Project no. 311919

# StarTree

# Multipurpose trees and non-wood forest products a challenge and opportunity

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## "State of the European NWFP"

## A summary

DRAFT

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## Abbreviations

| | |
|---|---|
| B | billion |
| EU | European Union |
| EU28 | 28 countries in the EU |
| IUCN | International Union for the Conservation of Nature |
| LEADER | *Liaison Entre Actions de Développement de l'Économie Rurale* |
| M | million |
| NWFP | non wood forest product |
| UN | United Nations |
| UNECE | United Nations Economic Commission for Europe |



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# 1 The relevance of NWFPs in Europe

Forests and the forest based sector can play an important role in shifting Europe towards an innovative, resource efficient and bio-based economy (bioeconomy), particularly when considering the whole range of forest products. Forests are much more than wood. Non-wood forest products (e.g., forest fruits, mushroom, cork, pine kernels, acorns, medicinal herbs, essential oils, chestnuts etc.) can be significant in the bioeconomy, especially in regions where wood is not the most profitable product. According to the Millennium Ecosystem Assessment (Schvidenko 2005) there are more than 150 NWFPs in international trade. The latest report on the state of Europe`s forests (Forest Europe 2015), reported that the total value of NWFPs in the Forest Europe region was estimated at 2,27 billion Euro, of which ~80% was generated by plant products. This value represents nearly 10 % of the value of total roundwood removals, which is significant considering the deficiencies in data collection and missing NWFPs. NWFPs are particularly significant in the Mediterranean region, where an immense diversity of NWFPs combines with low profitability of wood such that NWFPs represent a considerable part of the value of total forest production (Figure 1).

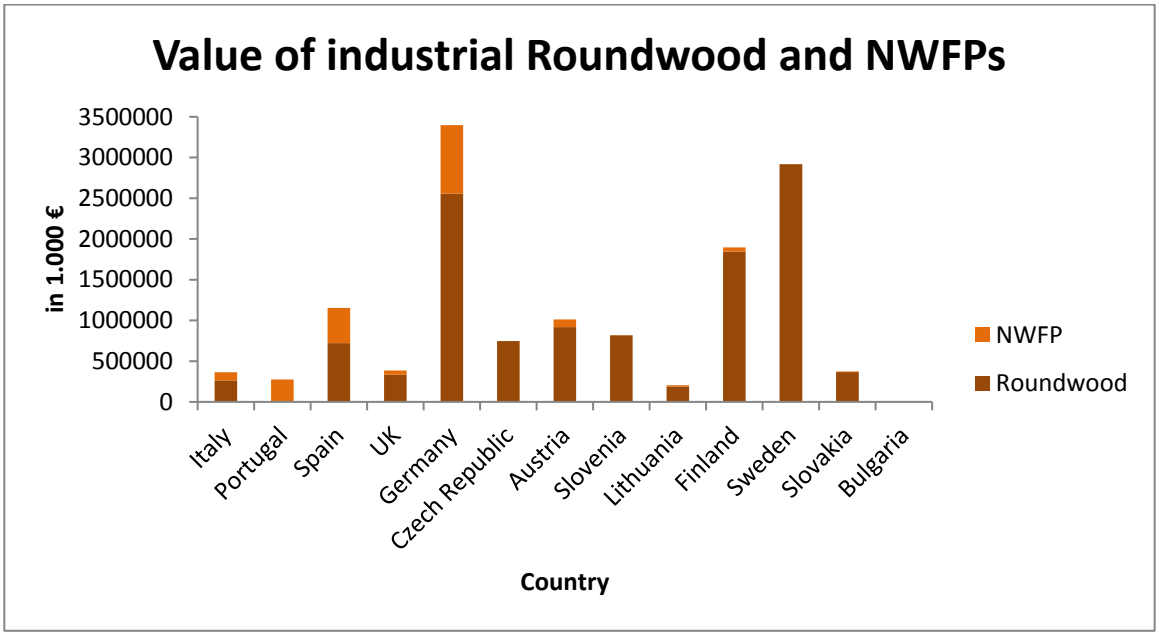


Figure 1: Annual value of industrial roundwood and NWFPs in selected EU countries (Forest Europe, 2015)

However, unlocking the full potential of NWFPs requires considerable progress at various levels, by:

- Developing new knowledge and tools to optimise the sustainable and joint provision of wood, NWFPs and related services as well as the management of multi-purpose trees in a climate change context
- Advancing the understanding on the socio-economic importance and the potentials of markets for NWFPs, including the role of public and private actors in supporting the innovation processes for new products and services based on consumers´ behaviours and patterns


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- Establishing solid strategic partnerships between key research organizations and specialised small- and medium-sized enterprises working on NWFPs in Europe to ensure and speed up the transfer of research and innovations to markets

The StarTree project explored a diverse range of ecological and socio-economic conditions and utilised 14 focal regions across Europe as the basis for data collection, analysis and stakeholder engagement (Figure 2).

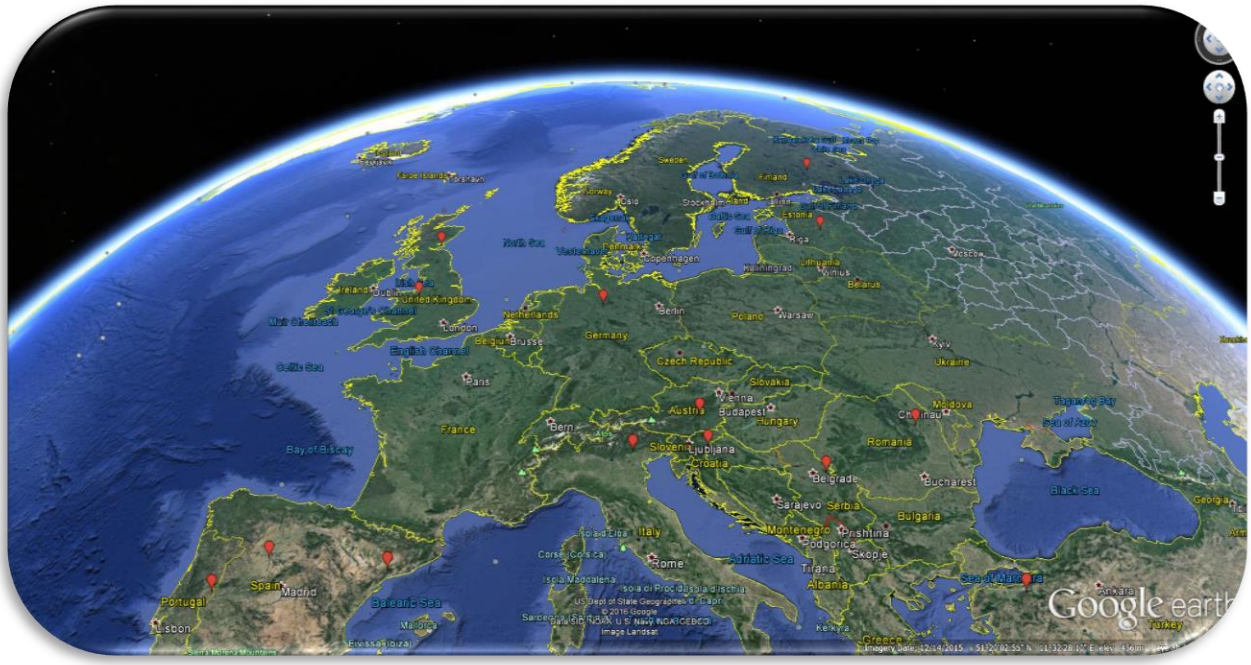


Figure 2: Overview of StarTree focal regions in Europe

## What does NWFP stand for?

There are many terms used for products harvested from forests which are not wood or timber. From among these the StarTree project adopted the term non wood forest product (NWFP) and the definition proposed by FAO (1999) "*products of biological origin other than wood derived from forests, other wooded land and trees outside forests*". This definition covers a very wide range of resources and products including plants, fungi, fauna and soil. Altogether, the products which are included in FAO's definition of NWFP number several thousand plant, fungi and animal species (see Figure 3).



