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## **D.5.6 Innovation Systems and Processes**

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## Executive summary

The report carries out a comprehensive and comparative analysis of the relevant innovation systems and processes for stimulating innovation at enterprise level. This includes comparison across regions and across different types of product and service innovations within the NWFP sector. For this we have undertaken comparative analysis of selected in-depth case studies (IDCS) in the STARTREE regions to identify support factors. Our results contribute to an understanding of entrepreneurial behaviour in innovation processes as a very individual and context-specific undertaking on the one hand and as a “universal” activity with common features and attributes on the other. The report shows that it is difficult at firm level to obtain funding for such innovations. This is not due to the small size of the firms (most are single entrepreneurs with little resources) but because many of the usual funding mechanisms for innovation are not built for such small innovative projects in rural areas. The second part of the report shows how larger associations of producers of NWFP can connect more easily to funding and support mechanisms. However, first, their cases are not applicable to all forms of innovation in the sector, due to differences in types of products and services. Second they require a common goal or vision that is strong enough to invest considerable time and efforts into such communal projects.

In sum, the research enables a better understanding of the forms and ways, the “how” of innovation processes, in which landowners act as entrepreneurs and create innovations. Within the forestry sector, there are not many comprehensive innovation policies formulated that touch upon innovation in the sector are of cross-sectoral nature (see D.5.3). Moreover, NWFPs are very often not seen as part of the “forest sector” and rather by-products by the forestry administrations (Weiss and Rametsteiner 2005). NWFPs as non-timber products are dealt with by administrators as somewhere between several sectors such as food and beverage industry, tourism and energy. This way, external innovation support systems are hardly active in supporting early stages of innovations of small scale NWFP start-ups. Specific support aiming at the development of new products and services in the forest sector is practically missing. This calls for maintaining and developing further openness towards bottom-up ideas and towards cross-sectoral connections at the level of entrepreneurs. It requires more policy instruments that foster cross-sectoral interaction and information exchange especially via low-bureaucratic and small-scale funding.

Concerning innovation systems as support function, the present report shows that the *sectoral orientation* of the innovation systems in NWFP also have vast potentials for more involvement from actors from the forestry sector, such as forest owner associations, forestry departments, firms and industry, research and consultancies. With exception of Finnish private and public actors, there still seems to be an indication that wild forest products and services are not thoroughly seen as an important business opportunity. Especially the actors at institutional levels (forestry and industry associations as well as forest owners associations) would have to engage more into the promotion of entrepreneurship, the provision of market information and to the support of interactions amongst landowners and across the different sectors mentioned above. Other institutional and instrumental policy aspects, such as the European Union LEADER instrument for rural development have positive impacts but also could be much more used for innovation support in the risky start-up phases for both single entrepreneurs and cooperations.



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# 1 Support for Innovation Processes at the Firm Level

## 1.1 Characteristics of Support for Innovation

The section sets out to examine the characteristics of support for innovation processes in Non-Wood Forest Products (NWFP). The typical enterprises and start-ups which emerge in this sector tend to be small-scale and family owned. We claim that there is a large unused potential for NWFP to support rural development and increase income of land owners and rural enterprises. In this section, we study what makes selected and so far successful product innovations in NWFPs special and subsequently what were the factors that supported their development and marketing. These questions we enquire at hand of four selected in-depth case studies in four European rural areas.

The entrepreneurs under examination either live on their own forest land or on land owned by their family and they all have developed their own business ideas. Their projects are innovative, as all of them have brought a novel idea successfully to the market. However, very often such innovations contain technical shifts, e.g. in information technology, biotechnology and other material technologies (OECD 2005, 5). Nonetheless, there have been attempts to understand and assess the importance of other factors for having an impact on innovation, besides solely R&D and new technologies (Edquist 1997, Edquist and Johnson 1997, Weiss 2011). Subsequently, it seems to be one of the economic “examples” of lesser interest for the study of innovation processes. Yet we claim here that it is precisely of interest to study innovations in such a “small” personalised sector because small and medium enterprises are of increasing relevance given the general economic crisis in this decade. There has emerged a measure of scholarly interest in this field (Buttoud et al. 2011, Hirsch-Kreinsen 2005, Rametsteiner and Weiss 2006, Kubezcko et al. 2006, Weiss 2011). Such recent innovation research in forestry is grounded in the fact that the forest sector is an important economic source of income for a considerable part of the population throughout Northern, Central and Eastern Europe. Conceptualisations of a “forest-based sector” up to now have been mainly built around wood based products (Timber). Hence, NWFP have often been perceived as being “outside” the forest sector, and because of this it has received little attention from forest-sectoral innovation systems (Weiss and Rametsteiner 2005). Nowadays (in times of a global recession and falling timber prices) this is surprising, given the fact that such products possess significant potential for contributing to economic development, particularly in rural areas. In other words: there is large unused potential for NWFP to support rural development and income of land owners and rural enterprises (Emery et al. 2006; Niskanen 2006; Niskanen et al. 2007; Nybakk et al. 2009). As complementary products they can also improve the economic value of small-scale forestry in marginal areas (Pettenella et al. 2007). With example of mass-produced NWFPs in South America, Velde et al. (2006) have shown that it is very often “key entrepreneurs” who are the driving force behind a whole value chain.

It is therefore necessary to ask what are the characteristics of support for single entrepreneurs to develop innovation start-ups in NWFP in Europe. Our in-depth studies shall crystallize the most important kind of support for development and marketing processes of the businesses.

