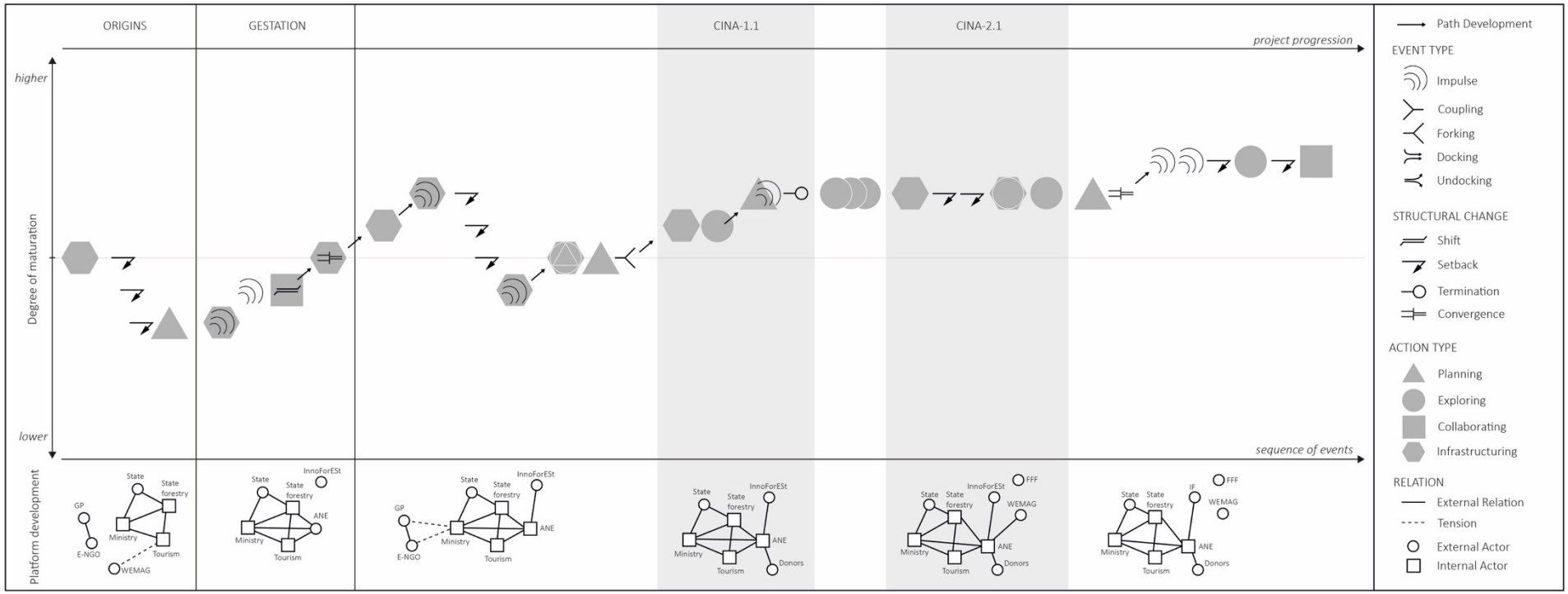


Figure 5. Innovation Journey Forest share payment scheme

Abbreviations: *ANE = Akademie für Nachhaltige Entwicklung Mecklenburg-Vorpommern (Academy for Sustainable Development Mecklenburg-Western Pomerania); E-NGO = Environmental Non-Governmental Organisation; FFF = Fridays for Future; GP = Green Party; Ministry = Subunit of Ministry for Agriculture, Environment and Consumer Protection; State = Whole Ministry for Agriculture, Environment and Consumer Protection; WEMAG = Westmecklenburgische Energieversorgung AG*

5.5 Fiera di Primiero forest-pasture management, Trentino, Italy

Origins

In the Innovation Region Trentino, the idea of forest-pasture management emerged with the introduction from forest planning in the 1950s (*shift/R*), while the land reform in the 1950s changed their way of farm and forest management. This led to non-profitable businesses in this area and caused an abandonment of the countryside and left unmanaged forests *(setback/L ↓)*. In the 1980s, the focus of the management practices was broadened: while previous emphasis had been on timber production, from then on, forests' provision of multifunctional services, such as soil protection or recreation were increasingly considered as well (*shift/R*). Due to awareness-raising activities in the Primiero Region through the local Autonomous Province of Trento office, Forest and Fauna Service (PAT), abandoned forests and the new focus of forest ecosystem services, to which also a report of the Observatory of Landscape (2013 and following) contributed by enhancing the attention on the wood encroachment process and generally on the dynamics and criticism of Trentino landscape, a one-year demonstration project aiming at landscape restoration through forest-pasture management was conducted in the Primiero region in 2014, organized by the Forest Service and financed by the Province of Trento, who were collaborating in this project. This promoted the idea of a mixed landscape of forests and pastures. The project involved a cooperation between different governmental organisations and three agricultural firms. It was mainly driven by the director of the forest district Primiero *(convergence, impulse/R, infrastructuring ↑)*. As the project subsequently was considered a success, a second project restoring a much larger area of meadows and pastures in Trentino was carried out between 2015 and 2018 financed in first instance by the provincial Landscape Fund granted by the Urban Service, with the aim to requalify the rural mountain landscape *(impulse/R, infrastructuring ↑)*. The future maintenance and preservation of the new pastures and meadows has been granted by proactive privates, farmers and breeders already in business in the region. Some of them could also benefit from the EU Rural Development Fund as support for their efforts and rural enterprise. Luigi Gottardo from the regional PAT-Forest District had turned to the office of PAT-Forest Service in Trento to raise awareness of the changing landscape caused by the abandonment of pastures and forests *(impulse)*.

Gestation

The University of Trento contacted first PAT to work on the idea of protection of forests for the Trentino region (exploring), but decided finally to further develop the initiative/innovative idea of PAT on pasture management, recommended by Luigi Gottardo (*impulse, external relation, planning*). Building upon this idea, the InnoForESt proposal was intended as a direct follow-up with the aim of conserving the traditional rural landscape in Trentino. InnoForESt could rely on an already existing stakeholder network, established and consolidated by the practice partner in the region, the Forest Service of the Autonomous Province of Trento (PAT), who was leading the previous first activities/initiatives in 2014. UNITN co-authored the project application with PAT (*collaboration, infrastructuring*). Through the InnoForESt project, the intention was to strengthen the practice, solve management issues, and foster a more active role of all participants in a bottom-up process.

Project progression

Laying the groundwork

The Innovation Region Team began the project with personal meetings with stakeholders to inform them about how they were going to be involved in the innovation process and upcoming events such as workshops. In May and June 2018, PAT (local & urban office) conducted individual interviews with a wide variety of relevant stakeholders, such as private landowners, sawmill operators, representatives of the hunters association, the Tourist Office and the Alpine Club, municipalities and nature conservationists from national parks. The purpose of the interviews was to learn about stakeholders' views and expectations about forest-pasture management, but also to identify potential obstacles for its implementation *(exploring, infrastructuring)*. The resulting findings were supposed to set the basis for the workshop strategy *(planning ↑)*.

At the end of October 2018, four scenario alternatives for the innovation development were drafted and presented during the general assembly of the InnoForESt project in Trento *(forking ↑)*. The first scenario focused purely on pasture and forest management; the second one on funding of ES via tourism; the third

scenario had the core idea of creating an association of forest owners, similar to the fourth one, which focused on a cooperative of sawmills.

At the same time, however, the original workshop plan had to be changed when the Vaia storm caused substantial damage to Trentino's forests at the end of October 2018 *(setback, impulse ↓)*. Keeping woodsmen and representatives of sawmills involved and meeting the interests of the newly joining stakeholders became challenging as they were processing the storm-induced oversupply of timber. Therefore, the previous workshop strategy has been adapted, taking the responses of the local community to this extreme event into account. Generally, the Innovation Region Team decided to follow a non-hierarchical approach and always examined the particular situation the stakeholders were in *(shift)*. For policy and agriculture-related stakeholders, the storm presented an opportunity to promote the maintenance of open landscapes, with pasture restoration and agro-forestry ecosystems as specific measures (e.g., benefit of increasing biodiversity through open landscapes, and less unmanaged areas of abandoned and mostly monocultural forests in the region, research on pastures types that can absorb nearly as much water as a forest and secures the hillside through its roots) *(impulse ↑)*.

First exploratory workshop

A first exploratory workshop (WS-1) took place in January 2019, four months after the storm, to pick up the thread again and motivate the stakeholders to develop their own ideas for financing forest management, for example through contributions from the public tourism board, which was denied by the stakeholders. In general, it turned out to be difficult to get stakeholders to participate and to get them involved in new ideas (such as alternative funding options). The impression was created that they may be very used to relying on public subsidies. However, the meeting was important in re-activating stakeholders for the project as a key step to (re)establish the platform, as stakeholders agreed to participate in the coming events. The aim was also to test the scenario drafts created from the preliminary stakeholder interviews in October and to enrich them with further suggestions - which was only partially successful. An external moderator, who was technically very familiar with the topic of forest innovation, was already called in here. He and the stakeholders got to know each other well here *(exploring, infrastructuring, setback)*.

First CINA workshop

The first CINA workshop (type 1: innovation options) followed in May 2019, and extended over two separate meetings. This CINA step brought stakeholders together again and although the stakeholders already knew each other, the small working groups at the round tables promoted discussions among themselves in the larger group afterwards *(infrastructuring)*. Based partly on the interviews conducted a year before, supplemented by innovation ideas that were developed in the aftermath of the storm, other possible obstacles and aspects leading to the development of a prototype were discussed. Each participating stakeholder group could provide their perspective *(exploring)*. Representatives of sawmills did not participate, neither did private tourism agencies, only the public tourism board was involved from the beginning. Considering the sawmill business' influence on the wood market and on forest management, their participation would have been beneficial *(setback ↓)*. Scenario alternatives and thematic foci were defined and not viable alternatives discarded *(coupling, termination ↑)*.

Potential for cooperation with Forest and Mountain Plan

Parallel to the first participatory activities induced by InnoForEst, in June 2019, the Council of the Province Trentino introduced the so-called Stati Generali della Montagna (States General of Mountain) aiming at a reconnection of the mountain areas with urban areas after previous workshops between March and May 2019 on four main topics: governance; services accessibility; economic development and social cohesion; landscape, environment and territory. As a part of it, the Forest and Mountain Plan was directed to increase the competitiveness of rural areas through a participatory process. Specific goals had not been decided at this point, so the relation and possible impact of the plan on the innovation was unclear, but it indicated that InnoForESt's approach and activities matched political efforts. Reports from Stati Generali della Montagna also provided the InnoForESt team with further insights into the existing networks and initiatives in Primiero *(impulse/R, exploring ↑)*.

In July 2019, a SETFIS interview with a research of the science partner organisation took place. It aimed at identifying influencing factors, which are important for the development of the innovation in order to analyse it better and provide information on the factors to the RBG exercise, the CINA workshop series and other related project tasks. Its impact on the innovation work can be described as an explorative process, on the scientific part of the project as well as an instrument to the Innovation Region to reflect on certain aspects they would have not thought about before (*exploring*). Furthermore, during the summer of 2019, several changes in the Innovation Region Team occurred, which required internal reorganization and slowed down the process for some months, without negative impacts on the innovation development *(setback/stagnation)*.

With regard to the platform building, it has to be noted that the digital platform offered by InnoForESt was not taken up by the stakeholders during the project procession and was finally decided in November 2019, right after the InnoForESt meeting in Schlierbach, Austria. Instead, the director of the forest district Primiero embodied the role of a 'physical platform', connecting the different stakeholders and having the necessary knowledge about the innovation idea and the emerging local situation *(infrastructuring)*.

In autumn 2019, the province's Forest and Mountain Plan became more specific, exhibiting many similar goals as stated in InnoForESt, for example, the recovery of storm-damaged areas and the restoration of historic pastures *(convergence/regime)*. As the Forest and Mountain Plan will be implemented on a larger scale, has a longer time horizon and possibly includes financial compensation and due to similar objectives, from the view of the stakeholders, of InnoForESt and the Forest and Mountain Plan, many stakeholders found it more attractive than the activities and measures proposed in the context of the InnoForESt project and are therefore hesitant to commit further involvement *(setback ↓)*. It was already difficult before to motivate the stakeholder to participate in such a project, due to time and costs, therefore the stakeholder saw more potential in the Forest and Mountain Plan project.

In October 2019, a SETFIS interview with two key members of the practice partner (forest administration) took place in Primiero. Its objective was to set a base for influencing factors on innovation emergence, development and transfer. The list of factors provided by the framework support the Innovation Region by creating a heuristic situation of the IR in Primiero *(exploring)*. This led to a first list of factors that was provided to the stakeholders during a workshop, where new factors were integrated into the new list and included in future workshops of the project. The RBG has included the factors from SETFIS in a behavioural experiment, which aimed as well to identify new and to gain a better understanding of key influencing factors (exploring). The discussions followed by the stakeholder immediately after the workshops were fruitful by confirming already known and new critical elements, the factors, and to include the new aspects in future decision making *(planning ↑)*. In November 2019, also a NetMap was created in order to better understand the stakeholder constellation within the Innovation Journey of Primiero (*exploring*).

Additionally, in October 2019, the Innovation Region Team invited interested parties from Switzerland, Austria and Italy (Bolzano) to meet again, after the meeting short after the Vaia Storm in 2018, to discuss experiences and governance approaches. Other transferability activities happened constantly between Primiero and Bolzano, mostly on pasture monitoring, control and management (*exploring*).

Short before the second CINA workshop in December 2019, the Innovation Region Team decided to discard two of the four scenarios, that depended on participation of woodsmen and sawmill operators, as they had to cope with the consequences of the storm and did/could not participate in the workshops and/or implement respective measures for that reason. Instead, the focus was put on the restoration of pastures and meadows and the development of local tourism. These two scenarios had been identified as two of the common interests of the stakeholders before *(termination, planning, infrastructuring ↑)*.

Second CINA workshop

The second CINA workshop took place in December 2019 and was dedicated to prototype development (type 2), based on both scenarios. Due to the changed focus, new stakeholders were invited to provide their input, for example, the director of a local cheese factory who was interested in utilizing restored pastures

for grazing areas for dairy cows *(infrastructuring)*. On the one hand, the event was supposed to create strong commitment, asking what specifically each stakeholder could provide to the process. On the other hand, the aim of the workshop was to identify which factors were most important to the stakeholders. Necessary next steps were identified, such as mapping of potential pasture areas *(exploring)*. The prototype has been set to a combination of pasture management that keeps the landscape open and attractive for local tourism and other economic activities (e.g., cheese production) *(coupling)*. However, there was a lack of specific ideas how to achieve it exactly (*setback*).

PAT put a lot of effort into continuous stimulation of stakeholders and the exploration of their needs, but at this point also reflected on its public and political role and how it affects their ability to drive a participatory process. While this question was difficult to answer, it became obvious after the workshop that the format of a larger multi-stakeholder workshop was not the format in which stakeholders would take specific decisions as to how the innovation could be implemented in the region. PAT therefore considered to continue in small working groups, each developing further a specific idea *(infrastructuring)*.