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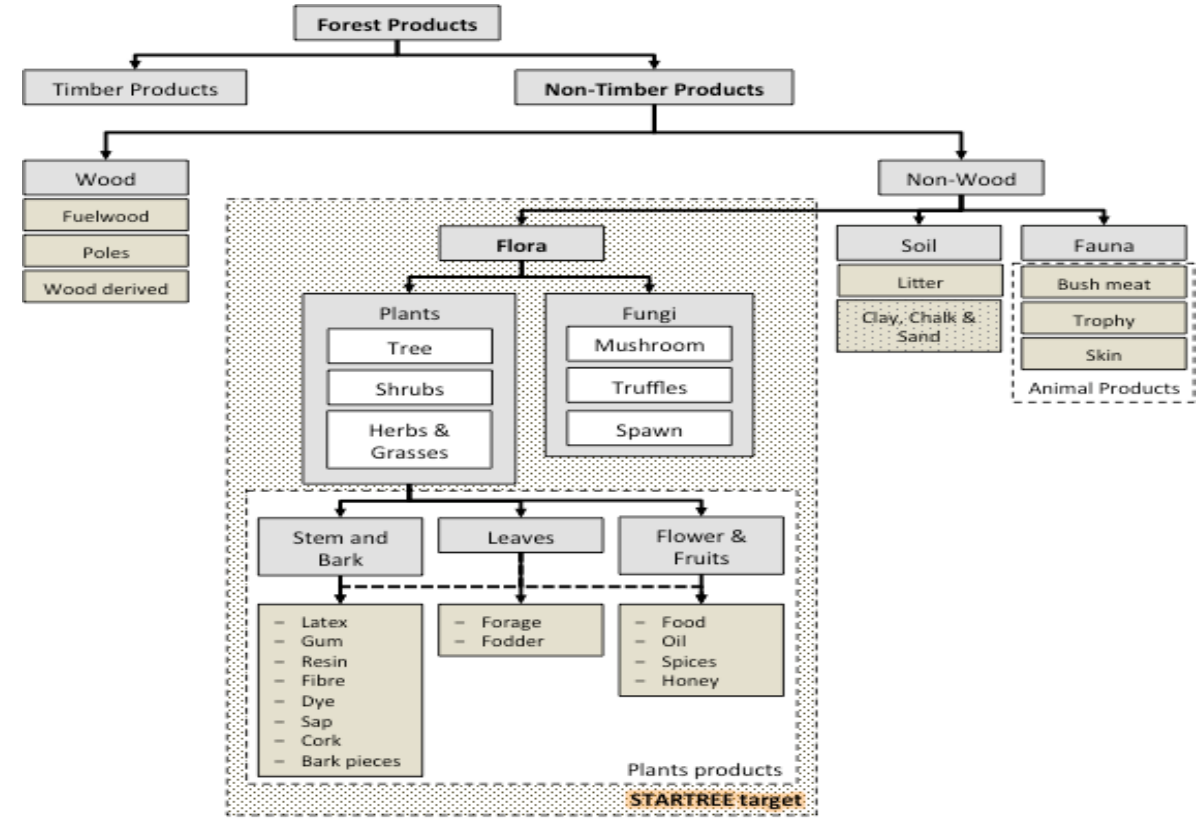


Source: modified from FAO (1999)

Figure 3: Products of the forests

# 2 Utilisation of NWFPs in Europe

This chapter looks at what we know about the use of NWFP in Europe. The picture that emerges is a nuanced one which puts the economic use of NWFPs into a wider perspective.

## What we know from statistics

Only few countries report regular statistics on NWFPs. Among the most frequently reported products we find: i) game meat, ii) Christmas trees, iii) wild mushrooms and iv) berries whereas for other products such as foliage, cork, pine resin, medicinal and aromatic plants, honey and nuts for instance the level of information is scattered. A recent enquiry included an estimate of informal NWFP production which yielded production estimates for 2005 of 4.53 billion € for just plant and fungi products (Forest Europe, UNECE & FAO 2011).

Notwithstanding progress in data estimation, there is a persistent lack of data on NWFPs use in Europe. The reasons therefor are manifold, including inter alia the lack of consistency in what is categorized as NWFPs (i.e. definition) but also a high share of personal consumption or local trade in informal markets. Hence they are rarely reported in formal statistical databases (FAO 2010).



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**Trade is an important use of NWFPs in Europe**. However, due to the multitude of commodities trade in NWFPs has rarely been analysed. Within StarTree four categories of NWFPs were investigated in detail: a) vegetable tannin, b) cork, c) nuts and d) wild mushrooms. Figures 4-7 highlight the EU 28 market share and trade balance based on detailed analyses of COMTRADE data for 2002 to 2013.

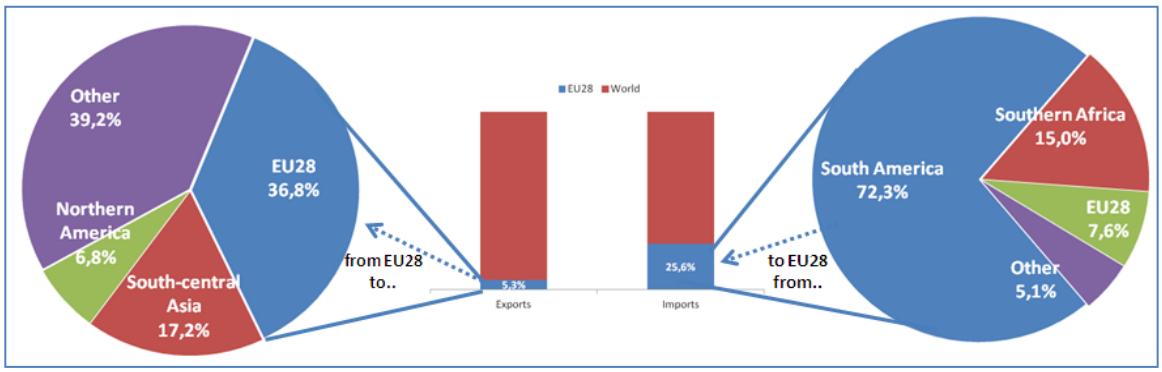


Figure 4: EU28 imports and exports' partners for **tannins** (only quebracho and wattle) in 2011 with respect to global trade (percentage on USD dollars)

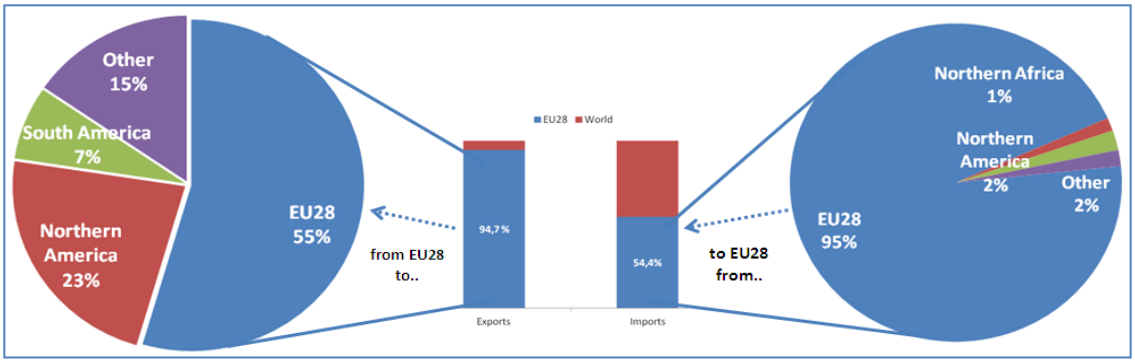


Figure 5: EU28 imports and exports' partners for **cork stoppers** in 2011 with respect to global trade (percentages of total value of trade in US$)