We will examine the most important supportive factors identified by the entrepreneurs. The research uses qualitative empirical data; therefore our results dig into the characteristics of “entrepreneurship” from a social science angle that emphasises the importance of practical knowledge and experiences in concrete economic developments and activities. All cases are situated in specific regional cultural contexts. We have carried out case study research and selected the cases for their exemplary status as successful innovations in a qualitative, small-N design (Yin 2009) in four European regions. Data was collected between September 2014 and May 2015. A total of five semi-structured qualitative interviews with the entrepreneurs themselves and an additional one with an official from the local administration were carried out, transcribed and analysed. The categories for the interview protocols as well as the subsequent analysis were developed



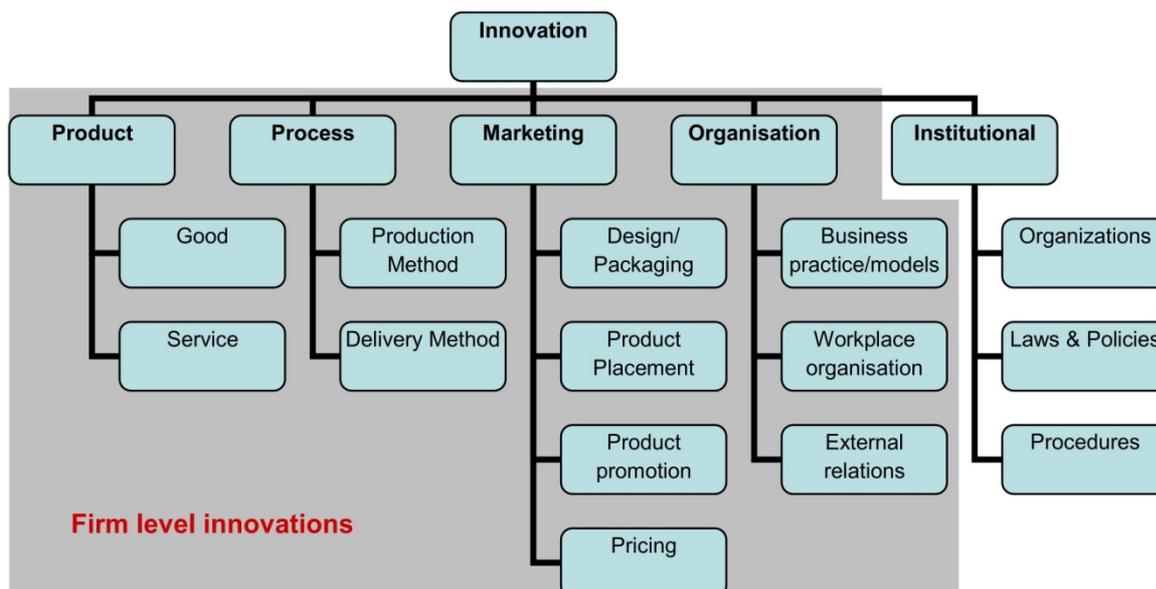
deductively from literature along the research focus on innovation processes: How did the innovation come to place, how was the innovation developed, how was it introduced to the market and how was it supported both in financial and non-financial terms?

The following sections will first outline concepts of support mechanisms in theories of innovation processes. In what follows the report will assess the support mechanisms that were most important for the start-ups. Subsequently we report on the actual practice in terms of explanations and strategies employed by the entrepreneurs. Finally, we will shed light on some differences between theoretical explanations of support for innovation/creativity in entrepreneurship and the actual practice of innovative entrepreneurship processes.

1.1.1 What makes an innovation as innovation in NWFP?

An innovation in NWFPs happens when **new products and services** are offered for the first time. It also occurs when technical **changes in production processes or organisational changes** in an operational procedure of working and labour organisation occur. A new product in this respect could be berry powder, spruce shoot syrup or medicinal health drinks from pine needles. A new service in this respect could be recreational or environmental services such as the renting of huts, guided tours or wellness seminars. **Technical innovations** can change already existing processes, introduce older (historical-traditional) methods for new purposes of production or introduce completely new techniques. Examples are the revitalisation of the extraction of natural resin in areas where this tradition is not used any longer. **Organisation/marketing** innovations can also change existing processes or introduce older (historical-traditional) methods for new purposes of management and marketing but also comprise the introduction of new methods of management or the foundation of cooperatives (see Weiss et al.2010, figure 1, see here below and Weiss 2011). For instance a self-organised local shop that sells regional products and is owned by the customers is an example for this.

FIGURE 1: Innovations at the Firm Level (from Weiss et al.2010, figure 1) adapted from OECD 2005



Within the IDCS-research we have inductively developed another, more detailed, typology that covers all the STARTREE innovation cases with example of the single firms and organisations at the micro-level. Its results are presented in section 3.1.1 (Typology of outcomes of innovation processes) and Table 2.

### 1.1.2 Supporting factors at firm level: Functions of Innovation Systems

For identifying supporting factors for entrepreneurship, the economists Freire-Gibb and Nielsen (2014) examined single entrepreneurs in Denmark via longitudinal surveys and state that in rural areas **social networks** are especially important for entrepreneurs, “where the institutional environment is less supportive of entrepreneurship” (2014, 141). Earlier, Edquist and Johnson (1997) described the **function of innovation systems** to support the innovation and to reduce uncertainty by providing information, management of conflicts and cooperation as well as the provision of incentives (Edquist and Johnson 1997, 51; Weiss 2011, 19). Along the innovation process, innovation system functions may be related to input factors (provision of resources: human resources, information, finances), to the management of the complexity of innovation processes (within a firm or across various actors), and to the use (promotion) of innovations (Kubeczko et al. 2006). For the purpose of this paper, we translate these functions into three groups of support factors that **innovation system actors provide to entrepreneurs all along the innovation process**: information, coordination and incentives. Information would then include human resources, market information, technical know-how as well as knowledge on how to do business; coordination relates to business co-operations, relationships with stakeholders and management of possible conflicts; incentives are any provided resources, including private or public sources for undertaking investments. We assume that innovation fields differ in how far these types of support are requested from the side of the entrepreneurs and in how far they are actually provided by the innovation systems.