As a reaction to the second workshop and the developments around the forest and mountain plan, the Innovation Region Team decided not to plan/initiate a third CINA workshop as the chances that it would create new knowledge or give fresh impulses for stakeholders' own initiatives were considered/perceived as low *(setback, infrastructure)*. Instead, a new focus to link InnoForESt activities with the Forest and Mountain Plan was set at the beginning of 2020 *(convergence, shift)*. CINA could have been used for this purpose, but has been seen differently by the innovation team and was not further pursued (*setback*). In March 2020, the Forest District of Primiero and central Forest Service officials already had a first meeting with representatives and the supervisor of the forest and mountain plan to elaborate on the selection and potential areas to be restored. InnoForESt played only a role in informal occasions between PAT and the Mountain Plan team *(external relations/regime)*. Again, the director of the forest district Primiero with his good connections to both InnoForESt and the stakeholders played an important role for the establishment of the contact. He would have been be a part in the design and implementation of the Mountain Plan anyways, but the PAT office in Trento also pushed forward their participation in technical conversations to provide InnoForESt a voice in the process. The development of the Mountain plan is an ongoing process, therefore, the role of InnoForESt in it, is still open. The outbreak of the Covid-19 pandemic stopped various forestry activities, and the development of the forest and mountain plan and InnoForESt's efforts to link with the plan in particular *(setback ↓)*. As a reaction to this deadlock of unknown duration, PAT evaluated the possibility of continuing their stakeholder process virtually *(planning)*.

Covid-19 and outlook

Furthermore, the Innovation Region Team contacted other InnoForESt Innovation Regions, such as Eisenwurzen and Love the Forest during the Covid-19 pandemic in 2020. Eisenwurzen was contacted with the objective of exchanging knowledge on different mountain tourism initiatives, after the first exchange at the General Assembly in Schlierbach 2019. The gathered knowledge will be further developed as the Primiero team search for tourism potential within the "saver places" in the mountain areas. Additionally, the educational part of Love the Forest could benefit the teachers from the Primiero and Trentino region as Italy is the first country in the world that includes climate change as compulsory content in the curriculum of school students (*exploring)*.

Overall, large parts of the innovation process and the associated research was dedicated to finding ways of engaging stakeholders, building a network and balancing interests in this network and exploring the relevant information to do so. Due to several major external influences, the design of the process had to be adapted continuously to new frame conditions.

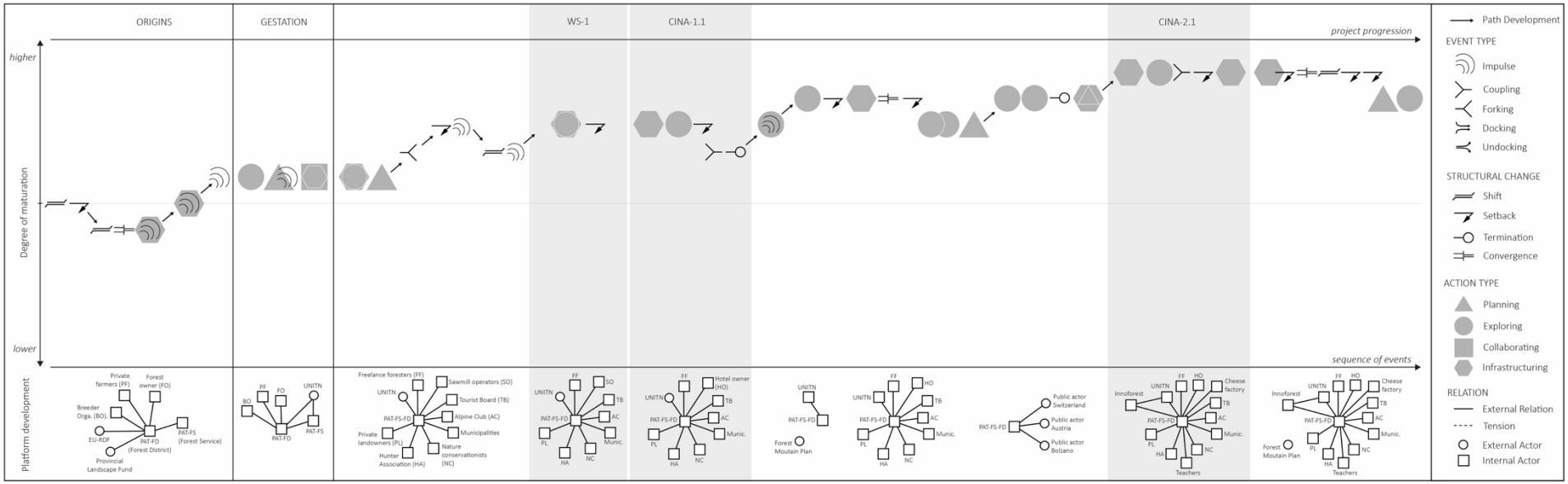


Figure 6. Innovation Journey Fiera di Primiero forest-pasture management

Abbreviations: *AC = Alpine Club; BO = Breeder Organisation; EU RDF = European Union Regional Development Fund; FD = Forest District; FF = Freelance; Forester; FO = Forest Owner; HA = Hunters Association; HO = Hotel Owner; Munic. = Municipality; NC = Nature Conservationists; PAT = Provincia Autonoma di Trento; FS = Forest Service; PF = Private Farmers; PL = Private Landowners; SO = Sawmill Operator; TB = Tourist Board; UNITN = University of Trento; WS = Workshop*

5.6 Collective forest self-governance, Land Trust Association Čmelák, Liberec Region, Czech Republic[9]

Origins

In Čmelák, a land trust association in the Liberec region, the activities of self-organized forest management date back to the 1990s. After a bark beetle crisis, caused by emissions of sulphur oxides and other pollutants from nearby thermal power plants (in Poland, Germany and Northern Czechia) and related acid rains in 1970s a1980s *(setback/R ↓),* the Čmelák Land Trust Association was established in 1994 to rebuild the regional forest in a more sustainable way *(impulse/R ↑)*. Čmelák is engaged in a variety of restoration activities (wetland restoration, education, planting trees in urban areas, etc.). Here, we focus mainly on their project with new virgin forests. To finance the purchase of land for afforestation, the Čmelák community chose many diverse paths which already included activities other than wood production: They collected donations from citizens, sold seedlings (2000), made use of subsidies (national: Ministry of the Environment, Labour office, regional government; EU funds: Operational Programme Environment; as well as from private foundations since 2006) and cooperated with sponsoring companies (at least since 2003)[10], and started to sell biodiversity certificates to patrons (since 2005). In 2016, Čmelák also bought an old cottage in the direct neighbourhood of the virgin forest where tourists could stay *(external relations, collaborating ↑)*. However, after more than ten years of selling certificates, the sales went down and the collection of donations was only partially successful as the capacity and resources for doing public relations work were not sufficient *(setback/R ↓)*. Furthermore, there was only insufficient political support *(setback/R ↓)*. Stakeholders stated that more support at national level was and is needed, including clear legislation. The current legal system neither supports the provision of non-productive ecosystem services nor does it systematically motivate forest owners to take these services into account. This results in an institutional environment that hinders the development of more sustainable forest management. In addition, a conflicting hunting legislation and legislation on protected areas (also forestry legislation) thus far prevented management of storm damages *(setback/R ↓)* and a complicated forest ownership structure with many different owners and interests made it difficult for the Land Trust to push afforestation. There was and still is a conflict smoldering with hunters who have a problem with fences that have been built to protect the new virgin forest *(setback/R ↓)*.

Gestation

Both the Čmelák community and the InnoForESt practice partner, the Institute for Structural Policy (IREAS), were motivated to work together for the further development of an innovative income generating activity. IREAS had always been interested in common activities with the organisation of Čmelák and the way they developed new ideas for their forest. Čmelák in turn regarded the participation in the InnoForESt project activities as a good opportunity to create innovative new ways to acquire funding for environmental purposes and to present their activities to a wider (expert) public *(impulse ↑)*. Loose private contacts already existed between Čmelák and one member of IREAS, who lives in the area *(infrastructuring)*. Before InnoForESt started, there were already several bilateral meetings between the practice partner and Čmelák representatives to get an impression of the Land Trust's activities and projects *(exploring, infrastructuring ↑)*. At that stage, the project team already explored as to why the sale of certificates, which had been the main

[9] Here, we present the case of Čmelák, Liberec Region, Czech Republic. This innovation development was accompanied by the same integrated practice (Institute of Structural Policy, IREAS) and scientific (Centre for Transdisciplinary Studies, CETIP) partners, as a case in the Hybe region in Slovakia which has similar historical and legal context conditions and was thus viewed as a case in which findings and experiences from Čmelák could potentially be transferred to. Čmelák and Hybe depict two geographical distinct regions, with politically differing landscapes and two distinct actor groups. Both regions' forest management are based on community management principles. During the first year of the project, it was decided that Čmelák would become the main innovation case. It Hybe was treated by the IR team as an additional source of inspiration for Čmelák as well as a place where experiences from Čmelák could potentially be transferred to. This is why we sometimes also refer to the Hybe case in the presentation of this Innovation Journey, as, for example, common scenarios have been developed for both cases.

[10] Sponsoring partners: domestic companies, as well as international companies, such as Uniqua, IKEA, DINO, DHL, ABB, Albi, Kia Motors, Freunderberg, Škoda Auto; some of these companies are sponsoring activities of Čmelák in general, some of them are „patrons" of some part of the New Virgin Forest (IKEA, Freudenberg, Albi, Otto office, Henkel), and some of the companies are collaborating at the "volunteers days" (Vodafone, Henke, IKEA, KPMG).

funding source of the Land Trust, decreased after its initial success *(exploring)*. It turned out that the number of potential buyers was limited and there was no incentive to buy a second certificate if you already had one *(setback/R)*. Furthermore, the cooperation with big companies such as IKEA did just raise enough money to buy new seedlings or new land, while it was not always possible to buy new land that could be afforested, due to the purposes of the various funding pots, which excluded one or the other use (*collaboration*). The money from private donors (sponsors) as well as from companies and private foundations was mainly used for the purchase of new land. The management activities (new seedlings, fences, etc.) were largely funded by national or EU subsidies or grants, for which a necessary condition was the ownership of land. These grants do not allow financing activities on leased land. Some of the private money was also used for buying (or growing one's own) seedlings and other management measures. In some cases (mainly between 2005 and 2010) the donors became patrons of part of the new virgin forest (e.g., IKEA, Otto Office, Freudenberg, Henkel, HSBC Bank). This meant that their donations were used for buying new land, but also for management measures. Then there was a different kind of project in collaboration with Škoda Auto (and Yves Rocher). These companies (or their foundations) have a special program that funds the purchase and planting of new seedlings, but that money cannot be used to purchase new land. For this reason, Čmelák began to work with nearby municipalities and then reforested new forest on the common land or converted the spruce/pine monoculture into mixed forest with funds from Škoda Auto or Yves Rocher. In 2018, more than 9,000 trees funded by Škoda Auto and more than 36,000 trees funded by Yves Rocher were planted *(external relations)*.

Project progression.

Laying the groundwork

The project officially started with a common introductory meeting for both the Czech and the Slovakian parts of the Innovation Region, in December 2017 with representatives of IREAS and Centre for Transdisciplinary Studies (CETIP) to create a common vision of the project and division of labour. Furthermore, ideas on how to proceed were exchanged and responsibilities were clarified. The Innovation Region team began collecting ideas and inspiration also in July 2018 when a first CINA-equivalent workshop was implemented in the Slovakian Hybe region as a careful step towards diversifying the Čmelák innovation process and establishing connections with similar initiatives *(infrastructuring, planning, exploring, convergence ↑)*.

In July 2018, a focus group round table was conducted in Čmelák. The focus group covered content that was similar to the first CINA type 1-equivalent workshop in Slovakia. The participating stakeholder group consisted of Čmelák Association members and was therefore homogeneous as they were all well informed about the problems that Čmelák was facing and they all shared the same objectives. During the event, information on general motivations, on previous success factors, on key stakeholders, but also on obstacles were collected *(infrastructuring, exploring, convergence ↑)*.

In the following months, the project team initiated several exploratory activities: In September 2018, a stakeholder analysis was conducted (by contacting stakeholders) to understand roles and motivations of stakeholders, but also to identify and include new relevant stakeholders into the process *(exploring, infrastructuring)*.

In the same period, the results were used together with the results from the first CINA-equivalent workshop in Slovakia to design three possible development paths, which were: 1. State-based regulatory compensation; 2. Establishing a market for sustainable local wood, certified by a third party; 3. Compensation payments for ecosystem services managed by the community itself *(planning, forking ↑)*. In October 2018, the first annual InnoForESt General Assembly meeting took place in Trento, Italy. At this meeting, amongst others a focus was put on presenting the outcomes of the Governance Situation Analysis, the Stakeholder Analysis and the discussion of scenario drafts among all InnoForESt project partners *(exploring)*.

Changes in the circumstances of local cooperation

In November 2018, key factors for a collective governance of ecosystem services were identified and assessed for both Čmelák and Hybe *(exploring)*. In winter 2018/2019, however, the interaction between the regional InnoForESt team and the Čmelák association largely subsided. There were some communication

problems with the new director of Čmelák. There were also changes in the structure of the organisation, which is why they focused more on internal issues than on project activities. The association's founder and president, who was the main driver of Čmelák's innovative ideas and activities, and, at the same time, a regional politician, was involved in a campaign for local elections. His political engagement limited the time he could spend on innovation projects of Čmelák (including InnoForESt) (*setback* ↓). In addition, the then director of the association was not very active and also a politician which caused conflicts of interest, e.g., when the Čmelák Association aimed for applying public funding *(setback/R* ↓). Therefore the project activities had to be paused until the consolidation of the Čmelák personnel situation in order to continue the joint activities (*setback* ↓).

Focu group workshop and scenario changes

The development towards an innovation was continued in January 2019 in a second focus group with Čmelák, in which the scenarios were discussed again and the participants generally agreed on them, with the possibility of future changes remaining open *(infrastructuring, collaborating, exploring, planning* ↑). Also in January 2019, the practice partner IREAS and the science partner CETIP met again to integrate the results from both Čmelák Association and the Slovakian Hybe Land Association and update the scenarios with the identified key factors (*convergence*). It was decided that the scenarios would have to be validated by a broader spectrum of stakeholders from the regions *(exploring, planning)*. Meanwhile a new co-director of Čmelák was hired in spring 2019 and since then the cooperation gained momentum again *(impulse* ↑).

In July 2019, two SETFIS interviews with practice partners from the Hybe Association and representatives of the National Park Nizke Tatry Administration took place. It aimed at a pre-assessment of key influencing factors (*infrastructuring, exploring*). In the following months, bilateral meetings to discuss key factors influencing innovation took place between the regional team (IREAS, CETIP) and key representatives from Čmelák (the executive director, the president, the project manager and the forester of Čmelák) to plan the next workshop *(infrastructuring, exploring, planning* ↑). The participating forester played an important role as he worked for the local public administration to support small forest owners and had good relations with those forest owners who are critical towards Čmelák Land Trust, too. He was very supportive towards innovation in general and Čmelák's efforts in particular. The forest expert was also in charge of enforcing forest regulations. This is an important factor for the bureaucratic part of the implementation of an innovation *(external relations* ↑). In August 2019, the Role Board Game was tested in Velké Karlovice (CZ), where forest owners and managers, municipality representatives and other interest groups from Czechia and Slovakia took part (*exploring, infrastructuring*).

RBG and CINA workshop

A workshop with main emphasis on Role Board Games and some CINA work in October 2019 (type 2: prototype assessment) in Liberec proved that the involved stakeholder groups had built trust and created a spirit of working together to push the innovation ideas. It provided a forum for collective discussions among stakeholders who otherwise would not have met and established durable bilateral contacts beyond the InnoForESt project. Throughout the CINA workshop in October 2019, the previous ideas on the three scenarios were discussed further and the involvement of new stakeholders gave new input *(infrastructuring, exploring* ↑). The overpopulation of game, the degradation of the forest, the discouragement of forest owners in their reforestation efforts and causing conflicts with hunters were identified as the greatest challenges on the road to prototyping: Building fences to protect the forest was considered expensive and a barrier for upscaling. Most importantly, it caused unresolved conflicts with hunters, who claim that building fences would be illegal. Regarding the development pathways, the stakeholders showed a lot of interest in the scenario of state compensation for economical management and in private compensation for ecosystem services.