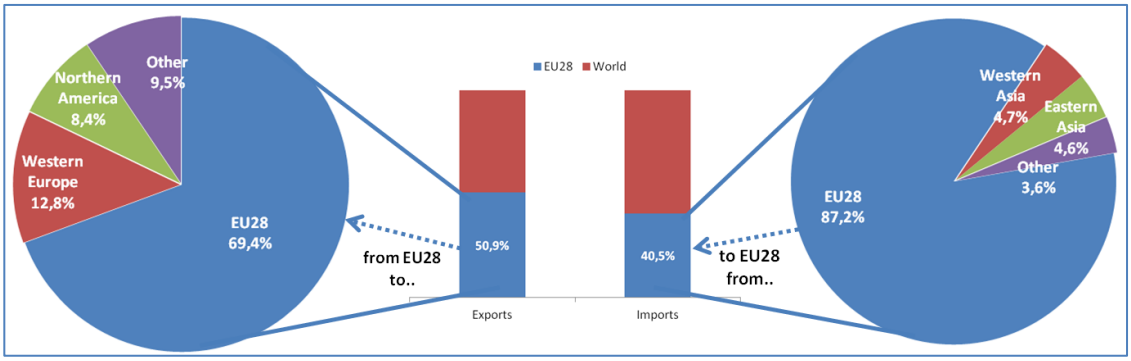


Figure 6: EU28 imports and exports partners for **chestnuts** in 2011 with respect to global trade (percentage of total value in US$)



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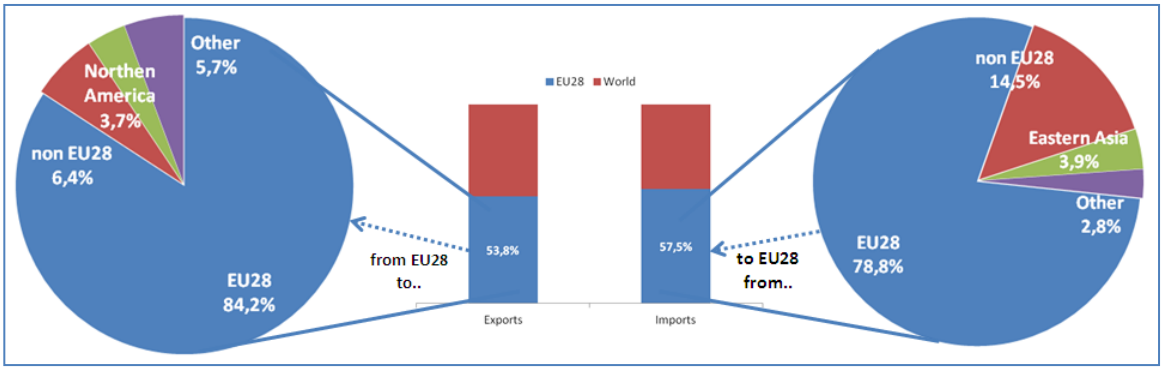


Figure 7: EU28 import and export partners for fresh **mushrooms** in 2012 with respect to global trade (percentage on US$)

The international trade of the selected NWFP commodity groups summed up to 12 billion US$ in 2011 but traded commodities that compose the overall trade value do not all originate from forest land (e.g. nut plantations are a common characteristic in several countries). The EU has a strategic role in the international NWFPs market accounting for 44.8% of the total export value of commodities based on raw or processed NWFPs. The EU acts as monopolistic global supplier for truffles and cork. EU28 chestnut exports accounted for 51.1% of global trade in this commodity. The results indicate that EU28 are highly dependent on international imports of wild mushrooms and nuts.

**While it is unrealistic to cover demands for all European NWFP from European forests, more attention should be given to the enhancement of the standards and overall quality of internal supply, to capture the high segment (i.e. higher values) of the market, a target that is reachable with an increase in entrepreneurship by NWFP internal producers.** There is a need for more detailed trade data to study complex commodity groups (i.e. tannins, mushroom, berries, nuts, etc.).

## Insights from the StarTree focal regions

A sector mapping exercise among NWFPs experts to list all biological resources used as NWFPs within their region reports of 432 taxa[1] across all 14 regions in groupings which roughly equate to kingdom (animals, plants, fungi) and within the kingdoms according to lifeform i.e. tree, shrub, mammal etc. Figure 8 shows that just over half (55 %) of the taxa used as NWFPs are higher plants with roughly equal numbers of animals and fungi (~20 % each) and only a few lower plants. Within the plants the greatest number of species used as NWFPs are understorey herbs. There are a wide range of animals which count as NWFPs with roughly equal numbers of mammals, fish and birds being hunted. The majority of fungi which are harvested are mushrooms.

[1] Distinct entities, usually species but also genera and at times groups of species e.g. 'coniferous trees'.



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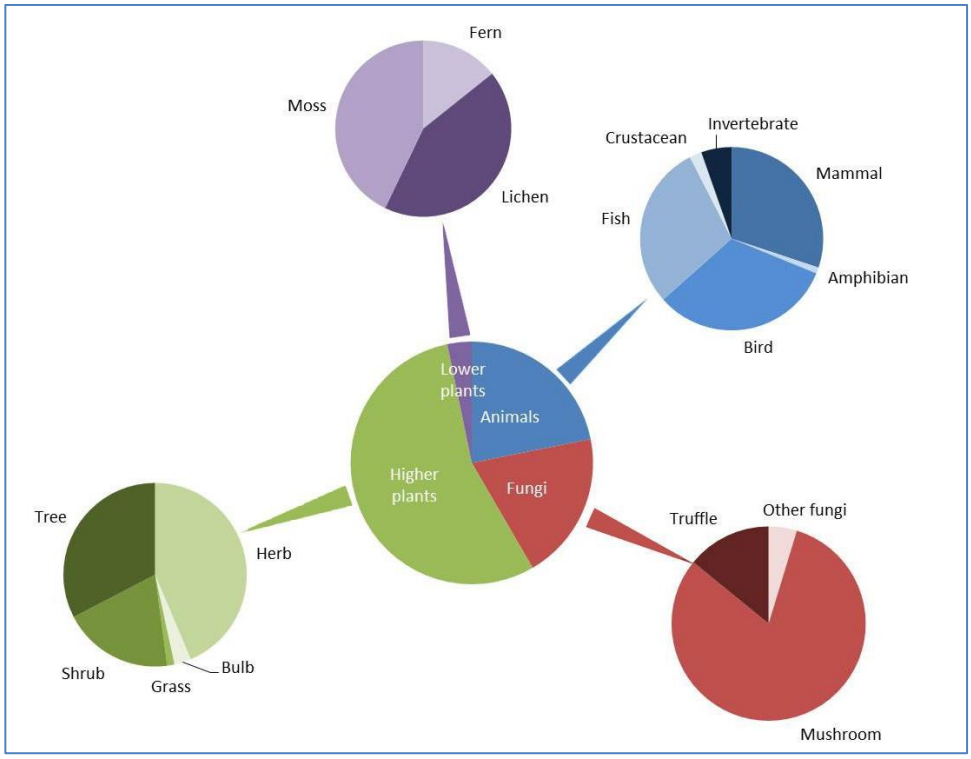


Figure 8: Number of NWFP taxa reported across StarTree regions

Further detail on the nature of the resources harvested is shown in Table 1 grouped into eight categories.