**We report here on four innovative examples:** a Finnish company producing birch sap<sup>1</sup> for consumers and companies; a Welsh company which commercialises organic tea picked by hand; a Scottish producer of country wines made with oak leaves and elderberries; and a hotel that implements a payment scheme for mushrooms in combination with tourism in Catalonia, Spain. First, they all have in common the typical characteristics of the enterprises in the forestry sector: They are small SMEs, often family run and they trade in NWFP-based services or products. Second, they all conform to general standards of innovation: Their idea is new, it is commercialised and unique for the sector and the region (Edquist 1997, 11pp.<sup>2</sup>; Nelson and Rosenberg 1993, p. 5; Weiss 2011). The most innovative feature of the Finnish company is to be the first one to produce bottled birch sap that keeps in room temperature without food additives, preservatives or pasteurisation. The Mushroom Hotel in Catalonia is the first hotel-restaurant on private forest land which combines a payment scheme for mushroom picking with tourism services and a mycological information path that trains and informs visitors on picking practices and safe identification of edible mushrooms. The Welsh company produces handpicked tea and disseminates knowledge about wild-growing herbs in Wales. The Scottish wine producers are the only ones who produce oak leaf wine (amongst other country wines from fruit and elderflower) in the UK. Whilst the making of country wine is an established tradition and a fairly common hobby in Scotland, it is unusual to find a successful country wine business in Scotland.

<sup>1</sup> Birch sap is a traditional drink in Northern Europe, Russia and Northern China, directly tapped from Birch trees. The sap can also be used to make birch syrup, which is used like maple syrup.

<sup>2</sup> Especially Edquist discusses the terms at length and comes to the conclusion that “There are many potential permutations. [...]The approaches complement each other rather than exclude each other.” (1997, 12)



## 1.2 Results from the analysis at firm level

### 1.2.1 Support in different levels

What kind of support was important during the project development and marketing processes? In terms of information all the cases had to search for information using their own initiative and in all cases it took several years to develop the idea, six years in Catalonia and Wales, more than ten in Finland, in the Scottish case more than 20 years. Some of the companies had additional consultations with designated agencies (Finland with ELY and the TE-offices (both are Economic Development Offices) and Wales with the LEADER support group) or research institutions (Catalonia with CTFC).

Also the second function of innovation support, cooperation is merely fulfilled by own initiatives of the innovators: their own retail and institutional networks were most important in three of the cases. The Scottish and the Welsh companies in particular emphasise the support from collaboration with the local communities, local pub owners and groceries as well as the family networks which helped them with logistics and retailing. In the Catalonian case the company owner emphasised the beneficial collaboration with the regional research institute. He also had connections from his previous activities in tourism.

Incentives such as (external) monetary support are the least prominent innovation support function. Most parts of all the projects were self-financed, for instance for buying the machine (Finland), for building up the first stocks of wine (Scotland) or for fencing the area (Catalonia). Three of the cases received external funding for essential parts in the final phases of their project: The Finnish company received financial aid from TEKES (the Finnish Agency for Technology and Innovation), FINVERA (a specialized financing company) and TE-offices ( ) for the technical development of the bottling system and also to direct investments, the Welsh company received monetary support from the local LEADER group for financing the water filtration system co-financing the greenhouse and for working hours invested in the project<sup>3</sup>. In the Catalonian case an EU-project (via the regional research institute) helped financing the signs in the mycological path. The Scottish company relied entirely on their own funds and mutual bargaining – exchange (there was no money flow, but work force and the letting of rooms etc.) with the surrounding friends-and-family networks (“No-one would have lent us money for that”, Int2). The following table summarises the importance of innovation support for the cases:

Table 1: Innovation support throughout the cases

Innovation Support	Importance	Features
Information	+++	<ul style="list-style-type: none"> <li>→ Much self-induced learning from books, internet and personal contacts.</li> <li>→ Consulting and technical know-how from research institutes, regional administration, organisations of regional development</li> </ul>
Cooperation	++	<ul style="list-style-type: none"> <li>→ Own private networks very important.</li> <li>→ Some cooperation with regional development and regional research organisations</li> </ul>
Incentives and Funding	+	<ul style="list-style-type: none"> <li>→ Foremost self-funding from main income, slow growth and small risk.</li> <li>→ Small funding from regional sources.</li> </ul>

<sup>3</sup> It was in total 1.850.- Euro that was provided for the glass-house.



External monetary funding was less available for the innovations and was available only for particular aspects and in the later stages of the projects. The Scottish entrepreneurs turned this into a virtue and stated that it is too complicated to apply for funds and that they prefer personal contacts in fairs for marketing their wines. In all cases external support did not happen through sectoral (the forest sector) but through regional innovation systems such as regional development organisations (LEADER, ELY) and other specific institutional actors, such as CTFC in Catalonia or TEKES in Finland. These same actors are also important for information and consultation but seemingly the personal networks and initiatives in gathering information were the most important features in developing these innovations.