As the stakeholders preferred a combination of governmental payments and self-organized fundraising with certificates, it was decided to try to combine the two scenarios *(coupling* ↑). The third scenario of promoting local wood was less attractive to stakeholders and thus, the project team decided to no longer pursue it *(termination)*. During the workshop, disagreements erupted between more conservative stakeholders such as

state forest representatives (the state is the largest forest owner in Czechia with a share of more than 50 %) and private owners, who were hesitant to change their management practices on the one side, and progressive land trust members on the other side. Some municipalities were also quite progressive, others rather conservative. This emphasized that ownership structures and the associated differing interests of owners formed a crucial barrier for the innovation, which was difficult to overcome. As next steps, the stakeholders expressed the need to conduct an additional workshop *(planning ↑)*. They also initiated the establishment of a smaller working group consisting of IREAS and stakeholders to further develop the scenario on governmental compensation. It was said the aim of the working group should be lobbying for more awareness for non-productive ecosystem services and a legislative change regarding compensation schemes *(collaborating, planning)*. The project team regarded the workshop as a success and an important step towards the prototype. Right after the workshop in Liberec, Čmelák started lobbying activities and became active in social media *(impulse)*. The founder and president of Čmelák also used his role as regional politician to promote the topic *(impulse)*.

Furthermore, in October 2019, the second annual InnoForESt General Assembly meeting took place in Eisenwurzen, Austria. At this meeting, amongst others, a focus was put on the exchange of experiences with the niche innovations between the different regions of the InnoForESt project *(exploring)*. In the second half of 2019, the Innovation Region Team was engaged in two Role Board Games designed and facilitated by the science partner CETIP: with Čmelák stakeholders in Liberec in October 2019, already during the RBG/CINA workshop, and then with Hybe stakeholders in Bratislava in November 2019. The purpose of the games was to test behavioural change and validate key influencing factors. The impact on the further innovation work can be described as support for the further discussion and further identification of key influencing factors.

Čmelák takes initiative

In January 2020, in cooperation with IREAS, Čmelák organized a discussion seminar (DS) in Liberec with a broader (expert) public on the topic of forests in times of climate change to raise public awareness *(undocking, impulse)*. The stakeholders realized that cooperation with other stakeholders and NGOs in the region would benefit their efforts *(infrastructuring/R ↑)*. The discussion of topics resonated with the themes of the 2nd CINA workshop. Many stakeholders that had attended the CINA workshop in October 2019 participated also in this seminar. In the light of increasing awareness of climate change and the ongoing bark beetle crisis in Czech Republic, there was also a tendency for a shift in the politics regarding forest management.

Following the interests of the stakeholders, the project team planned a third workshop for November 2020 with a narrower group of experts, which was supposed to bring together the Čmelák with the Hybe stakeholders to jointly work on a governmental funding scheme which both regions are aiming for *(planning ↑)*. The Čmelák members, IREAS and CETIP also intended to get a joint project proposal on track to secure the continuity of the innovation *(planning)*. However, in spring 2020 the communication between InnoForESt project team and Čmelák members slowed down again, possibly due to the Covid-19 pandemic *(setback ↓)*.

In June 2020, an online meeting with representatives of the Forest Share in Mecklenburg-Western Pomerania took place in order to prepare a joint excursion and to start a discussion about possible joint projects. However, no specific project proposal has yet been developed *(planning)*. Further discussion about the common project proposal as well as the excursion was suspended because of Covid-19 *(setback ↓)*. As a InnoForESt-wide platform for exchange, the excursion to the Mecklenburg-Western Pomerania and the Liberec region was planned again for October 2020, but had to be cancelled because of the worsening Covid-19 situation in both countries leading to border crossing restrictions (quarantine requirements) *(planning, setback ↓)*.

Covid-19 and outlook

Looking back, one can see the innovation journey of the project with the land trust Čmelák characterized by a quick start, a tough to dull main part and a comparatively intense late phase (until Covid-19 hit). Later,

however, the local actors and the partner Čmelák used the momentum and contributed their own initiatives to making the topic of alternative forest management forms beyond purely economic profit-making more visible in the region.

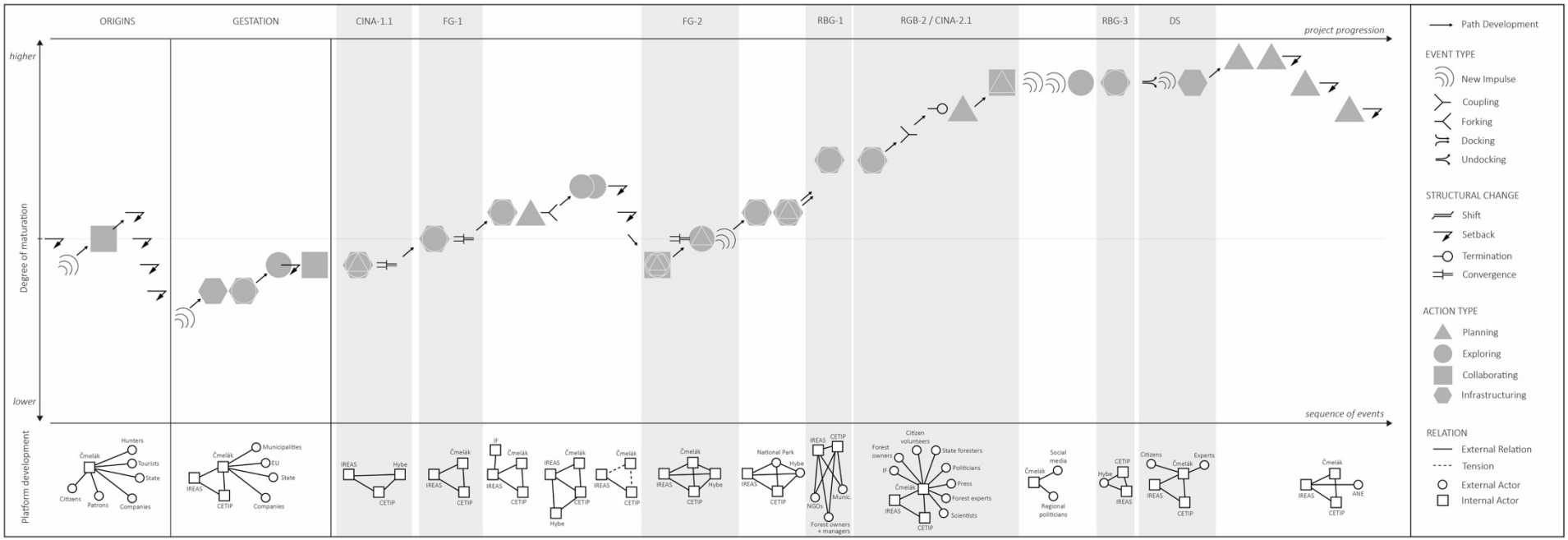


Figure 7. Innovation Journey Collective forest self-governance

Abbreviations: *ANE = Akademie für Nachhaltige Entwicklung Mecklenburg-Vorpommern (Academy for Sustainable Development Mecklenburg-Western Pomerania); CETIP = Centre for Transdisciplinary Studies; Čmelák = Čmelák Land Trust Association; IREAS = Institute for Structural Policy; DS = Discussion Seminar; EU = European Union; FG = Focus Group meeting; Hybe = Hybe Land Association; IF = InnoForESt project, supra-regional level; Munic. = Municipality; NGOs = Non-governmental organisations, RGB = Role Board Game*

6 Transversal analysis of regional innovation journeys

In this section, we collect and compare the findings from the innovation journeys. The central questions are: What characterizes the innovation work in the six different regions? Where did we end up in the course of all the work? What happened in the context of this project? We aim to uncover patterns, commonalities and differences. But there are also fundamental considerations involved in all of this. In all regions we found mutual references between public and private, state and corporate action. The frameworks for action are therefore either heavily geared towards the state, the market or mixed, i.e., networked forms of organization. This raises the question as to what can be learned about more government, market-like or network-like attempted solutions. Can we say which problem perceptions tend to lean in one direction or the other? Is the focus on market failure justified, or is it (also) about policy or system failure? (Chaminade & Edquist 2010; Smith 2000; Smits & Kuhlmann 2004) But also: How capable are the system, market or policy to recognize changes that require adaptation also on their part?

6.1 Innovation context

Innovation development does not take place in isolated space. Rather, it is shaping and shaped by essential context conditions. In this section we lay out the different geographical scales in which the innovations were developed and the governance levels involved. Although all innovations target forest ecosystem services their implications for management may differ. This is why we highlight the forest management approaches implied by our Innovation Regions and the link to the business interests. Lastly, when further analysing the Innovation Journeys taken by the different regions it is essential to emphasize their starting conditions.

Geographical scale and governance level of the innovation

The governance innovations in InnoForESt were developed at and for different geographical scales and governance levels. While Love the Forest focused on the city and surrounding of Gothenburg, a local region was the scope of the Innovation Region Trentino (to be more precise, it is the district Fiera di Primiero) and Forest Commons in Čmelák in the Czech Liberec region (*narrow geographic focus*). Initially, the Innovation Region Eisenwurzen covered a region that includes parts of three federal states in Austria, yet due to long travel distances in this mountainous region, most stakeholders joining the CINA workshops were coming from the federal state of Upper Austria. Attempts to change the location for the meeting to attract stakeholders from Styria were only partly successful, not the least since the new location reduced the number of participants from Upper Austria. Federal state level is the geographical scope of the Forest Shares in Mecklenburg-Vorpommern, while the idea of a Habitat Bank is to run such a mechanism on a regional or national level (*wide geographic focus*).

Forest management scope

The governance innovations pursued in the Innovation Regions had different implications for forest management. Reforestation measures were key elements of the governance innovations discussed in the Innovation Regions Čmelák and Mecklenburg-Western Pomerania. In these regions forests were planted for enhancing carbon sequestration, i.e., the important climate change mitigation service, and in the case of Čmelák at the same time to enhance biodiversity, by planting new forest or converting the spruce and pine monoculture into mixed forests. In both cases the availability of land dedicated to afforestation was a limiting factor. In turn, in Innovation Regions of Eisenwurzen and Trentino, governance innovations were rather aiming at reducing forest cover: in Trentino, widespread monocultures in often abandoned forests with low degrees of biodiversity were to be substituted by more diverse and also climate-resilient forests stands/composition in combination with recreation of pasture sides. In Eisenwurzen, the increase of forest extraction and timber use from explicitly regional forests was to be encouraged by the governance innovations under scrutiny, yet with the exception of national park areas. Here, transforming the forests into more climate-resilient and biodiversity-rich forests (or their preservation like in the case of the Finish Habitat Bank project) was discussed. Further, opposition to afforestation in Eisenwurzen is also due the already high share of forests in the region (up to 80%) and the encroaching of forests on agricultural plots due to reduced mowing activities on meadows. It can be summarized that a common feature of the analysed forest management activities is their aim of increasing biodiversity, climate mitigation services and

adaptation/ resilience potentials to secure a sustainable provision of Forest Ecosystem Services. This demonstrates existing will and partly implemented common practices to secure and raise the supply of Forest Ecosystem Services can be secured by innovative approaches to Forests and related businesses.

Starting conditions of innovation development

In InnoForESt, we observed a range of different starting conditions for innovation development. Two elements were core in this process (a) the stakeholders involved and the establishment of (trust) relations between them and (b) the maturity of the innovation idea. One can distinguish between those regions in which there were *no or only loosely connected network structures*, and those in which the innovation work started directly with *existing network structures*. The same is true for innovation ideas: *only vague or no ideas*, or *existing ideas* to be further pursued in this project.

In the case of Innovation Region Eisenwurzen, a number of broad business ideas and related scoping activities had been picked up during the stakeholder analysis and were condensed later in the three initial innovation ideas (scenarios). Amongst others, because these ideas were not specific enough they were not developed much further during the InnoForESt project. However, the idea of developing a network for these different business ideas in the region, and to make this a significant element of the innovation work, emerged during the innovation efforts by the InnoForESt project. Contrarily, the Finish Habit Bank project picked-up on an already existing idea that had partially been developed in a previous project: the idea of a habitat bank. The stakeholder network for the innovation development already existed in a relation of trust. Two case – the Swedish Love the Forest project in Gothenburg and the Forest Share project in Mecklenburg-Western Pomerania - even built on an existing running business model. The aim of these innovations was to further develop and adapt their innovations to reinforce their business proposition and reinvigorate stakeholder interest. This meant that both the stakeholder networks and content of the innovation were already well-known, including their strengths and weaknesses. Yet, breaking up such set structures can be a challenge, as we observed in Mecklenburg-Western Pomerania. The Trentino forest and pasture management and the Czech community-based land trust Čmelák represent cases in which previously existing approaches that had never really gained a foothold or had become dysfunctional were revived. In both these cases, pre-existing knowledge of the important actors and the major content of the innovation had been carefully evaluated and updated.

All these cases show how the historical context of the innovations matters. All innovations had varying status when InnoForESt began. Some of them were greenfield innovations, others represented incremental developments. It was clear from the start that the Innovation Region Teams had to deal with these varying contexts with all the frictions and rapids that the embedding of an innovation into a societal context involves. In this we see two analytically and practically distinguishable types of innovations in forest ecosystem service governance, greenfield innovations and incremental developments.

Relations to business activities and the economy

Forest-related governance innovations often depend on and/or are triggered by economic interests at different levels ranging from local to international and along the entire forest-wood value chain. In all Innovation Regions, key stakeholders were directly related to forestry management, timber production, and/or wood processing and/or wood-related construction work. This includes forestry workers and managers who are sometimes also forest owners, but also sawmills, carpenters, furniture producers or (wood) construction enterprises, and other small and medium-sized handicraft businesses. Governance innovations pursued in the InnoForESt project provided them – at least potentially – with additional or improved income opportunities and marketing strategies and connected them with new business partners along the forest-wood value chain. Interestingly enough, this includes business partner outside the forestry sector, such as tourism enterprises (hotels, travel/tourism agencies) like in Mecklenburg-Western Pomerania and Eisenwurzen, but also education-oriented small- and medium-sized businesses (e.g., forest education in Eisenwurzen, the practice partner Universeum in Gothenburg). These profit-oriented stakeholders are in most Innovation Regions closely related to - mostly research and/or nature-protection and/or regional-development-oriented - non-profit organisations like national park administrations (e.g., National Park

Gesäuse in Eisenwurzen), research institutes like the Academy for Sustainable Development Mecklenburg-Western Pomerania (ANE) in Mecklenburg-Western Pomerania or SYKE in Finland.

Legal and regulatory situation

In the Innovation Regions, we observe different problems with the legal and regulatory context conditions that influence innovation. There is the full spectrum of (a) innovations cast in law, unable to develop with the changing situation, (b) regulation falling behind developments in the regions, (c) framework regulation supporting innovation, and (e) legal innovation, both through public law and private contract law.

In Mecklenburg-Western Pomerania, it was difficult for the Forest Share to obtain planting permissions from the responsible authorities (conflict of opinion: authority states that a new forest creates more CO_2 than a previous pasture area including the shift to a forest). In comparison to the other Innovation Regions, the Forest Share is implemented on a federal state level, with more rights and opportunities than other regions (*innovation cast in law*). The downside of this strong legal underpinning shows itself when the political interpretation of the legal situation or the changing conditions for the once innovative approach change, but the law or its interpretation is not adapted for application.