Table 1: NWFP groups by StarTree region

| Resource type | Alejento | Bursa | Catalonia | E. Scotland | Latvia | North Karelia | Osrednjeslovenska | Styria | Suceava | Šumadija & W. Serbia | Trentino Alto Adige | Valladolid | Waldmärker | W. Wales & Valleys |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Edible fungi | | | | | | | | | | | | | | |
| Animal products (including honey and game) | | | | | | | | | | | | | | |
| Tree products (including bark, leaves, fruits and nuts) | | | | | | | | | | | | | | |
| Decorative plants and branches (including seasonal branches, florist's greenery, and Christmas trees) | | | | | | | | | | | | | | |
| Forest fruits & berries | | | | | | | | | | | | | | |
| Edible, Medicinal and Aromatic Plants | | | | | | | | | | | | | | |



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| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Seed Source (for tree and wildflower propagation) | | | | | | | | | | | | | | |
| None Reported | | | | | | | | | | | | | | |

Shading from yellow (low) to green (high) indicates the proportion of responses indicating each type of product harvested from the forest

## Products

All information regarding the type of product derived from the sector mapping dataset was reviewed and grouped into pragmatic groups with the final classes as shown in Table 2.

Table 2: Product groups

| Product group | Description | Example products |
|---|---|---|
| Beverages | All drinks, excluding those use as a means of administering medicines | Tisanes, spirits, fresh juice etc. |
| Decorative items | Anything used for home or garden decoration | Wreathes, Christmas trees, floristry etc. |
| Foodstuff | Anything intended for human consumption | Fresh, cooked, preserved foods, seasonings etc. |
| Handicrafts | Items used principally by artisans for traditional products | Baskets, dyestuff, furniture etc. |
| Horticultural products | Mostly bulk items used by horticultural trade | Bark mulch, packing for bulbs etc. |
| Industrial raw materials | Usually (but not always) sold in bulk for use in industrial processes | Cork for stoppers, resins for chemical industry etc. |
| Medicinal products | Used as medicine in a recognised CAM2 system whether self-administered or by a registered CAM practitioner. Main characteristic is its use primarily for health reasons. | Items used in herbal medicine e.g. lime, orchid roots etc. also raw materials for pharmaceutical use by herbal medicine companies e.g. Weleda. |
| Miscellaneous | Things which do not fit under other categories | Mostly live animals used as bait or bird food |
| Personal care | Items used as main or defining ingredients of topical and cleansing products | Cosmetics, soaps, shampoos, skin cream etc. |
| Reproductive materials | Live materials collected and used to propagate the species outside the forest | Queen bees, bee swarms, tree seed, mushroom spawn etc. |

The products most often mentioned are traditional; wild forest food and drinks, herbal medicines and handicrafts or related to the use of natural products for soaps and cosmetics. There are relatively few industrial products. One of these industrial products is cork others are resin, turpentine or in some cases botanicals.

[2] Complementary and alternative medicine as defined by the World Health Organisation http://www.who.int/topics/traditional_medicine/en/ and see http://www.who.int/medicines/publications/traditional/trm_strategy14_23/en/



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**Personal use**

Most of the figures presented are for material recorded in trade statistics. They therefore omit non-commercial use of NWFPs, most of which is picked for personal use. In all regions at least half the NWFPs are harvested for personal use while for three regions this rises even to 90% of records. The UK is one of the few StarTree countries which have formal statistics on personal use based on a face-to-face omnibus survey of the total population indicating that even in a low forest, urbanised country between 13 and 20% of the total population visit woodlands to pick NWFPs.

However, there is little available information on the numbers of people who personally collect and use NWFPs, the volumes consumed or the locations from which they are harvested. Such information is needed to be able to assess the scale and significance of personal use.

**Trade in NWFPs**

The StarTree project aims to support rural development and hence has a focus on enterprise opportunities which can be explored through the trade information in the sector mapping dataset. There is a large potential for NWFP to support rural development and increase the incomes of landowners and rural enterprises (Niskanen et al, 2007). However, to a large degree the realization of this potential depends, on one hand, on the obstacles that the enterprises have to overcome before they can operate with NWFPs, and on the other hand, on the support they receive from public administration and private bodies.

In order to analyse trade we adopted the conceptual framework based on marketing strategies proposed by Pettenella et al (2006) and reiterated in Niskanen (2007). The classification of marketing sectors employed in the sector mapping is given in Table 3.

Table 3: Marketing sectors for NWFPs

| Marketing sector | Characteristics | Examples |
|---|---|---|
| Mass market | - Raw material with low level of differentiation<br>- Large number of consumers easily recognised<br>- High competition, price sensitive<br>- Widely available | Cork as stoppers<br>Raw resources traded in bulk e.g. foliage, berries, mushrooms<br>Industrial raw materials e.g. turpentine |
| Specialised market | - Niche products<br>- High added value<br>- Unique territories<br>- Very well differentiated products<br>- High innovation | Small scale artisanal products with territorial labelling<br>Swiss pine hand cream<br>Birch sap wine<br>Willow basket coffins |
| Embedded products | - Products sold as an intrinsic part of a service offer<br>- Value of NWFP is a small proportion of value of services<br>- Product is essential component of offer | Vegetable dying workshops<br>Bushcraft activities<br>Survival training<br>Truffle tourism |

Table modified from Pettenella et al 2006



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Given the different nature of these markets, we found that the product classes that emerge from the information presented by NWFP experts were not the same between markets. This is because of product transformation along the value chain, with mass markets dealing in raw materials hence 'resin', 'botanicals', 'foliage' etc. while the specialised more often deal in processed products hence 'personal care products'. Embedded products are highly innovative and relatively new and have yet to be systemised. Forcing a generic classification on all marketing sectors may facilitate comparison between the sectors but at the expense of clarity in the nature of the products themselves.

**Overview of main findings**

Our enquiry into the nature of NWFPs in the StarTree regions has revealed that they are made up of a wide variety of resources drawn from a great many species from fish to fungi. The type of resources used and the uses to which they are put vary from region to region and reflect the forest culture of the regions. Nevertheless there are broad similarities in the role of these products to the people residing in the regions. They are intrinsic to the expression of forest culture and historical links with the land through personal collection and use at household level. Many of these products are marketed for sale in three marketing sectors. There are relatively few mass market products based on a small number of species such as cork and wild mushrooms but these are traded in bulk and are significant in terms of overall income and employment. There is a great diversity of specialised products with a lot of regional variation in the products themselves which again reflects prevailing forest cultures and economic opportunities. Embedded products are a relatively new innovation and seek to market services attached to personal collection and use of NWFPs. They may offer the prospect of improving the profitability of forest management for forest owners, as they "bundle" NWFPs with services, for which people may be willing to pay.

# 3 Macro- and micro-level policies affecting the use of NWFPs

**At European Union level**, there are no policies or legislation specifically and exclusively targeting NWFPs. However, the recognition of the ecologic, economic and social role of NWFPs and the willingness to promote them is highlighted in different European and International policies and agreements related to forests. The **New EU Forest Strategy**[3] recognises that "*forests also provide a large range of other products, such as cork, resins, mushrooms, nuts, game and berries*"; and advocates for sustainable forest management as "a key pillar of rural development". Key action 3 of the **EU Forest Action Plan**[4] specifically refers to exchange and assessment of *"experiences on the valuation and marketing of non-wood forest goods and services*". **FOREST EUROPE - The Ministerial Conferences on the Protection of Forests in Europe** also explicitly addresses NWFP[5] in their resolutions.