### 1.2.2 Entrepreneurship for NWFP in comparison across the different regions

In terms of the strength of the support mechanisms the similarities outweigh the differences among the cases. It is suggested by Freire-Gibb and Nielsen (2014) that entrepreneurs are not so different from each other, regardless of their geographical location. They show with a sample of 6,000 respondents that there are more differences between entrepreneurs and non-entrepreneurs than between urban and rural entrepreneurs in Denmark. We argue here that this also counts for the cross-national differences: On the one hand the innovative products were context-specifically developed and (culturally) appreciated<sup>4</sup>. This is very much so when it comes to food products as a matter of “taste” which is determined by cultural practices<sup>5</sup>. On the other hand, the attributes of entrepreneurs and the quality of entrepreneurship can be more cross-cultural or “universal”. What characteristics unify the four small-size entrepreneurs above? First, they all had prior knowledge of how to realise a “for-profit” venue and used this to build up their new business idea. Because of this they also had an idea of the market access and the (potential) demands for their product. Second, they all collected, either wholly or in part, information for their project on their own initiative during step-to-step procedures through self-education efforts (“finally [...] our knowledge overtook”, Int I, Wales, p.2). Some of them received monetary support in later stages of the projects but it was not big sums that they received, e.g. in Wales in total €1.850.- was received for building a green house. However this sum was absolutely necessary for the company at the time. Third, all four companies realised their innovations to a large extent through their own efforts. It is striking that they relied very much on their own initiative and a continuous trial-and-error kind of research rather than formal scientific knowledge or research. It was the Finnish case with a technical invention (the collection and bottling system) and the Spanish case with the scientific support for installing the mycological path who received technical information from existing external institutions. In the first case there was a mixture of local administration and economic support organisations designated for the support of such innovations. In fact, the Finnish case is the only “product innovation” (Schumpeter 1934) which ranks as “technical innovation” in Nelson and Rosenberg’s (1993) sense. The Catalan case strictly speaking is an innovation that is an “embedded product”, meaning, there is a “service” combined with the product, in this case the tourism activities and the mycological path together with the mushrooms. Nearly all of the entrepreneurs are landowners<sup>6</sup> based in their respective countries, and are culturally aware of the necessities and potential for success of their creative enterprises. This is to say that they possessed local knowledge on the opportunities<sup>7</sup>. They are well embedded in local community networks. The Scottish

<sup>4</sup> Only the traditional Finnish product nowadays is sold internationally and a lot of know-how was invested to search for possibilities of making it externally marketable.

<sup>5</sup> A Scottish wine made of Oak-leaves would have to be specifically introduced e.g. in a grape-wine drinkers market like Spain.

<sup>6</sup> Except for the Scottish couple, whose family owns the land. This has a disadvantage, as they have to ask Ron Gillies brother if they want to grow elderberry trees.

<sup>7</sup> In the Spanish case the land owner was also well aware of the specific hindering factors: boycotts from side of the local Tourist association and hostile other land owners towards the project.



company has their most important support ties in their personal relational networks, the Finnish company very much in public and semi-public start-up support institutions for innovation and technology and the Welsh company in both, personal networks as well as the local LEADER group as a support organisation. The Spanish case seems to be an exception: The land owner had good contacts with the local research institution which supported him and his idea, the local surrounding community seemingly was less supportive of the project and the initial idea of doing such a project, especially introducing a payment scheme in the whole valley for mushroom picking, was strongly opposed by the land owners and the tourism association in the valley.

### 1.3 Insights and Outlook for Single Entrepreneurs

The entrepreneurs under examination show some common features in the ways they started their business. However, they have applied individual strategies for the realisation of their own ideas. In line with recommendations from recent literature on creating innovations, all of them have used some “external” support, but at very different levels: They range from monetary support and consultation of effective support organisations to personal non-monetary exchange-relationships in social networks within a communal area. First, the support mechanisms were largely created by the individual landowners themselves. In Finland the system of (public and semi-public) “official” support mechanisms seems to be best developed, but for the innovation as such it was the effort, energy and situational knowledge of the entrepreneurs that had the decisive influence. The gathering of information (much on own efforts) was the most decisive factor for all of them.

Second, most of the landowners that own the companies have grown up in their specific cultural settings and “knew” the national/local consumer-practices and market-demands. Only the Finnish birch sap product is sold internationally nowadays, the company owners had focused very much on marketing and design for this. Nonetheless, all the innovative products have been originally developed within their contexts and are (locally-culturally) appreciated, which makes each of them special in its own right. The innovative aspects are their ability to adapt old practices to new societal demands. They bring local products out of their local context to new and larger markets.

Third, the development of the innovation, the collection of information and the strong will to carry out the project for many years in trial-and-error proceedings are common entrepreneurial features for all of them.

## 2 Impacts of Innovation Systems

### 2.1 Relevance of Institutions

Going beyond the individual firm level, there are institutional structures in innovations at the meso-level that can be of influence for innovation processes. It is no coincidence that innovation studies frequently denote institutions as an important element of support for innovations to occur (Edquist 1997). Innovation processes are complex within companies but also go far beyond single firms to include a range of other actors, depending on cultural and sectoral conditions (Weiss 2011, 13). The realm of Non-Wood Forest Products (NWFPs) covers broader economic areas that go beyond the forestry sector to include food and agriculture, leisure, recreation and tourism activities in forests and woodlands, crafts decoration and chemical substances and health products. In general, the NWFP sector is less technology-intensive than others. NWFP innovations often take place on a small scale, yet development in these fields is beneficial for employment and development in rural areas (Lawrence 2003, Nybakk et al. 2009, Rametsteiner and Weiss 2006, Weiss 2013) and as complementary products they can also improve the economic value of small-scale forestry in marginal



areas (Pettenella et al. 2007). As monetary policy support is not very targeted nor prevalent for NWFPs (Ludvig et al. 2016), the development of regional brands and labels which foster excellence through specific sustainable features of products, can be a valuable way of strengthening innovations. This seems even more to be necessary because NWFP often have “public good” characteristics (Mavsar et al. 2008) and the ways of production and marketing frequently are connected to landscape level as “territorial goods and services” (Slee 2011).

We raise the general question how innovations do reach success in often adverse circumstances, such as in economically weaker rural areas? In the following we tackle two questions: First, what role do institutions play in the development of such regional innovations? Second, what types of institutions and specific social configurations lead to the success of innovations?