During the gestation and project progression phase in Eisenwurzen, tiny house production and their placement in national parks was among the early scenarios for innovation prototype development. However, regulation on tiny houses was not established yet, as it is a hybrid form of a house and a movable object. Furthermore, national park regulation prohibited visitors to stay in the park overnight. Given this fundamental uncertainty about substantial legal hindering factors the Innovation Region Team decided to refrain from further developing this scenario (*regulation falling behind*). In a similar vein, the land reform of the 1950s in Trentino led to non-profitable businesses in this area and caused an abandonment of the countryside and left unmanaged forests. Since then, with interruptions due to other policy priorities, the province has been searching for ways to regulate the forest and pasture management in such a way that economy (businesses) and ecology (landscape, sustainability) could go hand in hand to advance the area. Also for Čmelák, in the Liberec region, it has been a long struggle with conflicting legislation for forests and hunting (hunters having problems with fences built to protect new virgin forest) preventing sustainable management of storm damages and leading to a complicated forest ownership structure with many different owners and interests, as well as regarding neither supporting the provision of non-productive ecosystem services nor motivating forest owners to take these services into consideration. There are no constructive innovations in sight here.

There are also cases of *support of innovation through framework regulation*. The region Eisenwurzen participated successfully as a part of LEADER from 2014 to 2020, financed by the European agricultural fund for rural development (EAFRD). Each region had to focus on specific topics that had to be stated in the Local Development Strategy. Activities in Eisenwurzen related to LEADER were the source for the innovation idea of the region and created the basis for its development. Similarly in Primiero, the EAFRD was supporting the innovation with funds already before the InnoForESt project from 2014 on. Again, this mechanism set the foundation for future innovative developments in the region and can be understood as the birth of the innovation mechanism. Therefore, the EAFRD was a successful tool not only in developing rural areas in Europe, it also supported the creation of innovative approaches that sourced several innovations. This regulatory support can also be found in areas where the Natura 2000 scheme applies.

Most recently, the Trentino province's Forest and Mountain Plan (Stati Generali della Montagna) means another broader approach with more participatory elements to achieve the reconciliation of forest and pasture management (*legal innovation*). The regional InnoForESt project in the Primiero can be considered almost like a pilot for a more integrative approach. By analogy, we found legal innovation in terms of desired non-state regulation or based on private contracts on a voluntary basis. The concept of a Habitat Bank can in theory be realized as a governmental mechanism foreseeing the compensation of biodiversity-reducing development projects by law. However, it can also be realized as a voluntary market instrument, in which stakeholders, such as large companies voluntarily offset/compensate the biodiversity impact of their business activities. In the case of the Habitat Bank of Finland, as of now, no legal requirement exists for the compensation of biodiversity degradation due to corporate activities, unless a Natura 2000 area is concerned.

This resulted in reorientations as to which stakeholder group to focus on in the innovation development process. Consequently, a shift from private actors to public actors took place. Further, in this situation of uncertainty, participating companies became inactive in piloting the innovation. In the case of Love the Forest, the focused educational content is not compulsory for Finnish students as it is for Italian school students, but the possibility to handle the content of the student thesis provided the stakeholders enough room to implement, maintain and further develop the innovation approach.

Our innovation cases show that a reliable legal environment is a fostering institutional context condition. Whereas election faces demonstrate unstable moments in various Innovation Regions as well some existing legal constraints for the innovations. Also it is important to highlight the EAFRD, as it seems to be an instrument by the European Union to trigger innovative potential of rural regions within Europe in different areas, in our case in forest and land management, business and network development at the same time. Additionally, involved stakeholders might become reluctant to further innovation development and active participation in case of high degrees of regulatory unpredictability. This led in the case of Eisenwurzen to dismiss one of the scenarios (land use planning and tiny houses). Furthermore, most innovation teams invested few resources to analyse the legal environment for further exploration, i.e., identifying and applying for further funds (i.e., compensation for travel time and losing working hours to attract all/more stakeholders, follow-up project), cooperation with public key stakeholders who could serve as enablers via policy support through constructive destruction or as a connector to suitable actors.

6.2 Key Strategic Orientation

For innovation development the strategic orientation, i.e., the overarching aims and objectives are essential. In this section we highlight the major underlying aims and the given InnoForESt project objectives for innovations development in our Innovation Regions.

Sustainability orientation

Fostering the sustainable provision of forest ecosystem services through forest-related governance innovations was the underlying motive of the InnoForESt project. Yet, it featured very differently in the innovations developed in our Innovation Regions. While forest ecosystem services provisioning was directly or indirectly on the agenda and considered in all Innovation Regions, only in some cases a comprehensive and integrative perspective on the provision of a broader range / bundle of forest ecosystem services was taken and their interdependence considered.

In Eisenwurzen, for example, provisioning forest ecosystem services where at first dominating the discussions when talking about extraction and processing of (regional) timber thus pursuing a regional value chain approach. This would have also had other positive sustainability effects and/or non forest ecosystem services related implications: using regional wood would contribute to de-globalizing the timber market, reduce transport costs and related environmental effects, ensure local income generation, and preserve local handicraft traditions. Here, the discussed innovations intended to support sustainable forest management in the region through increased demand for regional wood and timber; even some region-specific certification was discussed but not developed further. Other forest ecosystem services types like regulating and cultural ecosystem services were addressed, but less prominent; in particular with respect to biodiversity conservation and forest stand composition in the national parks, but also forest education.

In other regions, biodiversity and regulating services were at the centre of the innovation, for example, in the Habitat Bank of Finland. The importance of sustainable forest management in the context of climate change mitigation and/or adaptation was highlighted in Mecklenburg-Western Pomerania and by Love the Forest in Gothenburg, with the latter being designed as an educational project. It is interesting to note, that in Mecklenburg-Western Pomerania the range of targeted forest ecosystem services expanded over time: while initially the focus was 'only' on afforestation to enable CO_2 sequestration in new climate forests, at the end rather bundles of forest ecosystem services including biodiversity were discussed - not the least to provide arguments for possibly higher price of the Forest Shares in the future. Furthermore, it proved to be essential to use land owned by the federal state for afforestation measures to ensure the longevity of the forests and the selection of particularly resilient tree types (which are not necessarily fast-growing) and thus their climate-regulating effect and resilience. Further, the possibility was explored to combine the Forest

Shares with two other, non-forest-related products "Streuobstwiesengenussschein" (Orchard Benefit Certificate) and "MoorFutures". In the Primiero Region the focus changed from mainly timber and animal food provision (pasture, agroforestry) to timber, slope stabilisation, cultural services such as recreation, and habitat provision, climate regulation and pollination. Also in the Liberec Region, the Čmelák efforts so far have been aimed at afforestation of new virgin forest, conversion to mixed forest and an improved balance between forest and wildlife.

This 'widening' towards the inclusion of a broad range or bundles of forest ecosystem services addressed by the governance innovations proved to be a fairly consistent pattern.

Transfer, upgrading, upscaling of the innovations

Among the explicitly stated objectives of the InnoForESt project is the exploration of opportunities to upgrade or improve the innovation , to upscale it in geographical scope and/or to transfer the innovation to another region (https://innoforest.eu/project/objectives-of-innoforest/).

The Trentino Innovation Region Team organized and participated in several events and meetings to connect and exchange information with representatives from other European regions about experiences from post-Vaia-storm period (best practices of storm damage management), and to explore options for improving and transferring the forest pasture management.

The Forest Share concept of Mecklenburg-Western Pomerania, was already being copied in another German Federal State, before InnoForESt had started. In Thuringia, the concept was taken up, however this can hardly be called a transfer as it did not involve any knowledge exchange or collaborative activities with Waldaktie. The objective of the supervisor of the Thuringian version of the Forest Share is to upscale it on national level. Additionally, there are discussions and partly plans of the original to upgrade it through the inclusion of further actors, additional forest ecosystem services benefits. For example, during InnoForESt, the two Innovation Regions Liberec and Mecklenburg-Western Pomerania had several conversations exploring possibilities for collaboration on and knowledge sharing between the two regions during the general assembly of the project in Schlierbach.

All innovations are currently active in the niche level, some as Finnish Habitat Bank are one step behind of implementation as they are preparing the pilot at the moment, and therefore, no activity on transferring and upgrading has/could be done until today. The objective is to become a national legal institution, therefore, also because of a changed strategy (first objective: implementation on national level, now on regional), upscaling activities will be necessary in order to reach their goal.

The team in the Eisenwurzen region was in contact with several additional stakeholders within its region (upgrading), but also with neighbouring regions and regions that have a similar concept of a regional value chain (transferring), but with less focus on forest ecosystem services and sustainability. Additionally, some stakeholders from Almtal left the platform to develop their own projects on bus shelters made from regional timber, independent of InnoForESt. The detached part of the innovation can be defined as an additional type of related innovation, besides supporting, competing, similar or supplementing innovations.

As niche development innovations, most Innovation Regions focused more on stable functioning of the innovation and improvement of general processes than transferring them to another region or upscale them to national level, with the exception of the Habitat Bank, which had to step back first and pilot the innovation on a local level first and with a different target group as desired in the first place (national and private actors). Although, thoughts and ideas as well as first actions as in the case of Eisenwurzen, Trentino and Gothenburg are existing, which could be further taken into account and analysed.

6.3 Innovation as organised activity in institutional contexts

In this section we highlight how regional innovations have been organized. This includes identifying which actors have significantly advanced the innovation work and in what relation to public policy bodies this happened; we show how strong or weak the internal degree of organization of the innovation team was, what kind of tensions with stakeholders arose and what kind of phases of inactivity occurred.

Innovation leaders and change agents

In the Innovation Regions we were able to identify actors that can be characterized as the "mainstays" of the innovation work. In some cases, we observe a movement away from the state's overall responsibility for the forest ecosystem service approach, while in others either business actors are at the focus or community-based models play a significant role.

In the case of the Forest Share scheme in Mecklenburg-Western Pomerania, we did not observe any innovation with regard to personnel or the inclusion of new actors interests. Apart from the occasional widening of the stakeholder spectrum, especially at the last workshop, it was the same actors that had been carrying/developing the scheme before who sat together during the innovation process. The process was characterized by opposing ideas of the main actors. For the new Forest Share, the initial inventor of the Forest Share, an employee of the State Ministry of Agriculture and Environment, is pushing to promote his ideas for the future of the scheme. On the other side is the managing director of ANE, who aims for a key position of ANE in further development and marketing of the Forest Share scheme. His objective is to disentangle the new (or 2.0) Forest Share from ministerial responsibility to such a degree that ANE can manage the project largely independently, yet with the blessing of the ministry. Apart from the occasional widening of the stakeholder spectrum, the same people who have always carried the forest share sat together during the innovation process.

In the case of the forest and pasture management, the impetus for development came from incumbent actors, rather than from outside stakeholders. The most prominent being the director of the forest district of Primiero. He is very well connected and in his authority a point of reference to all the relevant stakeholders. He had also carried out the previous projects that have reintroduced the mixed approach for forest and pasture management and allowed first discussions about how the involved stakeholders would relate to this approach. The two responsible officials at the provincial administration in the forest service (who is the InnoForESt practice partner in the Trentino region) also play a strong role, at the same time being liaison with the InnoForESt project. The peculiarity of this case, against all other cases in the InnoForESt portfolio, is that it is the administration that drives the change, organizes the meetings, is the formal InnoForESt project partner (practice partner) and at the same time involves the stakeholders in the project more than usual (so far in this region) with a greater say due to the InnoForESt project's strong multi-stakeholder philosophy.

In Finland, incumbent actors are in charge. SYKE, as the national environmental research and advisory institute, plays a role in (the development of) environmental policy instruments (e.g., METSO) and aspires to play a key role as offsetting mediator. During the InnoForEst process persistence and idealism were required. The stakeholders, even if interested in principle, conditioned participation upon the overall political situation and the proposed business structure of the Habitat Bank idea. Furthermore, the political situation was unclear for a long time because the government did not advance legislation to offset ecosystem services.

In Eisenwurzen a small group of committed entrepreneurs drove the platform development and supported the product ideas. Although they were already active on a smaller scale, with the InnoForESt project they aimed to establish new partnerships and for developing regional wood products. Half way into the project lifetime, a task force emerged , including those actors that were willing to take matters into their own hands. However, they have not yet fully taken over the initiative.

In the case of Love the Forest the practice partner Universeum in Gothenburg in strong collaboration with the science partner acted as 'motor' of the innovation. Universeum had well established contacts with an existing stakeholder network that had been built up for the precursor Love the Forest 1.0, based upon an even earlier network between Universeum and schools for earlier collaborative projects. The input for further developing the Love the Forest 1.0 idea towards Love the Forest 2.0 was initiated and accompanied by the science partner from the University of Lund.

With regards to gender, we often saw a mixed picture in all regions. When looking at the key scientific and practice partners, we found in Eisenwurzen a mixed team with male leaders, in Finland and Czech/Slovak

partners also a mixed female/male group with female leaders, and in Trentino a female leader with a male co-leader, a female project worker for PAT with mostly male partners from the University of Trento. While in Mecklenburg-Western Pomerania the team was all male, in Gothenburg it was almost completely female.

In all our Innovation Regions we find individual actors that carry and lead the innovation development process. Without these actors the innovation processes would not be thinkable, especially the network y content development. Yet, their organizational rootedness encompasses the full range from (provincial) state administration in Trentino, ANE as a foundation with strong ties to the federal state, the Finish Environment Institute, science-business networks in Gothenburg and private business networks in Eisenwurzen.

The management of innovation work and anchoring in public bodies

If one takes a closer look at innovation work and its institutional (formal and informal rules, legitimations, etc.) and organisational (aims, configurations, policies, cultures) requirements, differences emerge as to whether and how the main carriers of innovation work are anchored in or with public organisations. This is important because public authorities have a strong role in initiating and structuring the innovation process. Just like other actor groups, they follow an agenda that can be supported, for instance, by means of legal and political instruments. Further, it is important to note that the mediating actors in state authorities often represent different preferences and interests, which also affect the motivation for and degree of personal commitment. Stakeholders who are already cooperating with the authorities are frequently influenced in their decision-making freedom whether and how they participate in the innovation process, due to their administrative dependencies. At the same time, it is important to note the extent to which state actors give up or delegate power in order not to stifle stakeholder participation.

In two cases, there are strong connections to state actors or activities: In Trentino, members of the administration mainly carry the innovation as persons of authority; with their offices as supporting and legitimizing apparatus in the background. In particular, the local director of the Trentino forest administration in Primiero is a fully committed, well-connected, and visionary figure who has already been active in previous projects and who pulls the strings together. In Finland, the feasibility of the Habitat Bank idea depends heavily on whether or not the government and parliament direct their policy towards an incentive scheme. Furthermore, there is a relatively strong institutionalisation of collaboration between SYKE as the Finnish Environmental Institute and the Finnish Forest Institute. Previous collaborations and planned future collaborations establish(ed) strong ties with the environmental/nature agencies of the Finnish government.

In two other cases, we observe certain tensions between the innovators and the relevant authorities. In Mecklenburg-Western Pomerania, the former initiator of the Forest Share 1.0, who is a long-standing civil servant in a leading position in the responsible Ministry, seems increasingly isolated. On top of that, the responsible Minister is launching a new tree-planting campaign with a budget of 20 million Euro, while the ANE, the project-promoting NGO, is fighting for its initiative, the Forest Share. At the same time, the Ministry's task is to make the Forest Share future-proof. It is also important to see that the innovation lead shifted from a department of the Ministry of Agriculture and the Environment for Forest Share 1.0 to ANE for Forest Share 2.0. The federal state's forest administration is also a key partner when negotiating the innovation options. In contrast, science and practice partners in the case of the Liberec region are rather independent of administrative links. Nevertheless, important government representatives, like the responsible state forester of the Liberec region, have been officially at the table as stakeholders during the InnoForESt activities.