[3] Communication from the Commission to the European Parliament, The Council, the European Economic and Social Committee and The Committee Of The Regions, 20 September 2013

[4] Communication to the Council and the European Parliament, 15 June 2006

[5] Only they use the term 'non wood goods' rather than NWFP.



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European forest related policies call for a commitment by the Member States to update their National Forest Programmes and framework legislation in order to address the concept of multi-functionality, which includes the provision of NWFPs. Moreover, the New EU Forest Strategy in particular, emphasizes that impacts of other policies on forests as well as developments taking place beyond forest boundaries should be taken into account.

Other sectorial policies in Europe relevant for NWFPs are:

- **Biodiversity policies**[6] and the specific EU Directives (Birds, Habitat, Natura 2000 network) and the creation of an ecological network for Europe, can influence forest management plans and consequently affect the production and management of NWFP in designated areas.

- **Endangered species policies**[7] may affect the trade and movement of NWFP of species included in the Appendices to the CITES Convention.

- The **Common Agriculture Policy (CAP) and Rural Development Policy** strongly encourage the diversification of the rural activities. Forestry is considered an integral part of the policies. CAP and rural development are oriented at helping farmer in "*making more productive use of forests and woodland*", and in "*enhancing the quality of production and products, improving the marketing for food specialities of the rural regions*". Specifically, measures across the whole Rural Development Programme can positively promote NWFP sector, affecting directly and indirectly all the actors along the value chain. The European Agricultural Fund for Rural Development (EAFRD)[8] is a financial instrument that can affect NWFP production, use, marketing and innovation.

- **The European Regional Development Fund (ERDF)**[9]**,** which promotes and gives financial support to Small and Medium sized Enterprises and local development in disadvantaged areas;

- **JEREMIE - Joint European Resources for Micro to Medium Enterprises**, which promotes and gives financial support to the improvement of access to finance for Small and Medium sized Enterprises.

Apart from the aforementioned sectorial polices, legislation related to other sectors can affect the NWFPs sector and these were identified as follows: a) food safety policy, b) product labelling and packaging, c) fruit and vegetable regime, d) marketing of agricultural and food products, e) plant health and biosecurity, and f) trade regulations.

**At country level**, the most important sectorial legislation and policies include Laws, Acts or Codes on Forest, Forest Policies, as well as National Forest Programmes. The provisions in the forest laws are binding and therefore they have a direct impact on the NWFP sector but they vary from country to country.

[6] The United Nations Convention on Biological Diversity and the EU Biodiversity Strategy for 2020.

[7] Council Regulation (EC) No 338/97 of 9 December 1996 on the protection of species of wild fauna and flora by regulating trade therein; and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

[8] Council Regulation nº 1698/2005.

[9] Regulation 1080/2006 of 5 July 2006 of the European Parliament and of the Council.



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Within the StarTree countries some of the more notable distinctions are:

- countries (Latvia, Portugal, Romania, Serbia, Slovenia, Turkey) which have provisions related to NWFP in national forest law;
- countries (Germany and Italy) which have provisions related to NWFP in the forest laws only at subnational level;
- countries (Austria and Spain) which have provisions related to NWFP both at national and subnational level;
- countries (e.g. United Kingdom) which do not have provisions for NWFP in forest law and
- countries (e.g. Finland) which do not have provisions in forest law but where there are references to NWFPs in other acts or other principles (e.g. Everyman's rights).

# 4 Managing for NWFPs

In this chapter we explore the types of forest and production systems which produce NWFPs and consider how they are managed as well as the potential to increase production through management systems designed to produce NWFPs.

## Types of forest for NWFP collection

The FAO definition of NWFP includes the observation that they can be produced from "forests, other wooded land and trees outside forests". The results from the sector mapping reveal that the vast majority of NWFP species (not volume) are collected from semi-natural (and natural) forests. Relatively few are derived from plantations. Agroforestry appears to be a significant production system for fungi and some trees but does not feature strongly for animals.

Independent of the type of forest from which it is collected a NWFP can be wild harvested or cultivated. 'Wild' and 'cultivated' are two ends of a spectrum with a lot of middle ground between them much of it occupied by NWFPs. Some NWFPs species are only collected from the wild while others can also be cultivated, while a few species, often non-natives are only cultivated. The extremes of this continuum are easy enough to distinguish a wild berry picked from a semi-natural forest is quite different from a cultivar of the same species grown in a polytunnel. However, there are many resources which are less easy to place. How should we consider a product harvested from a native species growing in a semi-natural forest which is managed for timber production? Is cork collected from trees which arise from natural regeneration managed in a silvopastural landscape wild or not? A distinction which is compatible with the approach to management taken in the next section would be to distinguish between resources which are explicitly managed i.e. that management plans contain specific actions to enhance their production. Pooling the StarTree data gives **45% of NWFP taxa are exclusively harvested from the wild, 39% which is sometimes cultivated and 6% which are exclusively cultivated**. Wild harvesting for at least part of the production is therefore an issue for around 80% of NWFP species.


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A different perspective on these issues is the question whether NWFPs are actively managed or opportunistically harvested. Across all StarTree regions opportunistic harvesting was reported from 74% of forest holdings while 18% of holdings were not managed explicitly for NWFPs and only 8% were reported to be actively managed for NWFP production (Figure 9). Active management constituted a direct management operation that targeted the production or an increase in production of a particular NWFP. An opportunistically harvested NWFP is a product that is not specifically managed for but is sought and harvested, by an undisclosed user group which is the equivalent of 'wild' in the sector mapping.