## 2.2 Institutions for Innovation Systems

Much innovation literature emphasise institutions as an important and central element. However, they often mean different things when they refer to institutions. In most of the literature on technological innovations in large firms, the necessary “institutional infrastructure” for technological systems is defined as a “set of institutional arrangements (both regimes and organisations) which, directly or indirectly, support, stimulate and regulate the process of innovation and diffusion of technology” (Carlsson and Stankiewicz 1995, 45).

One of the founders of sociology, Emile Durkheim, even referred to sociology as a whole as the “science of institutions”, by which he meant established procedures as well as “patterns of behaviour” (Durkheim 1946). Later, other sociologists have put an equal emphasis on the shaping of organisations (as “structures”) that in turn shape and influence social perceptions and norms (especially Bourdieu and Waquant 1992). An answer to what is the difference between an institution and an organisation remains absent. This question seems not to be a principle concern for many, not least “neo-institutionalists”. However, we must consider this question for an examination of the role of institutions in empirical examples at firm level. Thus far, the new institutionalism has addressed the influence of institutions on human behaviour through rules, norms and other frameworks, and by “other frameworks”, the scholars apparently mean organisations. Moreover, to become “institutionalised”, all such norms and “other frameworks” have to repeatedly occur. The innovation scholars Edquist and Johnson address two views on organisations versus norms. They distinguish between institutions that are formal (laws, regulations, constitutions, formal technical instructions) and informal (common law, traditions, work norms, practices). Furthermore, they suggest calling everything else (which seems to be the “hardware” in our notion or the buildings and “fixed structures” that Nelson and Rosenberg 1993 refer to) “organisations” (Edquist and Johnson 1997, 49ff.). In sum, organisations seem to be more “fixed” and “institutionalised” than institutions themselves (Powell 2007, 1)<sup>8</sup>. In the following, we suggest distinguishing between

- Organisations (fixed institutionalised material institutions such as forest owners associations and state forest administration);
- Formal institutions (such as laws, regulations, programmes and formulated policies) and
- Informal institutions (such as unwritten norms, values, beliefs and cultural practices).

This distinction in part mirrors Nelson and Rosenberg’s definition of fixed and less fixed institutions by denoting the first as organisations and the second as formal institutions because to us, they are both more solid than the third form: norms and values. However, for the research focus, the role that institutions play within Innovation Systems in fostering innovations is the most important question. Edquist and Johnson (1997, 51) tackle this question by first defining rather loosely that institutions “regulate the relations between people and groups of people”. Second, they describe the functions of institutions in support of innovation as such: institutions reduce uncertainty by providing information; they manage conflicts and cooperation; and

<sup>8</sup> Powell defines “institutionalization” as the processes by which patterns achieve normative and cognitive fixity and become taken for granted.



they provide incentives (Edquist and Johnson 1997, 51). Yet, the functions and activities of institutions in innovation processes have been described in many different ways for which a common understanding does not yet exist (Edquist 1997, Kubeczko et al., 2006). As a first approach regarding the “functions of institutions”, we use the Edquist and Johnson definition here, and we classify the support provided by institutions into forms of support via information, via cooperation and via financing (Weiss 2011, 19). We report here on the organisations, policies, regulations and institutional influences that played a role in support of innovations analysed in NWFs in the STARTREE regions.

### 2.3 Innovative associations as examples

The report examines both the involvement and role of institutions in three examples of associations: a food label from nature parks (“nature park specialities” in Styria, AT), a gourmet mushroom cooperative (“Del Monte de Tabuyo” in León, ES, Catalonia) and a chestnut association (“Associazione Tutela Marroni di Castione” Trentino, IT). These all conform to the scholarly standards for innovativeness, because they either introduce a new idea for a historical, traditional product (Italy) and they commercialise it in a new way that is unique for the sector and the region (Spain and Austria) (Edquist 1997, 11pp.<sup>9</sup>; Nelson and Rosenberg 1993, 5; Weiss 2011). Moreover, the three projects involve several actors and institutions and they are backed up by associations. Finally, all three involve a combination of several additional services linked to the traditional products: In the Austrian case, the recreational and cultural functions of the regional nature parks are complemented by the traditional products produced and provided by the local farmers living in these parks under the label. In the Spanish case, de Del Monte de Tabuyo which is both a cooperative and a firm, includes a restaurant and in addition the sale of processed, preserved gourmet mushroom products (in the restaurant as well as online) in a region (Castilla y Leon) that did not use their mycological resources before. In the Italian case, 100 associated chestnut growers and supporters from the Brentonico Plateau are organising activities, services and gourmet events around their chestnuts. We examine the specific conglomerates of different types of institutions had decisive impacts on their realisation. Data were collected between July 2014 and June 2015. A total of 11 semi-structured qualitative open-ended interviews were carried out face-to-face with selected actors involved (such as the founders, producers, funding bodies, CEOs of consultancy agencies or other relevant personnel in each case). The interviews were recorded, subsequently transcribed and analysed deductively. In concrete terms a deductive literature analysis of the literature on innovation support enabled the identification of four initial key themes for the analysis: Involvement of institutions in general and forms of support in terms of information, financial and cooperation. In order to cover the important “pilot phase” in innovation processes, we also investigated into the specific genesis of each case. One methodological challenge was that the theoretical focus of most innovation research is on technical innovations. Our research design is framed on the argument that the innovations in our examples are non-technical and yet subsume innovative features.

#### 2.3.1 Role of innovation systems for associations

The three cases were backed up by the continuous efforts of a range of various associations, consulting firms and municipalities. In two of the cases, larger associations were formed: The Nature Park Specialities as a collective project by 20 Austrian nature parks and the Associazione Tutela Marroni di Castione, which was

<sup>9</sup> In particular, Edquist discusses these terms at length and comes to the conclusion that “There are many potential permutations. [...] The approaches complement each other rather than exclude each other” (1997, 12).

the platform formed by several local landowners. Tabuyo del Monte is a cooperative within a single municipality that was founded on the initiative of five women.