In the case of Love the Forest in the Gothenburg region, the focus is on the collaboration between Universeum and the team from the University of Lund. Both organizations seem on a par: a strong practice partner and a highly supportive science partner from a public university, both with clearly defined roles. In the Innovation Region Eisenwurzen, the Federal Environment Agency (as lead organisation for the LTSER region) and the (national state-run) National Park Gesäuse have been involved in the planning activities from the very beginning of the project. Yet, their active involvement in strategic and operational planning became less important and regular over time. However, there is a strong cooperation and joint planning

activities in the Innovation Region Team between the University of Innsbruck and the practice partner STUDIA, a regional innovation research institute. Further, one member of the STUDIA team that was involved in InnoForESt until the end of 2018 was at the time also mayor of the village of Steinbach am Ziehberg. In 2019, she became a member of the Austrian Federal Council delegated by the Upper Austrian Landtag, yet she is still a board member of STUDIA. The InnoForESt consortium and the IR science partner work, with the Innovation Action project they carry out, as background drivers for the further development - as in all cases acting on behalf of the EU, but without imposing regulations.

We summarize that state organisations are often involved in and play an important role when developing governance innovations for forest ecosystem services, in particular when it comes to trying to 'hold everything together'. Yet, they are usually not the main change agents or drivers of the innovation efforts. We cannot rule out that this is due to a selection bias in the overall project, where value was strongly enough on more initiatives that are independent of the state. On the other hand, in many cases, the non-state actors still have to do indirectly with public authorities, not the least since public bodies set and implement relevant legal frameworks.

Management, degree of organization and scope of the innovation work

The innovation development process called for bringing science and practice partners in the Innovation Regions, regional stakeholders and the InnoForESt project partners together. This required management and self-organization manifesting in actor network development and innovation platform stabilisation. How strongly did the innovation carriers organise themselves in their role and with a network or a platform in the course of the project? In many cases we still find only loosely organized groups of stakeholders. There are many reasons for this, ranging from not yet clearly defined or agreed implementation and goals to unclear political or economic framework conditions to changing commitments. Often all of these are related.

Self-organization as a partial aspect or even the main object of an innovation scenario manifested itself in only one case (Eisenwurzen). The intensity of the workshops, the long-term mobilization of the stakeholders and the formation of a stakeholder task force suggest that a particularly high level of management organization has been achieved during the course of the project. Although not yet established, a formalised organization as a spin-off of the project has already been subject of discussions and been elaborated in the form of one scenario at the CINA workshops. The aim here was also early on to establish a working platform from among the stakeholders instead of pursuing only very specific product ideas.

In Finland, it is intended to implement the Habitat Bank scheme as a national or at least regional innovation. However, it took quite some time to get sufficient stakeholders on board. partly due to the complexity of management issues (larger scale, more actors, stronger national law component, business vs. biodiversity protection interests). Also, in the Liberec region, the innovation teams were confronted with the difficulty in keeping stakeholders engaged due to problems with the overloaded management of the partner organization Čmelák, which for long had different priorities. Relatively late in the project, but at least and as is so often the case with innovations that do not ignite at the push of a button, a well-attended workshop in Liberec assumed several follow-up events for further meetings, also outside the InnForESt framework, as well as new project participations.

In Trentino it may both be an advantage and a disadvantage that the forest administration plays such a strong role. Many stakeholders participate to some extent, and in some cases seem to feel obliged to do so because they want to work with the lead administration beyond the project. Furthermore, the decision process has been done mostly with an inclusive character within workshops. The existing network of co-operations, interests, dependencies and acquaintances was very important here - but there was no guarantee that all stakeholders who were deemed important were always participating. The degree of organization was particularly evident in the intensive discussion work on the matter, in the specific scenarios and the overarching implications.

In the case of the Gothenburg based Love the Forest initiative, it was beneficial that the practice partner Universeum was relying on an established stakeholder network, which only experienced smaller changes. At

the same time the content development of the innovation was building on a related and successful case. And still, stakeholder expectation management was a major challenge.

The management of an unfolding variety of sometimes contradicting interests of the different stakeholders involved in the innovation development posed a major challenge to the innovation agents. In particular, in those cases in which the innovation content development ran in parallel with the network/platform establishment process. Stakeholders needed to get attracted by the idea and kept in the process of further development.

Tensions with stakeholders

When a network of actors who aim to work together is formed, there is a tendency of seclusion. The network tends to increasingly regard itself as an independent entity, from the outside it is also increasingly seen as a separate unit. This may lead to disagreement with external actors, who might be interested in what is going on in the network, even perhaps because they are competitors.

The network insiders can strongly drift apart from outsiders regarding the knowledge or value basis, as well as political, economic aims or interests. In the Liberec region, the Čmelák land trust community always had dissent with hunters who were opposing the setting up of fences to protect the forests. Incidentally, neither the applicable legal rules for hunting nor those for forest use reconciled this conflict of interests. In Trentino, while working on the forest and pastures approach, it turned out that the provincial tourism office did not develop much interest in this approach for the Primiero. It seemed as if the tensions were in part caused by the provincial tourism office perception that "incoming" tourists from southern Italian regions with other background and knowledge on mountain areas were rather critical about an approach that would reduce forest, while being convinced trees have to be planted to mitigate climate change. In discussions about the Forest Share, tensions were well known: the Green party always criticised the approach of compensating emissions through local afforestation; the Minister would seem to forget about its own Forest Share scheme that it once had launched its own subunit in 2008. Tensions also arose with potential customers, as the example of a company that wanted to buy larger amounts of emissions compensating Forest Shares for their customers, on the one hand, while on the other hand driving them with Jeep safari through the forests. On another occasion the company management arrived at a tree planting event with a sports car. This vastly conflicted with the underlying idea of a compensation scheme that aimed at compensating only inevitable emissions by tourists. The conflict in the occasion was resolved when the bulk purchase of shares was ultimately dismissed. Finally and most severely for the Forest Share 2.0 innovation, the Ministry again straddled between by announcing a big tree planting programme in a previously non-forest area, thereby competing with the core business of the Forest Share. It must be added that both the company and the Ministry in question alternate between positions inside and outside the core stakeholder network. Both are directly involved at certain times through specific individuals, and they are more distant from the forest share (or from the core group of the forest share developers) at other times.

In contrast to the above mentioned incidences, in Eisenwurzen, we have not observed such tensions. Similar in the case of the Finnish Habitat Bank none have been made explicit by the regional partners. In the case of Love the Forest, it was not so much about tensions, but rather being sensitive to different stakeholder ideals, interests and opinions.

In almost all our Innovation Regions we observe varying degrees of tensions. In order to understand the course of innovation, it is important to see that it can hardly be done without tension. They exist as soon as diverging interests collide. Still, they can move the process forward if used as an opportunity to constructively address the underlying triggers and the potential solutions to the tension. Where the tensions persisted, as in Mecklenburg-Western Pomerania at some point, one of the reasons for this was that the actors concerned found it difficult to communicate with one another.

Inactivity in regional innovation trajectories

It would be illusory to assume that one could keep stakeholders mobilised around the clock and constantly drive innovation in this field of ecosystem services, where many are self-employed or literally work outside in the forest. In our case, we are not dealing with innovation development that is comparable to innovation

work in a company where people are paid to drive the innovation development process; neither is our situation comparable to a public administration hierarchy in which employees can be ordered to focus solely on one particular thing. Rather, we encounter times of inactivity among stakeholders who are voluntarily involved and, in addition to their other regular activities - both for internal reasons, because they simply cannot or do not want to work on it for some time, and for externally induced reasons, because the circumstances can be extremely unfavourable at times. In some cases, we interpreted this as setbacks for an innovation journey, but more generally it shows how these innovations are not no self-running machines that you only have to switch on once by pressing the button. How did that look in our regional projects?

In the case of the Habitat Bank of Finland, pushing biodiversity offsetting was difficult in general: difficult to "become seen" in many offsetting initiatives with perhaps higher profile from Ministries (*contested terrain situation*). In Mecklenburg-Western Pomerania the focused innovation could not progress at one point because a competing political initiative got in the way (as perceived by the local partners) - another *contested terrain situation*. In the Love the Forest project in Gothenburg, it was difficult to continuously proceed with the innovation due to, first, the drought and forest fire and later the Covid-19 crisis. These crisis situations had caused financial and organizational constraints (*crisis situation*). In the Liberec region, with the community-based land trust as partner, phases of lesser activity were obviously due to both personnel changes and political activities involving key Čmelák personnel (*organisational commitment situation*). In all three cases, we are more likely to blame circumstances for temporary inactivity.

In addition, we identify cases in which the construct of innovation itself - i.e., the design of the ecosystem service to be changed and/ or that of innovation cooperation - led to obstacles. In Eisenwurzen, focussing on establishing a broad Forest-Wood Value Network, only possible due to the enthusiastic participation and broad interest from many stakeholders, a broad range of innovation ideas quickly emerged. Consequently, in some moments, it was challenging to clearly define common objectives with no short-term 'implementation' of practical innovation ideas with a potential economic return in sight (that might have led to an increase in income in the short term, for instance). This can be attributed to stakeholder diversity, with actors from different sectors and the geographical diversity of three federal states involved (at least in the beginning). This resulted in a deadlock between identifying and deciding on platform objectives, on the one hand, and finding an appropriate organisation form, on the other hand, later making it difficult to find someone who would take on responsibilities after the end of the InnoForESt project. One could call this *a complexity situation* or "complexity reduction problem" situation.

In Mecklenburg-Western Pomerania, many problems that had initially led the Forest Share to re-innovate itself, i.e., the price scheme, acquiring new land for climate forests and defining a new organization to manage it, came up again. This was because no decision was made by the core stakeholder group that would trigger change. As mentioned above, a parallel initiative appeared quite suddenly, pursued by the minister responsible for forestry, which made the Forest Share competition. It turned out to be hard to establish communication with this "official copy" of the Forest Share in order search for synergies or new input. At the same time, actors closely related to the core group of the stakeholders were not included in CINA workshops. This can be interpreted as a missed opportunity to receive and generate new input for future decisions. Here we would speak of a *situation of miscommunication*.

Already since the origins of the new forest and pasture management approach, before the InnoForESt project started, a long negative process was successfully stopped that had led to non-management of pasture and forest area through abandonment. While the InnoForESt project has massively increased the activities and placed them in a broader, internationally comparative and visibility-generating framework, there were nonetheless phases of inactivity, first when the Vaia storm struck and suddenly the measurement and cleaning up of the damage and then again as the plan picked up speed and initially overshadowed the small pilot project in Primiero - participants only looked at its effects instead of staying involved in the little pilot. Additionally, a window of opportunity was not used the first time in relation to participate in the design of the Forest Mountain Plan, but has been pushed by the Innovation Region Team right after the publication of more information of the plan.

In relation to the activities organized and paid for by InnoForESt, the question is of course always how successful the respective regional teams were in building up a basis of trust and work; how quickly did they manage this and how sustainably; what was the problem or how could the working relationship have been intensified even better? We cannot measure and classify this precisely at a distance. We can only emphasize that this basis is indispensable and depends on the personal commitment of the responsible people.

6.4 Key project activities

In the InnoForESt project, a process structure of measures was jointly developed in the first few months and then firmly agreed. This provided for a number of measures to take place everywhere, such as three different types of CINA workshops (as far as this fitted into the respective innovation process). In addition, there were activities that were simply necessary to set the work process in motion in the regions (getting to know each other, exploring interests and opportunities, building trust, etc.). This also includes some procedures, such as Role Board Games, SETFIS interviews, NetMap interviews, that were intended as "supporting tools" and that - in some cases, for instance in the Trentino - developed slightly more impact as ways of informing and inspiring regional efforts with input from other regions and through its general heuristic value stimulating to ask a whole array of questions that had hitherto been less considered.

Kick-off activities

The kick-off activities in the Innovation Regions were undertaken in different ways, i.e., with different stakeholder groups and in different formats. Some regions held working meetings (*focused group meetings*), others started with a series of interviews, phone calls and smaller meetings before larger meetings took place *(distributed kick-offs*; distributed contact, getting to know and information gathering actions). In Finland, exploratory meetings with key sector stakeholders and a very early first focus workshop (CINA-equivalent) were held. A similar approach was taken in the community-based forest self-governance cases in the Czech Liberec regions, Čmelák, and Slovak Hybe region (yet, only the former could then be followed up intensively). For the Love the Forest 2.0 project in Gothenburg, the evaluation event of Love the Forest 1.0 was also a starting initializing point for the Love the Forest 2.0 initiative. In Mecklenburg-Western Pomerania, the practice partner met with the main stakeholder first in a bilateral meeting, followed by meetings with small groups of additional stakeholders. After this had taken place a first focus group workshop was organised. In Trentino, the project began with personal meetings with stakeholders to inform them about the innovation process and upcoming events, followed by a series of interviews for information gathering and a first focus group workshop to report first findings and test first innovation ideas. The same happened in Eisenwurzen, just that here stakeholders were first approached by telephone by the practice partner, then interviewed in depth by the science partner, before a first focus group workshop was used to report findings and test first scenario ideas.

Overall, we find that a common approach to initiating the innovation process was to first meet with stakeholders bilaterally in smaller groups, before the network was slowly extended and larger workshops took place. This does not come as a surprise as trust building and the investigation of different stakeholders interests seems to be a necessity before starting a longer term collaborative innovation process.

CINA as a workflow

The CINA workshops are the backbone of the small-scale innovation work conducted in the regions. These workshops provided the opportunities to explore the options and specified next steps of the innovation development. They were conducted with all relevant stakeholders and, in particular, in direct exchange with all of them and, if possible, even to decide, for instance, about which option would become the prototype to further work with or which protype alternatives would be considered most viable. Different types of CINA workshops were conducted that corresponded roughly with elementary phases of an innovation process. CINA type 1 was used to clarify the potential alternative scenarios of innovation development. Ideally one scenario would be selected, a scenario that would have been considered the most appealing, in order to then pursue them up to prototype status. The CINA type 2 workshop then allowed the selected scenario for innovation development, i.e., the prototype to be critically examined, which led, as was usually the case, to specific changes. CINA type 3 workshops were about how to organize the innovation beyond

the current project lifetime. The workshops also focused on re-evaluating what had been achieved with the prototype (or can still be achieved by the very end of the project).

In Gothenburg it was possible to step-up specificity of the innovation with each workshop. This also involved a change in the profile of the students addressed with Love the Forest from younger to older. In Finland, the Habitat Bank idea was pursued quite purposefully, although the political circumstances and the associated temporary hesitation of the stakeholders stretched the sequence. The Wood-Forest value network in Eisenwurzen made steady progress, too. However, it had basically doubled the first step in order to bring new and additional stakeholders on board from the geographically very scattered region. These two cases have a *complete three-step process*.

At the other extreme, in Mecklenburg-Western Pomerania, CINA workshops type 2 and 3 did not occur at all (*extensive work on alternatives*). In this case a great deal of care and effort was needed to agree and design on the reconfigured and novel content of the innovation, the Forest Share 2.0. The other Innovation Regions at least produced a prototype, i.e., an innovation with a narrower focus, which they had thoroughly refined (*prototype refinement level*).