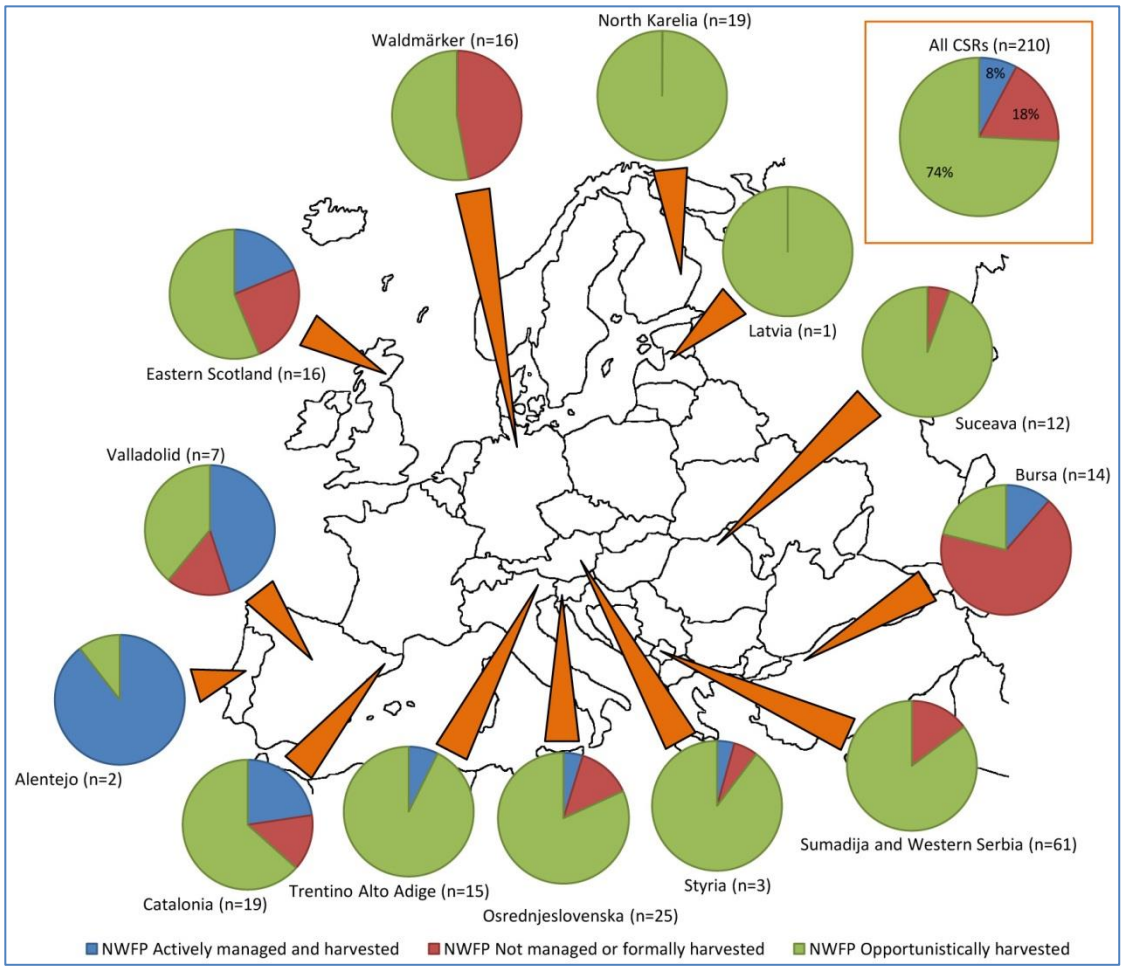


Figure 9: Active management for NWFPs in 13 European regions

The picture that emerges from these two separate strands of evidence is that **up to 75% of NWFP species represent wild plants and animals harvested from natural/semi-natural forests without any specific management for their production**.

## Forest management practices and tools

There is a notable lack of management for NWFPs. In most regions a timber oriented production goal dominates. NWFP production goals can be seen to be proportionally higher in western Mediterranean


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regions such as Alentejo and Catalonia which reflects cork and pine nut industries and mushrooms in the case of Valladolid. The application of silvicultural management for the production of NWFPs is variable. At present it is apparent that NWFP collection is a largely informal sector across Europe. Timber production prevails and it is evident that the majority of management operations are conducted for the increase and improvement in quality of timber products. Co-production of timber and NWFPs in established forests is a rare production goal. However, the modification of silvicultural practices is apparent, especially in cases where NWFP production is already established.

The use of decision support tools comes along with forest management practices and their historic development. In the case of NWFPs there are only few tools available that support forest owners or managers in forest management planning. For private family owned forests the most commonly applied decision support is a printed forest plan. Computer based planning systems are rarely used. In forests under other ownership categories (state, municipality and common forests) the situation is similar to that of the private/family owned forest, although these owners tend to apply more generic instructions and less often seek to optimise prescriptions for a specific site.

## Conservation issues

The sector mapping garnered a list of 370 NWFP taxa identified to genera or species level from the 14 StarTree regions. This list was checked against the IUCN Red data list (http://www.iucnredlist.org/) to determine if any of them are listed internationally as species under threat and therefore of conservation concern. **There are eight animals (five fish, two rodents and an ungulate) and five higher plants (two trees, a woodland flower, an herb and a non-native shrub) which are given higher threat codes by IUCN**.

Only 27% of higher plants have been assessed by IUCN and there are no assessments for any of the lower plants or fungi. Many of these species are common and would likely be assessed as of Least concern but there is a risk that some of these are of conservation concern. The IUCN Red list categories are assessed at international level for *in situ* native populations (which is the basis of the listing of walnut, horse chestnut and rabbit) and this will mask many smaller scale issues such as endemics, regional sub-species and species at the edge of their range. More needs to be done to formally assess the conservation status of local populations of NWFP species before implementing policies aimed at increasing harvesting from wild populations (which we estimate as 75% of NWFP species) either through commercial operations or awareness raising and education aimed at promoting recreational (personal) use. The majority of popular NWFP species are not going to be a conservation concern but there will be some which will be vulnerable to over-harvesting - especially rare medicinal herbs and species caught up in indiscriminate bulk harvesting of plants.

## Inclusion of NWFP in formal forest management

In general, the owner or the NWFP user is able to transform the forest or a forest stand for commercial use of NWFPs, with the approval of the appropriate authorities, based on a management plan or on a felling license. One may suppose that clear-cut is likely to be excluded, as far as this kind of forest transformation is severely restricted in forest legislation. In a few regions stands cannot be transformed (i.e. Suceava, Bursa,


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Šumadija and Western Serbia and Alentejo in the case of cork stands). In Styria forests are defined as being for the production of timber/wood and the owner may transform the forest to some extent as long as timber production is not compromised. In Finland transformations of forest stands is also not common: for berries and mushrooms this does not take place although researchers are currently working on "semi-cultivation" concepts. For birch bark and sap the owner can plant birches and use them as she/he wants. In Catalonia and Valladolid if the forest management plans include the activity then it is possible to transform the forest stands (though management plans must be approved by the Administration). If the transformation is not mentioned in a specific forest management plan, then special permission is needed that should be provided by the competent administration.

**The possibility to abandon timber production while maximizing NWFPs production is therefore in most cases restricted** and applies specifically to some products such as cork production (Alentejo) or game management (Suceava, Latvia) or to some regional patterns such as in the case of Spanish regions where the forest owners are not required to produce wood by decree law.

# 5 Access to forests and NWFP harvesting rights

According to the definition adopted in the StarTree project, **public access** in the forests refers to the right of citizens to enter forestland and enjoy non-subtractive benefits (e.g. hiking, canoeing, sitting in the sun, etc.). It refers strictly to *the right to enter a property* not to the right to make use of forest products. In addition to access, we explore the issues of harvesting rights, both for personal consumption and for the purpose of commercial exploitation of NWFP.

## Public access to forest

Most of StarTree countries guarantee free **access to forests**, albeit subject to specified conditions, restrictions and prohibitions. Generally, a rule conditioning access to forests is that people entering must avoid damage and harm to the forest owner, to property and to the forest environment and ecosystem. However, there are countries which have specific restrictions. Analysis of access regulations at country level reveals differences in:

- whether public access rights to forests are regulated by the forest law or other legislation, and the administrative level (state, regional etc.) this regulation in encoded;
- regulation of access rights between private and public forests;
- the extent of formally acknowledged access rights and the precision with which they are described;
- defining the activities people entering the forests are permitted to do; and
- powers granted to public authorities (mostly local) to regulate, restrict or prohibit the entrance and certain practices.

The access rights relate to legislation at national level and this provides a basic framework for understanding the legal situation. However, access to forests and NWFPs are also regulated at lower administrative levels and can often be modified by local practices and norms. Access rights are usual constant across regions and


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can be universal application of everyman's right, confer on all owners the same rights to restrict access or make the allocation of rights a legislative matter. In three regions the rights regime is differentiated by the form of ownership.

Table 4: The regime of restrictions on public entry to production forests by form of ownership

| Region | Private ownership | Common ownership | Municipal ownership | State ownership |
|---|---|---|---|---|
| Alentejo | | | | |
| Bursa | | | | |
| Catalonia | | | | |
| Eastern Scotland | | | | |
| Latvia | | | | |
| Osrednjeslovenska | | | | |
| North Karelia | | | | |
| Styria | | | | |
| Suceava | | | | |
| Šumadija & W. Serbia | | | | |
| Trentino Alto Adige | | | | |
| Valladolid | | | | |
| Waldmärker | | | | |
| W. Wales & Valleys | | | | |

Legend
- Everyman's right
- Restricted by law
- Restricted by owner
- Not regulated
- Not applicable

However, in practice, any restriction of public access is frequently difficult to enforce.