The main support in the initial phase of the first case came from the umbrella association of Austrian Nature Parks (VNÖ) and the consulting firm ÖAR, from the consulting company IRMAsl in the second case and from the Autonomous Province of Trento and the municipality of Brentonico in the third case (IT).

In all of them, the formation of these conglomerates of organised structure and cooperation was decisive: they were utterly necessary to build up capacity, which a single entrepreneur could not achieve alone. First, all of the cases involve getting together and cooperating, and people invested time and effort in the structures because of their belief that there would be a benefit for the group (and with this for them as parts of the group). To develop the innovations (bringing a novelty to the market), the institutions (in this case, organisations, that is, the associations and cooperative) had to be founded. In other words, the innovative new products and the attached services could only be created with the simultaneous creation of the organisations. Thus, the product and service innovations required an “institutional innovation” for their realisation. An institutional innovation includes new or adaptations of existing organisations, new or significantly modified rules, regulations and policies as well as new or significantly modified procedures to implement such policies (Weiss et al., 2010, 43).

Second, all of the cases have in common a regional type of marketing strategy that refers to the specific regional landscapes (nature parks), municipalities (Luyego) and plateau (Castione). Their brands and forms of regional marketing also attract consumers from outside these specific areas. The cases are all embedded in broader areas and involve more people at larger scales than a single entrepreneur could cover with such a brand and label and that require coordination efforts and mutual trust amongst the participants in the projects. These characteristics are what render the innovations institutional; they are characterised by repeated practices and organisational formations.

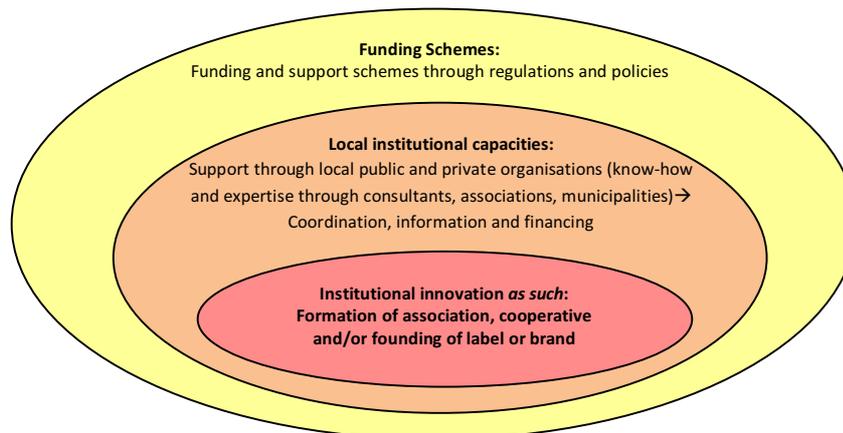
The further institutional features in support of the cases, such as formal institutions (policies) or organisations, are external in character. In the Spanish case, a new explicit regional governmental project that addressed the issue of “reviving” the economy in the area was useful. Del Monte de Tabuyo also received support from the policy programmes LEADER and EARD as well as EAFRD funds. In the Austrian case, in the beginning, the Association depended on national funds, then LEADER and then EAFRD. In the Italian case, the Association was 50% supported by the Autonomous Province of Trento, the Municipality, the Valley Community, and the APT (Association for the Promotion of the Tourism). The chestnut farmers themselves received individual public funding (both from the RDP and the Autonomous Province) for chestnut orchards recovery and maintenance.

Hence, institutions were most prevalent in the perceptions of the interviewees, especially when they recalled organisations and people who helped them develop their idea, and when they recalled the regulations that were most helpful for their projects (formal institutions). In addition, it seems that also informal institutions played important roles in success of the cases. They are mostly embedded in the local and regional identities that surround the products and vice-versa are also assisting in creating such identities. Forms of interrelated loyalty and trust amongst the founders of the projects were also important informal factors for success. These formal and informal institutions influenced the innovations. According to Peters, it is institutions that “guide and shape individual behaviour” (Peters 2012, 2). The initial ideas stemmed from specific innovators who had the will and energy to carry the ideas through. In all of the cases, the entrepreneurs and the producers first gave the decisive stimulus and then later were either supported by a consulting agency (IRMA sl in Castilla y Leon or the ÖAR) or found direct support from public bodies (the municipality and the other organisations in Italy). In addition, in all three cases, institutions were part of the very innovation. For the production, new cooperatives, associations and new branded labels were founded. In other words, at the core of the innovations was the foundation of organisational institutions. It is therefore fruitful to distinguish between **external institutional influences** and the **shaping of institutions within the innovations**.

The following figure illustrates the institutional framework in the results.



Figure 2: Framework of Innovation System Support



The outside layer in figure 2 denotes all relevant funding schemes in the IS: the political programmes and funding (“formal institutions”) as well as private and public organisations, banks and public agencies (“organisations”). The second institutional layer covers all the external private and public organisations involved in support of the innovations. These were the consulting firms and the supporting municipality (Local institutional capacities). The “inner circle” denotes the single core institutional innovation itself.

## 2.4 Insights and Outlook for Associations

Specific conglomerates of different types of institutions had decisive impacts on realisation of innovation projects. All selected innovations were developed by associations and cooperatives of producers that in the first two cases were supported by private consulting companies and in the third case by a municipality. To date, the scholarly literature on the role of institutions in innovations has focused on the institutions as external support in the IS. However, our results show that in some cases, institutions can also be part of the innovations themselves. Consequently, we claim that it is more fruitful to analytically examine institutions for innovation from two separate perspectives – first, from an external perspective, as they can influence the development of innovations through their support, and second, from an internal perspective, as part of the innovation itself, which we label therefore as “institutional innovation”. Institutional innovations are necessary in the small structured NWFP-projects that involve a label or a brand. The label is a necessary pool for the producers, both in terms of produced amounts and the marketing of their products. In this way, customers can be better reached through the intentional founding of labels. For the associations, both agreements between the founders were necessary and later the support from intermediate institutions. Infrastructure and capacity are necessary to grow and realise the projects in the succeeding steps.