Table 5. Type and number of CINA workshops carried out

Innovation Region	**Eisenwurzen**	**Finnland**	**Gothenburg**	**Liberec/Hybe**	**Mecklenburg-Western Pomerania**	**Trentino, Primiero**
CINA type 1: innovation options	2	1	1	1	3	1
CINA type 2: prototype assessment	1	1	1	1	-	1
CINA type 3: road-mapping	1 equivalent task force workshop	1 planned for fall 2020	1	-	-	-

One can see that innovation processes are highly dynamic, even when dealing with mandatory instruments for structuring and focusing the content of change options, as presented in the CINA workshops. When the time is right, one can take the respective steps that are laid out in the specific orientations of the workshop types. Yet, the maturation of the innovations is different in all cases.

The overall CINA process in Eisenwurzen is characterised by the emergence of a task force holding several meetings and a higher regional variation in workshop locations than in the other, geographically more confined and static cases. The workshops were also pretty large with dozens of participating stakeholders. The scenarios were very specific and detailed so that they could serve as the central focal point of the workshops. The scenarios were used both as holding devices for innovation ideas and as motivation to get together. Purely product-related scenarios were neither rejected nor selected, but a meta-scenario of network stabilization was preferably discussed and further pursued by the stakeholders. In Trentino, stakeholder targeting was also intense and extensive, although the regional scope remained very focussed compared to Eisenwurzen. The scenarios were specific and were detailed through the interactions with the stakeholders. Scenarios were largely used more as a theoretical framework orientation, discussed in detail at some workshops. In Gothenburg the CINA process was actually the key to innovation development. The scenarios had been thoroughly developed, from the outset. Within the process the discourse situations in direct reference to the regime and with a view to the broader changes of indirect influence at the landscape level were taken into account and sharpened by subsequent fine-tuning. The scenarios served the step-by-

step development of the prototype. First, they initiated brainstorming about various options with key elements. Then they were narrowed down and specified. What all these cases share is the *extensive CINA process* combined with *intensive scenario work*.

There are also two cases in which the *scenario work* was *not* so *central*, particularly not during the workshops. In the Finnish Habitat Bank project, it was rather difficult to find a strong approach in terms of infrastructure and content: the interest groups switched between the two CINA workshops, the idea of private financing was terminated and the innovation work continued with the municipality of Lahti in early 2020. The scenarios were used rather as a loose orientation only marginally discussed at the workshops. In Liberec, the scenarios were not yet well developed at the early introductory workshop. This development occurred rather relatively late in the process. Here it was less an issue of targeted and participating stakeholder focus, but an issue of less stakeholder mobilization for further long-time cooperation. Scenarios were largely used as a more theoretical framework orientation, discussed in workshops, but only marginally. Yet, one cannot simply blame the differently designed scenario work, but take into account the intensity of the previous research with regard to the stakeholder interests and the binding nature of the social relationships between the innovation agents and stakeholders, which was difficult to establish while the CINA process was rather weakly developed.

In Mecklenburg Western-Pomerania, lots of informal talks between the practice partner and small group of stakeholders took place on how to get to a Forest Share 2.0 version and what it could entail - or whether this step should be made at all. The *scenario work* was *intense*, and so was the CINA *workshop work*. Also, in this case, scenarios were largely used as a more theoretical framework orientation, discussed in some detail in workshops.

Platform and network facilitation

InnoForESt aimed at establishing *physical and digital platforms* for stakeholders to support innovation development. The digital platforms were websites with functions for external communication and internal project management. However, the digital platforms did not play the expected important role in the Innovation Regions' communication and management structure. In some cases the digital platforms were competing with existing websites of the Innovation Region practice partner that were better established, for example in the case of Trentino or Universeum for Love the Forest. In other cases, digital platforms could play an important role in the future, once the new or further developed innovation is in the implementation stage, for example, in the case of Forest Shares 2.0 this could become a major building block once the new product is being sold or in the case of the establishment of a pilot habitat bank in Finland.

With *physical platforms* we mean the stakeholder network facilitated and coordinated by the Innovation Region Teams. In most cases, both the core composition of these physical platforms already existed prior to the start of the InnoForESt project and the stakeholders' interests were known to the coordinating practice partner. Thus, the challenge was rather to motivate the existing stakeholder networks to actively engage in developing a new innovation or adapting an existing one. In some innovations, such as the Habitat Bank of Finland or the Primiero forest-pasture management, emerging signs of 'stakeholder fatigue' complicated this process.

Stakeholder networks and platforms were central elements of the innovation development work in our cases. Yet, we observed different intensities of facilitating stakeholder engagement. In the Eisenwurzen case, for example, Studia invested a lot of time in addressing potential stakeholders by series of phone calls, based on existing contacts in the region. In addition, the extensive interviews in the context of the stakeholder analysis in the first year of the project, helped to identify some stakeholders that had not been involved in related network activities in the region so far, and managed to encourage them to engage in the innovation development work. In the Love the Forest case in Gothenburg, the platform work focused much on keeping the existing network interested in the innovation development by ensuring well-prepared and organized meetings and workshops. In the cases of Primiero and Forest Shares in Mecklenburg Western-Pomerania we observe that after the first initializing phase of existing stakeholder networks the drive for network expansion stalled quickly. Similar to the Love the Forest case, it can be regarded as network maintenance work rather than an effort to further engage new actors or establish a completely new network. In the

Čmelák case, we had a loose network to start with. In contrast to the other networks the local stakeholders and the practice partner had a history of mutual interest, yet did not have an established collaborative working history. As a consequence the network was more of a mutual expression of interest to start with. This led to an early faltering when stakeholders were busy with their daily duties. However fruiting later in the project duration and leading to further activities, but not yet reached a stable platform. Overall, in this case one could say that it was more about establishing a working relationship and networking effort rather than the maintenance of an existing network.

Innovation work intensity

While *intensity* can have different meanings, here, the focus is primarily on how far-reaching the change steps were on a content level: did change occur in small steps (incremental) or in large jumps (paradigmatic = fundamental). Another aspect of intensity is the importance of the hardship of small-scale, personal innovation work that builds relationships and trust over a longer period of time (or just offers a few workshop meetings to brainstorm).

Innovation work in Eisenwurzen has been *intense* regarding the social relationship building. A lot of effort went into bringing together stakeholders and letting them feel their interests are recognised. With regard to content, it was about bringing together already existing and new product ideas. Against this background, however, the establishment of an innovation cooperation platform is a more radical step going beyond what had been discussed before. Rather, it arguably qualifies as a *paradigmatic shift* away from the mere product orientation that was so akin to what stakeholders had hitherto experienced during innovation exercises in the Eisenwurzen. Around the Love the Forest project in Gothenburg, three CINA workshops were held, woven into the dense activity of the regional team, always concerned about mediating between the diverging interests of the stakeholders and the relevant issues that arose, also in educational contexts. *Incrementally*, the content orientation and the focus on the addressees moved further and further away from the starting point (from young students to older students). We see a pretty strong development here as a result of the very careful adaptation to changing circumstances of the use of Love the Forest more *fundamentally* than expected at the beginning. In Finland, less emphasis was put on scenario-based CINA workshops. Instead, a lot of behind-the-scenes lobbying work, agenda-setting and being present and visible was invested. A more *radical* shift from a state-centred to a business-centred focus was the result.

For Forest Share 2.0 in Mecklenburg-Western Pomerania, the innovation work has largely been limited to adding new elements to the forest share (*small steps incremental process*). In the third year, however, a lot of work went into the effort to save the Forest Shares scheme as such, as it had been side-lined by the new reforestation policy introduced by the same Ministry that owns the Forest Share. In Trentino, the original idea is based on an adaptation of a traditional approach to forest and pasture management and known to all stakeholders. In previous projects and informal efforts this has always been communicated clearly enough. This project was innovative rather in terms of the more deliberative-inclusive weight that has been given to the ideas of the involved stakeholders. Whereas, in the Čmelák case in the Liberec region there were few(er) meetings, the concentration on 'acts' was higher, compared to, for example, Eisenwurzen, where many meetings were designed with more nuanced activities and also with some repetition (which led to both saturation and stakeholder fatigue).

Prototype developmental stage

In almost all Innovation Regions, at least outlines of prototypes have been identified, developed, and discussed - although the concrete form of these prototypes are quite diverse. In the Liberec region, at least key innovation options and respected stakeholder preferences have been identified and discussed. In the Trentino region , the (new) focus on mountain and pasture policies and an adapted and inclusive stakeholder approach as well as the links to tourism benefits have been consolidated. In Eisenwurzen, in principle, all product innovation options are still on the table flanked by a discussion by a working group on more targeted objectives and the appropriate organisational form of the innovation platform 'Forest-Wood Value Chain'. In the case of the Habitat Bank of Finland, it seems that rather initiatives other than the InnoForESt innovation are proceeding into the pilot stage. The InnoForESt idea seems to be still unstable in terms of the targeted clients and the type of compensation mechanism. In the case of Love the Forest , pending

funding makes it difficult to identify a clear context of use and implementation for piloting the prototype. Similarly, there is no clear plan for implementation of the Forest Share 2.0 yet, mostly due to tensions with a potentially competing afforestation programme initiated by the federal state Ministry for Agriculture and the Environment.

InnoForESt project-wide reflection insertion

In all IRs, two or more SETFIS interviews were conducted - partly with members of the science team, sometimes only with practice partners, and in some cases with both (together). While the interviews were in general perceived as good opportunities to reflect on their own activities, only marginal direct effects on the innovation development work were reported. Perhaps with the exception of IR Trentino, where the IR team took up the list of influential factors and developed it further within the CINA workshops together with the stakeholders. This is due to the objective of SETFIS in the context of InnoForESt, which is on identifying the main influencing factors of the innovations and feeding theoretical and empirical results to the related project work packages.

With the exception of Eisenwurzen (Covid-19 induced), Role Board Games were conducted in all regions, yet mostly perceived as rather abstract exercises not really close to or relevant for the issues discussed in the innovation development work. Further, in four regions , specific interviews that aimed to uncover the actors' constellations (NetMaps) were carried out helping to trace back the development of the stakeholder network and to make explicit the interrelations between different stakeholder (groups).

The General Assembly workshops were found to be important means for interaction between teams from the Innovation Regions and between them and scientists not directly involved with them. Further, the regular update on the respective innovation work development and the exchange of respective experiences (positive and negative) were considered as important and encouraging.

6.5 Setbacks and adaptive capacity

Real world innovation development does not take place under ideal "laboratory" conditions. Rather it is shaped by problems, crises, stagnation and setbacks. In the course of the project implementation, we observed several such incidents in all of our Innovation Regions and then, six different ways of coping with these challenges. All regional teams would all try to deal with them in their own way, yet all in an effort to understand the new situation and to adapt to it.

Crisis and external events

Some events affect innovation development in a way that imposes a challenge for their further continuation. Some of them lead to a step backwards or pose obstacles that cannot be bridged on the innovation development path and can be understood as a crisis or a type of setback (see section 4.2). Examples are social, political, and economic events and processes, such as new EU policies or political changes; spill over effects from related ecosystems, or climate change events, and/or related natural hazards within the ecosystem of the respective Innovation Region, and the Covid-19 outbreak in the beginning of 2020. These events often originate from the regime or landscape level and are often insusceptible to change by niche actors. Through their impacts, a crisis, in other words exceptional punctual events as well as a series of negative setbacks, of internal or external origin, can lead to a deviation from business-as-usual and may serve as triggers for the innovation (Geels & Schot 2007).

Within the period of analysis of the six Innovation Regions, various natural and biological hazards occurred, such as storms, droughts, forest fires, and bark beetle infestations. The Primiero in Trentino was directly and strongly hit by the Vaia storm in October 2018. This impacted the innovation development in various ways. Firstly, an immense amount of timber was lost due to the storm and afterwards the low timber price because of the oversupply due to the timber that needed to be sold because of the storm. Secondly, some stakeholders left the project due to preoccupations with the storm impacts, while others joined the stakeholder network in Primiero. Though indirect, the Vaia storm in Eisenwurzen impacted on the innovation causing bottom prices at the timber market, thereby threatening the existence of small businesses because forest owners' costs were exceeding the income generated by selling timber. As a consequence, forest owners often left their timber in the forests. Another example of a crisis, which led to an innovation

is the bark beetle infestation in the Liberec region. In two other regions, Gothenburg and Mecklenburg-Western Pomerania, droughts caused effect dynamics varying in intensity and outcome. In Gothenburg, the hot summer of 2018 resulted in a number of forest fires. This had a direct impact on the innovation development, because Universeum, which as a non-profit museum and science centre economically very much depends on visitors' entrance fees. These experienced a steep decline as people spent their spare time outside, instead of visiting the museum. These economic constraints lead to shifting management priorities to other projects than InnoForESt, ultimately leading to temporal stagnation of innovation development. The drought and forest fires also had an indirect effect on the Swedish innovation development: given part of the donors were forest owners, who were dealing with a decrease in timber product and subsequent economic loss, their motivation to remain a participant in the innovation dwindled.

In the case of Mecklenburg-Western Pomerania, climate change and related natural hazards such as forest fires and droughts as well as a desired educational impact on the society led in the first place to the development of the innovation idea itself in 2007. The idea was to raise societal awareness about climate change and its impacts through planting events with the state forestry by focusing on tourists who could compensate for their greenhouse gas emitting activities through the Forest Share. A similar push was to be observed years later in the Swedish Love the Forest innovation. Here a strong public debate on climate change discourse was going on during the project progression phase, resulting in Fridays for Future and the alleged "Greta effect".

Additionally, a crisis and a series of stronger setbacks in the landscape and regime level in the Primiero region led the innovation idea to be generated. In Primiero, the unprofitable business in the forest pasture management in the 1950s led to the abandonment of rural areas in Northern Italy due to land and regulation reforms. This led to an increasing forest cover because of unmanaged forests, destruction of cultural landscape and few economic opportunities in the region (migration to cities) with the consequence of a proactive development of an innovation idea.

As far as the Habit Bank idea in Finland is concerned, no exceptional events occurred that influenced the innovation. Important to mention is that several discourses on climate change within society as external events helped the innovation to move up the political agenda at the regime level in the first place. But waiting games of companies to participate because of the danger of being accused of greenwashing and being just voluntary, as well as competition with related mechanism ideas, political uncertainty and difficulties in matching degraded and protectable sites slowed down the process of a prompt implementation. This triggered a vigorous reaction of the Innovation Region Team, which is explained in section 5.2. Here, as well as in other Innovation Journeys such as the Forest Share, a series of setbacks, which were at the same time long lasting, led to a crisis and required proactive counteraction of the Innovation Region Team.

All Innovation Regions were confronted with the pandemic Covid-19 outbreak and its direct and indirect impacts on the innovation. In Eisenwurzen, plans to hand over the organisation of the stakeholder network to the regional stakeholders themselves before the project ending had to be postponed due to lockdown measures. This slowed down dynamics in the meantime and "the momentum" could not be used in the way it was planned. As a consequence a continuation of stakeholder work with direct contact, working group meetings on site and combined hybrid (partially online and physical participation) meetings was conducted in early summer 2020 to explore opportunities for future activities after the project ends. In Finland, the Covid-19-outbreak interrupted the exploration process with an interested municipality. However, a workshop has been organized at the end of October 2020 with municipalities, research and business to further explore possibilities. In Sweden, the Covid-19 outbreak caused Universeum to temporarily close down the museum. Similar to the drought of 2018, this resulted in financial constraints impacting Universeum management and slowing down further innovation and communication. Again, this generated problems to find new partners and keep existing paying ones on board. Covid-19 hit Northern Italy extremely hard with effects on the innovation. It interrupted the stakeholder process as well as the development of the Forest Mountain Plan and some forestry activities. The Innovation Region Team reviewed the possibilities to continue online. Also the Innovation Region Team in Čmelák kept in touch and attempted to organise a workshop, which in the end could not be held. In Mecklenburg-Western Pomerania we can see negative and supporting effects from the outbreak. On one hand, similar to Čmelák

in the Czech Liberec region, a bigger workshop that was planned between all IR for exchange, could not take place. On the other hand, the Innovation Region Team used the additional time capacities to explore possibilities to connect the forest share to the ministry's new forest association.