## Harvesting rights

In most of the StarTree countries, the public has the right to use at least some NWFPs. The differences in regulations across countries concern the following issues:

- whether harvesting is regulated by the forest law or by other legislation, and at which level (state, regional etc.);
- the resources for which harvesting is restricted by legislation (due to the ecologic, economic social relevance, of the specific NWFP in the country/region);
- harvesting in public versus private forests;
- the quantity and methods that are admitted for collection;
- collection for individual and household consumption versus collection for commercial uses;
- requirements for authorization in the form of licenses or permits for collection.

According to these differences, several groups of countries can be distinguished, namely:

- countries where the public has general rights to use NWFP, but where land owners may restrict or prohibit the use of certain products by using adequate signs or may charge fees for their collection as in Italy, Latvia, Serbia, Spain;
- countries where harvesting is generally free of restriction, as in Finland;



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- countries where the restrictions are only for commercial purposes, as in Scotland, or when collection can be forbidden when the forest owner holds a permit to harvest NWFP for production, as in Slovenia;
- countries where collection can be totally prohibited, for example, in private forests such as in Turkey.

**The distinction between the commercial and personal use of NWFPs**

This distinction is the basis of any regulation of any NWFP harvesting system. It grounds on several economic and ethical considerations: on one hand, the landowner and the local people should be entitled to benefit from a public good under the "first claimant rule", on the other hand, this rule should not impede the development of economic activities based on this resource which belongs to the landowner. This distinction is one of the prerequisites behind exclusion rights work in practice. In general the legal distinctions are made between commercial and personal use for many of the listed NWFPs. For example, for mushrooms, the most common method to distinguish between the personal and commercial use is the "intent of the picker" which involves a certain contextual and subjective interpretation of the enforcers (if any) when facing the pickers.

**Forest owner's use of NWFP from the forestland he owns**

In general, the owner is entitled to use NWFPs from their property both for self-consumption and for commercialization. However, commercial use is sometimes subject to additional procedures, for example commercial exploitation of certain species may require the existence of a specific plan for resource management or extraction. In few cases, a management plan is required but need not include specific provisions for NWFPs. Other identified restrictions imposed on forest landowners include harvesting permits and authorization for commercial harvesting of NWFPs from their own forests, including the imposition of harvest quotas.

**Collection of NWFP for personal consumption by general public**

Harvesting of NWFPs for personal consumption is generally permitted in all StarTree regions. In several cases, forest owners can exclude the public from harvesting NWFP by law (Valladolid, Suceava, Latvia), whereas in other cases such exclusion is discretional (Styria, Catalonia, Alentejo), or exceptional (W. Wales & Valleys and Bursa). However, in practice in the majority of the cases forest owners are rather unable to prevent the public harvesting NWFPs on their land.

**Collection of NWFP for commercial purposes**

In most of the StarTree regions, the owner has the right to exclude the public from the commercial use of NWFPs from his land. This right can be transferred to a third party (by agreement, sale or rental) by the owner or they can take advantage of it themselves. The right to exclude in some cases is directly granted by provision of the law but for most products it is at the discretion of the owner/holder as the law gives the right to decide about exclusion and how to do it to the owner/holder. Only in North Karelia everyman's right also applies to the commercial use of most NWFP resources (e.g. mushrooms, berries, cones and fruit lying on the ground).

In practice, the exclusion of commercial users is less affected by informal norms compared with the case of public access. The forest owner can physically exclude commercial users, by fencing, closing roads, putting


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signs and so on, according to the products, yet this is very rarely put in practice and in few cases is even prohibited (Scotland and Finland).

A common feature of the case studies is the fact that, in practice, ownership of the NWFPs is acquired based on the first claimant rule – thus for most of the NWFPs a commercial collector becomes *de facto* the owner of the products harvested, yet legally he may or may not be entitled to harvest them. Increasing use of seasonal organized collection by specially hired professional collectors from outside a region, seems to indicate a trend for the organization of activities on a profitable and systematic basis in some StarTree regions. This use of organized labour can be a source of conflict between the law and what happens on the ground.

## Instruments regulating NWFP collection

The most prevalent harvesting instruments are of a regulatory nature (62% of all identified harvesting instruments) – namely, legislation concerning harvesting rights, permits and quotas, as well as the limitation of areas where harvesting can take place. Frequently these regulations are accompanied by the payment of license or harvesting fees, which means they are a form of an economic instrument. Other economic instruments include financial assistance for the modernization of forest companies or subsidies for the purchase of technical equipment. Informational instruments include mandatory training of NWFP collectors in and also voluntary NWFP collection codes. Other instruments include agreements between forest owners and collectors.

### Selling and leasing collection rights

Another policy instrument that was explored by StarTree is the selling of the right to collect NWFP. This is based on the premise that the separation of the forest ownership attributes (e.g. ownership on land and ownership on NWFPs) could facilitate the development of economic activities. The leasing of private forest land for the purposes of exclusive access to NWFP use is known in most regions, and sometimes practiced, but rarely in the case of NWFPs.

The selling of rights to collect NWFPs is rather more often practiced in public forests than in private forests. In public forests, the sale of the right to collect NWFPs takes the form of a royalty similar to the stumpage system practiced for timber selling. In rare cases, sale of the right to collect is intended to cover only the costs of administrating the license.

### Main messages:

- there are many rules for NWFPs withdrawal and exclusion that are not contained within the law, e.g. customary rules/rights give priority in collecting mushrooms to the local people, the others may be not allowed;
- there are situations when the rules defined by laws and common practices are totally different, e.g. by law the forest owner or the pickers are obliged to ask the authorities for a permit to collect berries or mushrooms, but in reality they never do so. Also, the owners of the land or the owners of the right to collect NWFPs in an area may be allowed to exclude others, but this right is rarely used except


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when done by the forest administration. Equally, the products may be collected ostensibly for self-consumption, but once processed, they are sold to local restaurants or marketed labelled as home-made products.

# 6 Role of innovation in NWFP development

In this section we explore the conceptual basis for work on innovation. We were interested in a broad range of **types of innovation** (see Figure 10) and different **levels of novelty** (radical and incremental innovations).

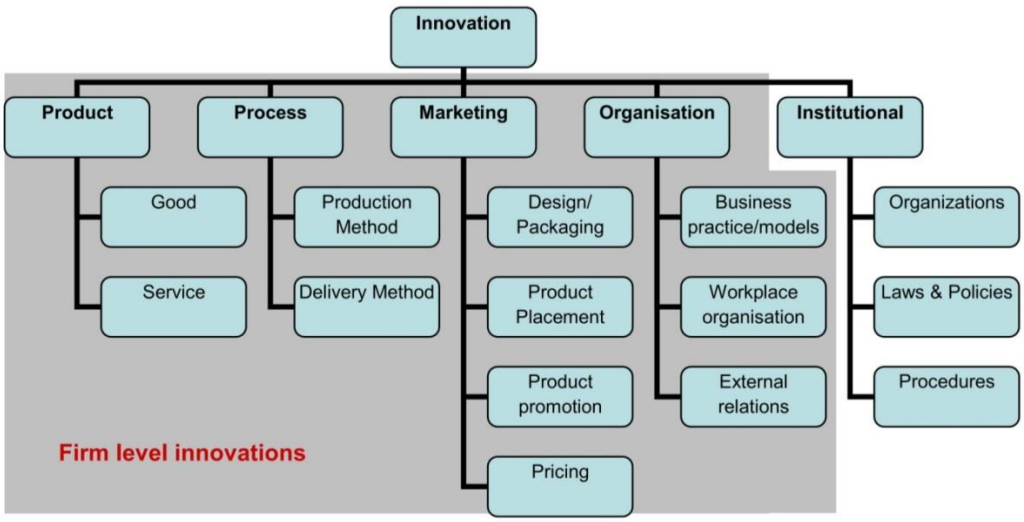


Figure 10: Types of innovation (modified from OECD 2005)

According to OECD (2005), innovations may be classified into product, process, marketing and organisational innovations. We further add institutional innovation as a separate category (Weiss et al 2010).