Considering this distinction, we can confirm that a project’s success very much depends on the involvement and activities of a range of organised groups of actors in realms both within and outside the innovation. To become economically successful, institutional innovations are labour intensive and time-consuming. They have a time span of 5-20 years, and they need specific support from “outside” institutional actors, such as funding bodies and rural development agencies.



## 3 Conclusions and Recommendations

### 3.1.1 Typology of outcomes of Innovation Processes

The following table illustrates an overview of the types of innovation cases found in all the STARTREE IDCS (table 2) with example of single firms and organisations at the micro-level. For this comparative analysis we have taken all the relevant IDCS that were conducted within the research package:



Table 2: Types of Innovation at the Firm Level in the selected STARTREE case studies

Type of Innovation	Examples at Firm Level in STARTREE regions		Characteristics			Type of Innovation (OECD 2005)
	The Examples	The Firms and Initiatives	The Initiator(s)	The Product	Most Innovative Features	
Product Innovations	Innovating a well-known product	“Cairn O’ Mohr” (UK, Scotland): Scottish landowners who produce wine from oak-leaves and elderberries. <a href="http://www.cairnomohr.com">www.cairnomohr.com</a>	Single Firms/Entrepreneurs (Farmers and Forest Land Owners who found single enterprise)	Mushrooms, Birch Sap, juices, tea, wine	Product innovation with self-induced learning as main source of innovation	Product (Good)
		“Fine Pluck” (UK, Wales): Welsh Landowners who produce home grown and hand-plucked tea specialities.				Product (Good)
Institutional Innovations	The foundation of labels and brands for stronger product marketing	“Nature Park Specialities” (AT): <a href="http://www.naturparkespezialitäten.at">www.naturparkespezialitäten.at</a>	Organisations, Associations and Cooperatives of producers (Farmers and Forest Land Owners)	Labels around wild forest products (Mushrooms, berry products such as jam, chestnuts)	Several actors find consensus and back-up an innovative project that would be only difficult to realise by a single entrepreneur, farmer or forest land owner.	Organisational/institutional (Weiss 2010)
		“Xeis Edelwild” (AT): direct marketing of deer by municipal state forests in Styria.				Organisational + marketing
		“Wild vom Förster” (DE): direct marketing of deer by municipal state forests in Germany.				Organisational + marketing
Historical/ Traditional Innovations	Natural Resin as revival, Turpentine from Larch	“Resinas naturales” (ES): firm producing natural resin in Castilla y Leon.	Single Firms (Farmers and Forest Land Owners who found single enterprise)	Natural resin, larch resin	An historical product gets re-used and adapted to modern needs.	Product (Good)
		“Servizio di raccolte resine” (IT): natural resin harvesting in Trento, Mr. Mauro Iori				Product (Good)
Innovations with “embedded” products	Adding value to the products: Tourism and festivals in regions connected to a specific product: Mushroom Hotels, diverse products	“LEADER region Zirbenland” (AT): <a href="http://www.zirbenland.at">www.zirbenland.at</a>	Single Firms, Regional Development Agencies, LAGs of LEADER, Tourism Associations	Regions connected with a NWFP and vice-versa	A whole region sells itself in connection to a product for tourism and other activities around the product.	institutional (Weiss 2010) due to LEADER involvement + Good
		“Vale die Castione” (IT): association of Chestnut Orchard owners: <a href="http://www.marronicastione.it">www.marronicastione.it</a>				Organisational



	around Scots Pine and specific products	“The Monegal Mushroom Hotel” (ES, Catalonia): www.monegal.com(portal/el_monegal)				Service + Good
Service Innovations	Selling of experience with a service connected to a NWFP: Cutting your own Christmas Tree, adventure Foraging for wild fruits from forests.	“Cooking from the Meadow” (AT): guided tours with nature park guide Renate Dobovolnik in the Nature Park Mürzer Oberland	Single entrepreneurs (Farmers, foragers, nature park guides)	Adventures and “nature” experience connected with NWFP	A firm or single entrepreneur sells a product and a service together as experience attraction.	Service + Good
		“Christmas Tree Marketing” (AT): cut your own tree at the plantation of Mr. Andreas Reisinger (Neuberg and der Mürz, Styria)				Service + Good + Marketing
Marketing Innovations	Stronger product marketing through the foundation of labels and brands or new packaging	“Del Monte de Tabuyo” (SP) Castilla y Leon: gourmet products from mushrooms: www.delmontedetabuyo.com	Firms, Organisations, Associations and Cooperatives of producers (Farmers and Forest Land Owners)	Labels and brands around NWFP	A label is founded as innovative marketing.	Service + Good + Organisational
		“Adonis company” (SRB): marketing of tea via tea spoon shaped bags: <a href="http://adonis.rs">http://adonis.rs</a>				Product + Marketing
		“Finnish Gift Firm” (FI): A small enterprise producing NWFP in special luxury gift packages				Product + Marketing
Technical innovations	Birch Sap companies who develop new preservation methods. Domestication of Wild Mushrooms.	“Birch Sap Company” (FI)	Single Firms	Product Innovation via R&D investments	Product Innovation with (little) R&D support besides self-induced learning.	Product (Technical + Process)
		Trentino Firm (IT): currently domesticating mushrooms				Product (Technical)
		“Wooden Knots from Climbing” (SLO): a small company in Osredenje Region produces such wood knots with only minor processing: www.facebook.com/UJAA2012				Product (Technical)



The detected **product innovations** in NWFP are initiated by single entrepreneurs (Farmers and Forest Land Owners) who are innovating a well-known product. As examples rank here a firm that produces wine made from oakleaves and elderberries as well as a firm that produces hand-plucked home grown tea, amongst others. Such forms of product innovations are characterised by slow grow and low risk as well as a high percentage of self-induced learning and accumulation of know-how. There is little to none monetary support or provision of know-how by external support organisations.