We can observe that most of the crisis related interruptions of innovation development were also an opportunity in radically changing pathways. The Covid-19 related lockdown measures throughout Europe in contrast - and as far as we can tell to date - have rather paused or severely slowed down innovation development on most topics, but some Innovation Region Teams are trying to use the time for exploring activities, such as Italy in connection with Sweden or Austria, as well as strategic meetings online.

Response to setbacks

In the following, an inventory of responses to setbacks is provided, aimed at deriving a set of common reactions to setbacks. As "setbacks", we define everything that leads to regression in the narrow sense, but also to delay or stagnation. Those setbacks of internal and/or external origin (vis-à-vis the niche) often caused the innovation teams to become active. The Innovation Region Team Primiero continuously adapted processes to setbacks with an improved outcome, which were pragmatic, quick and effective and decided on in a democratic manner, while it was organized centrally. The team documented the actual processes thoroughly, participated in project activities and events and could therefore allocate setbacks. The team provided after most setbacks possibilities to the stakeholders and decided during workshops on future pathways and strategies.

In Eisenwurzen, a setback led to a scenario that integrated all previous ideas by developing a platform Forest-Wood Value Chain. Other setbacks, such as departing key stakeholders to realize specific innovation ideas (e.g., tourism associations in the promotion of tiny houses in the region), the questioning of an idea's economic profitability, or the perception of some stakeholders of not being represented sufficiently in the innovation-related decision-making processes triggered to planning activities on part of the Innovation Region Team to counteract and mitigate, if adequate, the impact of the setback on the innovation development. For example, a first Task Force meeting was integrated right after a series of setbacks during the second CINA workshop to strengthen the participation of highly motivated and committed stakeholders in the platform development and to jointly develop new strategies for its constructive/effective implementation.

In Mecklenburg-Western Pomerania, during the origin phase as well as during the project progression phase, a series of setbacks (obstacles with the pricing system, successor of the Ministry as managing organisation, allocating new areas for afforestation) led to reactions to current developments. On the one hand, the forest share has become the subject of reflections on how to revise it during the origin phase in the first place. Interesting are two characteristics here: first, the setbacks from the origin phase were not easy to handle for the Innovation Region and arose partly as setbacks during the innovation again. The setbacks were not solved via the participation in a project, but in parts later, because the new actor (ANE) built trust with the existing main stakeholders with bilateral, later conversations in smaller groups and finally workshops with all main stakeholders and the InnoForESt team.

In the case of the Habitat Bank Finland, the major setback in terms of a stagnating innovation process was caused by the change in scope of the scenario. While in the beginning the objective was to roll out the innovation nationally straight from the start needed to be reconfigured. Then however, the Innovation Region Team pragmatically adapted the scenario content and stakeholder configuration, since the companies would rather wait until pending relevant political decisions would be made. The Innovation Region Team therefore searched for a regional public actor who was willing to participate as a pilot instead of private ones.

Adaptive capacity of dealing with obstacles

Adaptations can be understood as responses to risks or events (Smit & Wandel, 2006), or setbacks and other obstacles within other events, e.g., tensions, undocking, forking, etc) which affect innovation development. In the field of innovation studies, "adaptive capacity" demonstrates the ability of an individual innovator, of stakeholders closely related to an innovation and/or organisations managing an innovation, to react to

events such as natural hazards and human vulnerabilities. In the Innovation Regions Eisenwurzen and Trentino, the innovation processes were highly dynamic, including many and diverse actors. In Primiero, information flow before and after events were often quick and transparent to the stakeholders as they contacted the stakeholder after crisis and stronger setbacks. Needs were identified and often alternative decisions were prepared and decided/restructured within workshops. This happened especially after the Vaia storm and Covid-19, when the Innovation Region Team adapted their strategy in terms of workshop management and content, e.g., inviting all internal stakeholders after the storm to discuss possible solutions and decide together as well as trying to shift from participation in person to online meetings. Moreover, the team met several times with external public actors from other Italian regions and countries for knowledge exchange.

In the Innovation Region Eisenwurzen, some organizational constraints on part of the Innovation Region Team impacted the platform development activities to foster innovation; a planned Task Force meeting in March 2020 was postponed to June 2020 and conducted as a hybrid event; also a planned 'hand-over' side event (Jazz im Hoizwerk/Jazz in the Woodwork) in July 2020 was cancelled. The Vaia storm did not directly or clearly impact on the activities of the platform. However, the timber oversupply from northern Italy and the ensuing low wood prices increased economic pressures on forest owners and made using regional wood relatively less competitive. Here, the development of an Eisenwurzen label for regional forest products was discussed that would have allowed for some price premium. The label idea further integrated the stakeholder's request to find a collective symbol for the regional forest-wood value chain, which would also have an identity-enhancing effect.

Adaptive capacity in Finland clearly was present, but rather limited, because of fewer participating actors, events and process changes as in other Innovation Regions. The Innovation Region Team had difficulties to find a strong line of proceeding in terms of the composition of the stakeholder group and content. At one point in time, the team refocused on other stakeholders between two CINA workshops. The problem was that too few companies were interested in volunteering for interactions with the Habitat Bank (see above for the reasons). Consequently, the Innovation Region Team terminated the idea of private funding. At the beginning of 2020 it continued instead with a public actor - the municipality of Lahti - that was interested in exploring compensation mechanisms for certain biodiversity-degrading activities.

For the Gothenburg-based Love the Forest project, the adaptive capacity was also limited, as the crisis hit the practice partner with economic constraints and did not provide much space for alternative solutions. A bit more of those and the practice partner would not have been able to continue. In the Liberec region, it was dependent on the goodwill of Čmelák as a key partner. After a series of setbacks in the origin phase, the core stakeholder group of the forest share reacted to participate in InnoForESt project, after a period of inactivity, in order to revise and possibly re-innovate the product. It can be noted that decision possibilities were revised intensively between the core stakeholder group, sometimes without a final decision.

Some of the Innovation Regions react kind of naturally to obstacles using their adaptive capacity and foster therefore at the same time the resilience behaviour of the innovation development. The Innovation Region Teams in Eisenwurzen and Primiero included diverse and manifold stakeholders not only to listen in workshops, but also to participate proactively and increase their ownership on the developments and therefore their participation and performance.

7 Discussion and conclusions

The perspective of Innovation Journeys has been central to this report. It entails the reinvigoration of an innovation studies concept and its insertion into forest ecosystem services governance thinking. In the following, we shed light on what adopting this perspective brings to the table and also reflect on some of the shortcomings of the approach.

7.1 Implications of the Innovation Journey reconstruction

A closer look at the innovation journeys has revealed that (a) innovation processes have a rhythm, (b) which is very different depending on the local and historical situation in which it is embedded, (c) which is not simply going into the direction of the new, towards progress and (d) that stakeholder networks develop along with the rhythm of the innovation process. In addition, the role of the Constructive Innovation Assessment with its multi-phase approach became clearer.

Innovation process rhythms vary; there is no blueprint. In two cases (forest-wood value network Eisenwurzen and Love the Forest Gothenburg), a constant pace was maintained for a long time, which only got out of step with the Covid-19 crisis towards the end. The Habitat Bank in Finland and the community-based self-governance in the Czech Republic's Liberec region started very early to gather stakeholders for workshops, but without attuning to a steady rhythm. The efforts in those regions seemed to have gotten out of step rather quickly after the start of InnoForESt. Only then, the horizons of possibility and accompanying circumstances were examined more closely and what was possible then could not or no longer be properly aligned with the original innovation ideas. Finally, although intensive discussions were carried out with the closest stakeholders and sound scenarios had been developed in the innovative Forest-Pasture Management approach in Primiero/Trentino and Forest Share in Mecklenburg-Western Pomerania, we observed how obstacles complicated innovation efforts, such as a storm in Trentino and the changing political context condition in Mecklenburg-Western Pomerania late in the process.

Efforts to innovate are situated, locally-embedded processes. Although always also influenced from the outside, such processes initially attempt to define a protected zone for themselves in which they can mature. Once that is realized, they can start to find and consolidate each other, often through trial and error. When an innovation is ready to challenge the existing regime and leaves its protected zone it is again at risk due to competition. The existing regime does not wait for the innovations that are being pursued and offered. Instead, the existing regime must first be convinced that the time is right for the innovations, because they are exactly the right means to solve problems that cannot or only suboptimal be mastered otherwise. This has succeeded in some cases. In others, it is not yet possible to predict whether the innovations are ripe enough or, if they are, would also be recognized as an opportunity in the existing regime as well as among the innovators themselves coming together for the new approach pursued within the InnoForESt framework. As such, the content-wise development of innovations during the InnoForESt duration was mixed, from rhythms leading to small "incremental" steps to "paradigmatic" jumps ahead. Finally, the local embeddedness of the innovations also means that the innovation prototypes are currently in different stages of development.

We, including the Innovation Regions teams as well as related stakeholders, also had to learn how quickly promising approaches can be blurred or even the momentum that was gained initially can be lost. We have seen that different types of crisis and external events hamper innovation momentum. Some of these cut across a few or all Innovation Regions (storm Vaia and Covid-19) and have, over the course of the project, triggered comparable responses. However, the situatedness of innovation processes (see previous paragraph) prohibits conclusions to be drawn regarding more localized events. The individual character of each innovation niche, of the people driving it and of the specific set-up of the stakeholder network ensure that such events are dealt with in a localized way, too. However, it can be concluded that the setbacks that challenged the innovations in InnoForESt did not end them. The Innovation Region Teams found ways to cross barriers or rerouted the innovation to avoid the setbacks, with, as a result, a picking up of the momentum. This points to a certain resilience of committed innovators to events directly obstructing the progress of their innovation. This resilience did not only occur regarding setbacks, but also to other kinds of – not necessarily negative – events.

Another aspect not to be underestimated is the challenge of forging strong stakeholder alliances that endure the difficulties arising from crisis, setback, and other developments outside the niche. First, we find that forging alliances for innovation ideas leans considerably on the character of pre-existing stakeholder networks and their coherence. Depending on the history of a network, the character of the niche, physical platform development work may range from efforts directed at keeping an existing network together to

having to find actual stakeholders interested in forming an ecosystem around a certain niche. Second, forest ecosystem services governance innovations are likely to result in tensions between stakeholders. An innovation follows a certain rationale that some stakeholders may oppose due to political and economic interests or normative convictions. Especially in cases where traditions are touched (Primiero, Trentino) or where environmental discourses are questioned (Forest Shares, Mecklenburg-Western Pomerania), tensions may arise between stakeholder groups. Contrarily, tensions may be much lower in cases where an ecological modernization approach is aimed for, i.e., developing mechanisms that presumably benefit both the environment and commercial or economic interests. This was the case in the forest-wood value chain in Austria or with the corporate social responsibility potential of the Habitat Bank in Finland. Third, forest ecosystem services governance innovations likely often rely on the interest, commitment, and efforts of unpaid stakeholders. The mixture of interests and primary occupations other than innovating makes the studied governance innovations "rest" at some times to be revived later. Other situations leading to inactivity of the innovation niche were contested terrain situations, crises, organisational commitment situations, complexity situations, and miscommunication situations (see section 6.3). Finally, in the timeframe of the three years of the project duration it has proven difficult to consolidate strong, committed stakeholder alliances across the board, with barriers ranging from not yet clearly defined or agreed upon goals and ways of implementation over unclear political or economic framework conditions to changing commitments.

The focus on Innovation Journeys has its merit as a process perspective. However, the addition of the stakeholder network perspective is necessary to show that a potentially successful process is in many cases accompanied by an ever-changing stakeholder network.

7.2 Contemplating the key method: what to take away from the CINA process

The role of the CINA approach in these six very different contexts should not be underestimated. In addition to the accompanying research tasks (Stakeholder Analysis, Governance Situation Assessment, NetMap and SETFIS interviews, Role Board Games) and the formal project meetings, this was the only common ground that all teams in all regions shared at least in part. If a certain degree of coherence was achieved in the project in the attempt to initiate innovations and drive things forward, it was at least in part because one could and had to orient oneself to the agreed rhythm of the CINA workshops. The CINA approach also created a yardstick pinning down where the teams started in the individual regions, how they made progress and where they came out in the end.

Progress in content depends, among other factors, on the use of scenarios. We have the impression that the scenarios, where they have been *carefully developed and used in a targeted manner*, made a significant contribution to the consolidation of innovation efforts. They made the possibilities and limits tangible, every time you looked at them - but first they were also the concrete occasions/manifestations/opportunities to think about things and to write down the ideas, to structure them and to translate them into coherent overall designs. Where one has *not* put so much emphasis on their development and discussion with the stakeholders, on the one hand, the necessary preparatory work (thorough situation analysis and determination of the interests of the key actors) seems to have not been carried out deep enough and, thus, weak points (in the innovation pools themselves) and obstacles (to implementation and in the context of the effort) have been less recognized. Second, the stakeholders did not have so much concrete information at hand with which they could have worked further.

It has been a difficult balancing act to implement the CINA approach in the various contexts that are changing and with which the local partners usually deal without the help of the CINA approach. Although we made an effort to *provide intensive and close-knit support to the Innovation Region Teams*, it was not always possible to achieve the *necessary depth of learning* there. This has also to do with the fact that there are cultural, professional, and linguistic boundaries that one cannot easily go beyond - or only begin to cope with when the project is almost over. Of course, there are also moments of resistance to "external" methods, especially when their usefulness in the specific application context cannot be convincingly verified. The attempt to adapt the CINA approach in a context-sensitive manner sometimes almost ran into a dilemma: In order to claim its validity and reliability, it would have had to be presented in a less flexible and adaptable manner - also to give partners who need it clear messages. On the other hand, if one points out that it is binding, one

doesn't always get it ready; especially considering all the cultural, professional, and linguistic circumstances, you have to adapt the approach sufficiently to the circumstances. The approach requires skill - it's not a standardised tool that you pull out of the toolbox and just use it without further ado. It can achieve a lot where one develops the instinct for it. If not, it acts like a burden.

7.3 Forest ecosystem services governance innovation: action situations, power, and leadership

Sustainable provision of forest ecosystem services was high on the agenda of InnoForESt. As a consequence, the aspect of sustainability was continuously highlighted in all innovation processes. In some of the innovation processes this has led to the incorporation of a broader range of sustainability aspects over the course of the project. In this section, we explore the findings from the institutional economics perspective as one mainstream view in ecosystem service thinking. This includes a reflection on governance innovation processes as networks of interdependent action situations, aspects of improving the mix of ecosystem services taken into account in an innovation process and the role of power and leadership.