- *product innovations*: new or significantly improved goods or services (including technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics);
- *process innovations*: new or significantly improved production or delivery methods (including significant changes in techniques, equipment and/or software);
- *marketing innovations*: new marketing methods (including significant changes in product design or packaging, product placement, product promotion or pricing);
- *organisational innovations*: new organisational methods in a firm's business practices, workplace organisation or external relations.
- *institutional innovations*: changes in the political-institutional framework of the sector. Many improvements or novelties cannot be implemented by market actors alone but depend on changes in the policy field or procedures (regulations or incentives) or joint action supported by public or


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semi-public organisation such as authorities or interest groups. This may be the creation of new markets (e.g. carbon trading) or joint actions (e.g. co-operation in the form of forest owners associations, industry cluster initiatives, etc.).

In the StarTree project we could find examples of innovations in each of these categories (see also Table 2).

## Overview of innovation policies in the StarTree regions

From our analysis of existing innovation programmes we observe from some **common features** of measures that support NWFP:

- **Rural development plans for building growth opportunities**
  In nearly all regions the rural development plans (2007-2013 and their successors for 2014-2020) are important support to rural economic growth. This includes the LEADER+ programme (2007-2013) which has been used to good effect by NWFP enterprises (e.g. for mugolio in Alto Adige[10] ) and is to be continued in the 2014-2020 Rural Development Plan. LEADER is unique in that it seeks to facilitate innovation with funding decisions accepting a high level of risk than is usually the case. A minimum of 5% of the Rural Development Plan regional budget has to be allotted to LEADER but regions can allocate a higher proportion of funds to LEADER if they wish. The attitude of entrepreneurs and investors to risk is an important aspect of innovation. Other components thereof which have the potential to be used for NWFPs are measures related to the competitiveness of agriculture and forestry (formerly Axis 1).

- **Regional policies that explicitly address NWFPs**
  Many regions have policies at the regional and local levels that deal with and are; or might become important for NWFPs. Most important, all programmes that explicitly deal with NWFPs address a specific product, e.g. in Valladolid it is mushrooms and pine nuts, in Catalonia it is cork, chestnuts, mushrooms, pine kernels and aromatics and herbs, in North Karelia it is mushrooms, sap and berries, in Styria it is deer, mushrooms and tourism, in Waldmärker it is honey and bee-keeping and in Bursa for chestnuts, pine nuts and truffles.

- **Regional development policies are often used for NWFPs**
  Many of the policy programmes that are mentioned as (potentially) important for NWFPs are programmes that aim at supporting small scale businesses directly or through the development of markets in the regions. These policies aim at fostering research and investigation activities into products of relevance to the region. One notable example are the regional policies of West Wales and The Valleys where it is the drive for job-security that leads to an emphasis on developing the local food sector with grant schemes for such developments while NWFPs can also be supported by the agri-environment scheme which includes farm woodlands. Another example is the

[10] http://agris.fao.org/agris-search/search.do?recordID=IT2007601196 and https://innoforce.boku.ac.at/publications/AT_06_4%205_P30-33_BattPiet.pdf



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Osrednjeslovenska region, where the regional development goals seek to strengthen the local economies, such as to develop enterprise clusters and to explore business opportunities.

- **Research and innovation policies are most often general in scale with specific programmes at regional level**
  The innovation policies mentioned by the CSRs were most often technical and research intensive national Research & Development strategies targeted at scientific research. It is possible to use these for innovation and advancement of NWFPs. In addition, very specific policy programmes targeting NWFPs are sometimes mentioned: this is the case for the advancement of research in mycology and the genetics of *Pinus pinaster* (Valladolid), the planning of phytosanitary measures for chestnut trees (Catalonia) or the development of renewable resources from agricultural and forestry (Waldmärker). Some target the general enhancement of production and marketing (Bursa), or more explicitly are targeted at the products: to encourage the (chestnut) sector with possibilities for increase (Catalonia).

To sum up; there is brisk activity on the part of governments and administrative bodies as well as economic sector organisations which can be fruitful for NWFPs.

# 7 Challenges for future research

The picture which emerges from the StarTree research is one which demonstrates the central role of NWFPs in the forest culture of Europe. Personal collection of wild resources from natural forests characterises the NWFP sector in all countries. Unfortunately it is not possible to determine the numbers of people involved nor the volumes they collect or the dominant uses to which they are put. There is most information available for mass market products such as cork, pine nuts and some mushrooms which are significant exports from a small number of countries. A great many NWFPs are used in specialised markets as niche or territorial products. Little is known of the full extent of this activity and it is characterised by high levels of innovation and is often employed to diversify incomes. Several case studies of entrepreneurs producing niche products suggest that life-style choices may be a factor in their development. There has been rapid growth of embedded products where the NWFPs are marketed as an intrinsic component of services. Many niche products may also be cashing in on connections with the landscape and older ways of living. It is this rather than introduction of new mass products which is likely to represent the future of NWFPs across much of Europe.

Access and harvesting rights for NWFP are distributed among a variety of laws and regulations at several administrative levels depending on the specific arrangements in the country and region. Some countries (e.g. UK) have no formal regulations for NWFPs at all while others are highly regulated (e.g. Italy). These differences to some extent reflect the nature of the products, the extent and history of trade and the prevailing forest culture. The legal restrictions on NWFPs are modified by local practices and some such as the right to exclude the public from personal use, owners are unable to use. Some restrictions on forest management designed to protect the integrity of timber production objectives could be a significant barrier


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to the introduction of NWFP management. The formulation of regulations and the ability to exercise rights are important structural elements of the NWFP sector. There is much ambiguity in the formulation and exercise of what is often a palimpsest of rights and this leads to a range of conflicts which are not easily resolved.

Innovation is a key to resolving some of these conflicts and addressing needs and an understanding of where and how to foster it is an indispensable tool for achieving the objectives of NWFP policy. Innovation can be fostered by specific instruments and measures but these may also act as barriers if applied inappropriately. Work has commenced on assessing the most appropriate ways of encouraging different forms of innovation. For now we see that the NWFP sector is alive with innovation with new products, enterprises and indeed sectors emerging across Europe.

Turning ideas into successful enterprises is something which is fraught with regulations and requires many permits, official registrations and can be costly. Countries vary widely in the difficulty of negotiating these regulations and this will have an impact on the level of turn-over in new enterprises. There are several ways in which EU, national and private funding is used to assist rural enterprises overcome these hurdles.

Our story is one of great complexity with many gaps in knowledge and much work to be done. Rediscovering NWFPs has the potential to stimulate a reawakening and updating of forest culture in Europe. However, there are risks involved in this – not least conservation of the resources themselves and resolution of conflicts between personal and commercial users. There are some ethical issues to be debated such as which provide the greatest public good – the promotion of personal use or the development of rural enterprises and jobs? Might it be possible to do both or will we need to trade one off against the other?

## Key challenges

The most significant of the gaps in knowledge which have been identified by this report are:

- poor trade data arising from difficulty of tracking NWFPs though the HS system of customs codes
- no formal statistics on the numbers of people picking or volumes harvested for personal use
- little use of silviculture, models or decision support for NWFPs in forest management plans
- forest management advice only available for a limited number of mass market NWFPs
- limited assessment of conservation status of NWFPs
- conflict resolution between competing rights holders especially between personal and commercial users
- no clear legal distinction between personal use under everyman's rights and commercial harvesting under permits and licenses
- little is known of the relationship between enterprise activity especially for embedded products, well-being and forest culture


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- the most effective means to foster rural development through creation and promotion of NWFP enterprises



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