**Institutional innovations** are initiated by organisations, associations and cooperatives of producers and are characterised by the foundation of a label or a brand for stronger product marketing. Examples in the STARTREE regions are labels within Austrian nature parks to promote the local traditional products or direct marketing of deer by municipal state forests in Germany and Austria.

**Historical/traditional innovations** revive old traditions and sell them to new needs. This is the case with natural and environmental and health friendly resin in Spain (Castillia y Leon) or Italy (Terpentine from larch). These innovations are initiated by single firms. The historical products get reused, old knowledge gets dug out and the product is adapted to new needs.

**Innovations via “embedded products”** can be initiated via single firm, regional development agencies, LAGs (Leader Action Groups) of the rural development programme LEADER or Tourist Associations. The innovation adds value to a specific product via touristic activities and festivals connected to a specific NWFP. Such is the case with Mushroom Hotels (SP, Catalonia), Annual Chestnut festivals (Trentino, IT) or whole regions (LEADER region Stone pine “Zirbenland” in Styria, AT) that sell themselves in connection to a product and with activities around the product.

**Service Innovations** are innovations that sell “experience” via a service connected to the NWFP. The examples in the STARTREE regions stem from single entrepreneurs (Farmers or nature park guides) who sell a product together with a service as an experience-attraction. It is the case with a specific form of Christmas tree marketing in Styria (AT) where the costumers come to the farm, chose their own personal tree and cut it by themselves or a nature park guide in the same region (AT) that leads tours under the motto “cooking from the meadow” where people after hiking and collecting wild herbs and fruit cook and eat the products together. It is also the case with “Out to Learn Willow”, a small company in South Wales, that provides a wide range of workshops and willow courses such as making traditional crafts from willow, weaving and also the planting of living willow structures.

**Marketing Innovations** aim at stronger product marketing through the foundation of labels or new packages, whilst the label or the packaging is founded as innovative marketing. The initiators can be firms, organisations associations or cooperations (of farmers and Forest Land Owners). Such is the case with a cooperative of 5 entrepreneurs selling gourmet mushroom products and leading a restaurant under the label “Del Monte de Tabuyo” in Castillia y Leon (SP) or a Serbian Tea company selling tea in tea spoon shaped bags (“Adonis company”). In distinction to the institutional innovation it is a label around a NWFP that is here in the centre and not the NWFP in a larger region or whole valley and backed up by larger groups of producers, demanding labelling in order to better sell itself. It is also the case with a small Finnish firm producing luxury gifts in exquisite gift wraps out of NWFP in the area of North Karelia.

**Technical innovations** require innovation of products with more R&D support than mere self-induced learning in the cases of the other product innovations within the IDCS in the STARTREE regions. They are also initiated by single firms but need more advanced technical and research input. Such is the case with a Birch Sap Company in Finland that has invented a new bottling system in order to keep their product fresh without preservatives for a longer time. As well it is the case with a firm in Italy (Trentino) that is currently domesticating wild mushrooms and a small company in Osredenje Slovenska Region, Slovenia who has developed long lasting sustainable wooden knots for climbing with only minor processing effort.

When we assess the cases via the OECD Typology of their Oslo Manual for Guidelines for Collecting and Interpreting Innovation Data (2005), see above, Figure 1; it turns out that the cases at the individual level can be characterised as mixed forms within the typology. Most of the innovations then are “Product”-Innovations



(Good). Some of those are combined with service innovations or marketing innovations. Three of the examples are technical innovations of products.

### 3.1.2 Innovation Systems and Processes: Challenges and Prospects

The sectoral orientation of the innovation systems in wild forest products has vast potentials for more involvement from actors from the forestry sector, such as forest owner associations, forestry departments, firms and industry, research and consultancies. With exception of Finland activities amongst private and public actors, there is indication that wild forest products and services are not thoroughly seen as an important business opportunity. Especially the actors at institutional levels (forestry and industry associations as well as forest owners associations) would have to engage more into the promotion of entrepreneurship, the provision of market information and the support of interactions amongst landowners and across the different sectors mentioned above. Other institutional and instrumental policy aspects, such as the European Union LEADER instrument for rural development have positive impacts but also could be much more used for innovation support in the risky start-up phases. Unfortunately in the current LEADER period the fund giving is turning out to become more and more bureaucratic, following EU-funding logics. This is confirmed by some of our expert interviews. As a result, the programmes lose attractiveness and especially their effectiveness in marginalised rural areas. The examples of innovations in the NWFP sector have shown that entrepreneurship is undertaken by very small forest holdings or even only individual farmers who do not have the administrative resources or skills for organising extensive applications for such EU-funding schemes. The research found out that in cases of individual entrepreneurship, very little financial or informational support was obtained, and if so, only in later stages. It is recommended to reconsider the strategies for fostering innovation in such contexts. At the level of associations there was more and better funding support and also more know-how transfer was involved from the beginning. It is easier for associations to connect to funding schemes. However, this routine (the foundation of associations in the first step) is not applicable to all innovation processes in NWFP. It only applies to the ones where a larger region is involved and where, most importantly, the producers agree on the advantages they could possibly have if they work together. In sum, the new uses of forests for other purposes than mere timber production in many of the cases in our studies have often been introduced from outside sectors such as energy, biodiversity conservation, recreation or tourism. The main challenge for innovation systems in NWFP is that there is no “one” innovation system supporting non-timber products but support is given through certain programmes from several sectoral innovation systems, including forestry, agriculture and nature conservation.

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