7.4 Governance innovation processes as networks of interdependent action situations

Within socio-ecological system research, action situations represent situations where decisions are made by individuals within a biophysical, social, institutional, and governance context. Various factors within these contextual areas such as ecosystem and resource conditions, stakeholder characteristics, legal frameworks and other policies are influencing the decisions (groups) of actors take in these action situations and, thus, also the outcome of these decisions affecting in turn the state of the socio-ecological system in various dimensions as direct feedbacks. Depending on the action situation, different rules with respect to positions, boundaries, exit or entry, eligibility of choices, aggregation, information, payoff, and scope may apply. These action situations can be placed in different action arenas. In the InnoForESt project, examples for action situations range from decisions of a forest owner to plant certain types of trees or cut a certain number of trees; of a carpenter to use regional wood and/or particular types of trees; or of a national park manager to restrict access to certain areas; or of policy makers to initiate financial support programs. Other examples include private landowners offering plots for potential offset sites and a construction company to engage in voluntary compensation in the context of Habitat Banking, or a regional government's decision to designate public land for afforestation measures. Against this backdrop, the innovation development work in the Innovation Regions, within or outside of the CINA workshops, can be understood as constant identifying of action situations relevant for or even being triggered by a certain scenario, exploring and discussing interdependencies between these actions situations, and, most importantly, evaluating and negotiating the direct and indirect outcomes of the decisions actors take in these interdependent action situations. For example, a scenario might invoke the exclusive use of regional wood or of specific types of wood (e.g., beech), which has a potential of triggering the decision of a local carpenter to buy her wood only from local forest owners or to request only certain wood or tree types. This in turn might encourage forest owners to invest in certain tree types or to sell directly to local buyers.

It is important to note that the CINA workshops themselves can and should be framed as (a set of) action situations, too. It is here where the negotiations take place, where outcomes are discussed and evaluated, and where specific rules apply that determine, for example, how the scenario selection takes place, who can decide, and what information needs to be shared beforehand. The Innovation Journeys make these discussions and negotiation processes transparent and explicit. The range and complexity of the relevant - and actually explored and discussed - network of interdependent action situations depends on the specific scenario under scrutiny and would have 'determined' which stakeholder (groups) and at which levels are affected and/or would need to be integrated in the innovation development process since they are crucial actors in a relevant, connected action situation.

Analysing the respective Innovation Journeys offers important insights into the identification and a better understanding of action situations that are - or promise to be - turning points in transforming the social-ecological system under scrutiny and in furthering governance innovations. Reconstructing Innovation Journeys helps also to identify and account for bundles of closely interdependent action situations where relevant decisions in different decision-making contexts are made, using scenario development techniques and/or CINA workshops. This also makes the decisions, interests and action resources of different

stakeholders within a certain context visible and transparent. Therefore, the governance innovation process depends on the innovation capacity of the governance system and the diversity and composition of actors acting in the selected system where the innovations (may) occur. Thus, in order to understand governance innovation processes and to gain a comprehensive understanding of the underlying dynamics and concrete decisions made along the way, an action situation perspective helps. To some extent, a better identification of the action situations helped us to see certain patterns of stakeholder constellations: While some of the Innovation Regions reacted somewhat "naturally" to obstacles using their adaptive capacity and thus fostered the resilience of the innovation development, other Innovation Regions had difficulties in identifying obstacles and to search for possible alternatives.

7.5 Finding and negotiating the 'right' mix of forest ecosystem services provision

Actors involved in the Innovation Journeys are mostly a non-homogeneous group. They represent different stakeholder types, come from different spheres (private, public, collective, or private/public), play different roles in economy and society, and operate at different scales ranging from local to international. Some of them benefit directly from one or more concrete forest ecosystem service(s) (e.g., sawmills, tourists, local residents) while others do so rather indirectly. There are stakeholders that are actively managing forests and, thus, affect the kind and level of ecosystem services provided there (supply); often with quite different objectives (e.g., extracting timber vs. conserving biodiversity) and means (e.g., wood cutting vs. monitoring bark beetle infestations). Yet, there are also stakeholders that benefit rather indirectly from forest ecosystem services provision but effectively shape the management of forests (e.g., policy makers designing and implementing related policies, or financing organisations organising/running payment schemes fostering the sustainable use of forests/forest ecosystem services).

Stakeholder's activities and involvement in the innovation activities depend on their interests, visions, and concerns with respect to the innovation. These are usually closely linked to (one or more) specific forest ecosystem service(s). Related to these interests, issues were debated along the Innovation Journey, mostly at the CINA workshops. These issues were related to concrete forest ecosystem services, to the stakeholders directly or indirectly involved in managing or using the forests under scrutiny, and to the governance innovation action. It is therefore interesting to see what were the outcomes of negotiating the issues, potential conflicts, and differing interests around forest ecosystem services provisioning and of.

Looking at all Innovation Journeys, a quite diverse picture can be drawn. In many cases, the innovations are aiming at balancing extractive use in and the use and conservation of ecosystem services within the forests, as well as balancing communal, societal, collective, and private economic benefits or with the efforts made by specific stakeholders of providing forest ecosystem services. his "balancing", however, has not been perceived as satisfactory in most cases. Here, the governance innovation has been aiming to mitigate inequalities or address trade-offs.

7.6 Power and leadership

The Innovation Journeys have provided evidence that not only the stakeholders' interests, visions, and concerns are important driving forces for determining the direction and outcome of the respective innovation work, but that also their respective situational power and ability to take on responsibility and leadership were crucial at various points.

The role of power in understanding ecosystem services governance has been recognized, for example, in the IPBES framework (Diaz et al. 2015). In the New Institutional Economics literature, however, power is rarely discussed (Morrison et al. 2017), with exceptions including Jack Knight (1992) who saw institutions as instruments of power. In a similar manner, key individuals - or leaders - have been found to be "*important in establishing functional links within and between organizational levels, thereby facilitating the flow of information and knowledge from multiple sources to be applied in the local context of ecosystem management*" (Galaz et al. 2008: 165). However, leadership is not necessarily associated with positive attributes and objectives. There is ample empirical evidence that leadership can also be accompanied by an abuse of power and the destructive, manipulative and selfish behaviour (Theesfeld 2011; Kellerman 2004).

By and large, however, the concepts of power and leadership are not systematically theorized and are applied most often as unitary concepts. Analysis of informal power or collective action situations is less researched. Difficulties arise as power in these cases is malleable and open to interpretation. Power relations are clearer to analyse when it is performed either in formal settings or through actors using power highly intentional and resource-centric (Dallas et al. 2017).

In the InnoForESt context, the rhythm of an innovation process as well as the progress towards a goal, an achievement, or towards 'the new' are dependent on dynamics within the innovation network. Many decisions taken along an Innovation Journey depend on the circumstance that a majority of stakeholders is convinced that a particular next step in a certain direction is necessary, and they are willing to accept all risks and the insecurity of possible failure or unintended consequences. Indeed, in the moment of taking certain decisions, their implications and effects cannot fully be foreseen. As the example of the Eisenwurzen shows, stakeholders were often reluctant to take on responsibility for one or the other innovation idea/scenario and to "embrace" fully the risks implied.

In other cases, however, powerful leaders, like the director of the regional forest administration in the Italian case function as change agents in this kind of crucial situation either voting for an option and sharing their convincing arguments with other stakeholders, opening up debates, and/or pushing the network into the direction of 'the new', now backed by this strong leadership. Yet, power relations and asymmetries can often be more subtle: this relates to power relations and distribution within the stakeholder networks, for example, what constitutes their respective power (e.g., a specific occupation, affiliations with regional or national government authorities, economic affluence, monopoly position, but also innovation-specific expertise or experiences or relevant knowledge).

7.7 Innovation as a mutual learning process

One of the largest risks in governing is to translate governance models into practice without them being "updated or accompanied by learning to adapt to fast-moving changes" (Shapira 2010: 185). This holds true for governance of forest ecosystem services. In our opinion, this applies both to continuing to work with existing approaches to governing ecosystem services, which are now to be modified a little, as well as to striving for new concepts and approaches that you have thought out yourself at the drawing board or would like to transfer from one regional context to another. It is not advisable to indulge in an over-idealization of an existing model or/and the perceived "region" from which that model emanates, while circumstances vary (cf. Shapira 2010).

Innovation work, in the given case supported by innovation research and (EU) innovation policy, has to strive for a special relationship between these "dance partners" (all the stakeholders seen in the various innovation journeys) - a relationship that is characterized by a mutual willingness to learn and a fundamental precondition for real co-evolution. This learning relationship includes policy learning, practice learning, and conceptual learning. Learning in and from innovation work is about combining the action results with the specifications of the existing regime of ecosystem services in such a way that the performance remains within the framework of the existing, usual rules (first order learning). But learning further means/includes an endeavor to identify, question, and adjust the specifications that can no longer be brought into line with the given circumstances (second order learning; cf. Schot and Steinmueller 2018; Kuhlmann et al. 2010).

If such a learning perspective is not mutually accepted, the accompanying research, theory and methods will not lead to any impact - they will not be worth the paper all the frameworks have been laid out at the beginning and all the notes have been taken down during the innovation process.

8 Outlook: How to secure the legacy?

Much has been achieved in the Innovation Regions during the course of the project by the Innovation Region Teams. In many cases, however, a quiet fading out was observable towards the end of the project, Partially due to the difficulties of meeting under Covid-19 conditions. At this stage it is up to the stakeholders themselves and the regional practice partners to decide whether they feel at ease or in a position

to continue what they have achieved so far. The innovation work done is a good start, but still not enough for an innovation to fully take root.

In order to secure the legacy, stakeholders should initiate more meetings, either on invitation of the practice partner or of one of the stakeholders willing and able to organize an invitation and setup. Keeping in touch with the entire stakeholder network enables to stay up to date with further developments and with external relations and development influencing the innovation. At least regular meetings should enable to keep relationships vivid and to further debate on promising ways to secure achievements and ideally to keep on elaborating the innovation. The established digital platforms with its external and internal parts are ready to be used as technical support for information exchange and keeping the momentum alive.

For the time being, there are no further funds from the InnoForESt project, although an innovation process doesn't have to stop with the end of this project. Consequently one approach could be the initiation of follow-up projects and acquisition of alternative funding streams, for example on national level or within EU-rural development funding. In this context, it is important whether the regional and national administrations and companies are willing and able to take up a stimulus set with the InnoForESt project and pass it on. Innovation rarely happens on its own. Often it is government or entrepreneurial initiative that is required to prepare the basis and helps to survive tough beginnings.

The role of public policy (cf. Edler 2010) could be (a) to promote private or public demand, or direct financial promotion of private/public demand, and (b) to support the further building of awareness, competence, or knowledge. Public policy could also signal interest in the initialised innovations by offering to discuss regulation that adopts the basic assumptions and objectives of innovation more than in the existing legal situation (think of the regulatory framework for public and / or private compensation, of the rules that mediate the interests of forest owners and hunters). Integrated approaches, using varieties of instruments, should be thought of as well, because complex circumstances and goals often require the combination of several suitable instruments, as a single instrument could not even meet the spectrum of requirements.

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Annex

A. Dates of narrative and follow-up interviews

Innovation Region Eisenwurzen			
	Date	**Interviewers**	**Interviewees**
Narrative interview	April 28, 2020	Felix Zoll (ZALF) Peter Stegmaier (UT) Ewert Aukes (UT) Stefan Sorge (HNE)	Wolfgang Baaske (STUDIA) Hannah Politor (STUDIA)
Follow-up interview	May 6, 2020	Felix Zoll (ZALF) Peter Stegmaier (UT) Ewert Aukes (UT) Stefan Sorge (HNE)	Wolfgang Baaske (STUDIA) Hannah Politor (STUDIA)
Innovation Region Finland			
	Date	**Interviewers**	**Interviewees**
Narrative interview	April 29, 2020	Felix Zoll (ZALF) Christian Schleyer (UIBK) Ewert Aukes (UT) Stefan Sorge (HNE)	Markku Granander (FFC) Liisa Varumo (SYKE) Minna Pekkonen (SYKE)
Follow-up interview	May 7, 2020	Felix Zoll (ZALF) Christian Schleyer (UIBK) Ewert Aukes (UT) Stefan Sorge (HNE)	Liisa Varumo (SYKE) Minna Pekkonen (SYKE)
Innovation Region Gothenburg			
	Date	**Interviewers**	**Interviewees**
Narrative interview	April 20, 2020	Felix Zoll (ZALF) Christian Schleyer (UIBK) Peter Stegmaier (UT) Stefan Sorge (HNE)	Sara Brogaard (ULUND) Christa Torn Lindhe (Universeum)
Follow-up interview	April 29, 2020	Felix Zoll (ZALF) Peter Stegmaier (UT) Stefan Sorge (HNE) Stefan Sorge (HNE)	Sara Brogaard (ULUND) Christa Torn Lindhe (Universeum)
Innovation Region Mecklenburg-Western Pomerania			
	Date	**Interviewers**	**Interviewees**
Narrative interview	April 28, 2020	Felix Zoll (ZALF) Lasse Loft (ZALF) Peter Stegmaier (UT) Stefan Sorge (HNE)	Peter Adophi (ANE)

Follow-up interview	May 4, 2020	Felix Zoll (ZALF) Peter Stegmaier (UT) Christian Schleyer (UIBK) Ewert Aukes (UT) Stefan Sorge (HNE)	Peter Adophi (ANE)
Innovation Region Primiero			
	Date	**Interviewers**	**Interviewees**
Narrative interview	April 20, 2020	Felix Zoll (ZALF) Peter Stegmaier (UT) Christian Schleyer (UIBK) Stefan Sorge (HNE)	Caterina Gagliano (PAT) Francesca Bussola (PAT) Enzo Falco (UNITN)
Follow-up interview	April 29, 2020	Felix Zoll (ZALF) Peter Stegmaier (UT) Christian Schleyer (UIBK) Stefan Sorge (HNE)	Caterina Gagliano (PAT) Francesca Bussola (PAT) Enzo Falco (UNITN)
Innovation Region Čmelák			
	Date	**Interviewers**	**Interviewees**
Narrative interview	April 14, 2020	Felix Zoll (ZALF) Christian Schleyer (UIBK) Peter Stegmaier (UT) Stefan Sorge (HNE)	Jiři Louda (IREAS) Martin Špaček (CETIP) Lenka Dubová (IREAS)
Follow-up interview	April 17, 2020	Christian Schleyer (UIBK) Peter Stegmaier (UT) Felix Zoll (ZALF) Stefan Sorge (HNE)	Jiři Louda (IREAS) Martin Špaček (CETIP) Lenka Dubová (IREAS)

B. Dates of SETFIS Interviews

Innovation Region	Date	Participants
Eisenwurzen	30.09.2019	Christian Schleyer, Jutta Kister (UIBK)
	14.11.2019	Wolfgang Baaske (STUDIA)
Mecklenburg-Western Pomerania	11.06.2019	Peter Adolphi (ANE)
	11.02.2020	Felix Adolphi (State Forestry)
Finland	25.10.2019	Eeva Primmer (SYKE)

	12.11.2019	Markku Granander (FFC)
Primiero	25.07.2019	Francesco Orsi (UNITN)
	01.10.2019	Luigi Gottardo, Caterina Cagliano (PAT)
Čmelák	29.07.2019	Ján Bukovinský (Hype, Slovakia)
	30.07.2019	Administration of "The Low Tatras National Park" (Liptovský Hrádok)
Gothenburg	25.09.2019	Christa Törn-Lindhe (Universeum)
	12.12.2019	Sara Brogaard (ULUND)

C. Dates for the Role Board Games

Innovation Region	Date
Mecklenburg-Western Pomerania	December 5, 2019
Finland	June 18, 2019
Primiero	December 10, 2019
Čmelák	Liberec (CZ) – October 2, 2019;
	Bratislava (SK) – November 26, 2019 + testing in Velké Karlovice (CZ) - August 13, 2019
Gothenburg	October 8, 2019

D. Dates of the NetMap Interviews

Innovation Region	Date
Mecklenburg-Western Pomerania	17/07/2018
Finland	1/01/2019; 31/01/2019; 01/02/2019
Primiero	1/11/2019
Gothenburg	29/04/2019; 30/04/2019