

ENTREPRENEURSHIP IN THE FOREST SECTOR IN EUROPE

Anssi Niskanen, Bill Slee, Pekka Ollongvist, Davide Pettenella,
Laura Bouriaud and Ewald Rametsteiner

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University of Joensuu
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Foreword

The COST Action E30¹ entitled ‘Economic integration of urban consumers’ demand and rural forestry production’ was implemented between September 2002 and September 2006. Altogether 21 European countries participated in this work, including Austria, Bulgaria, Croatia, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Lithuania, the Netherlands, Norway, Poland, Portugal, Romania, Sweden, Switzerland and United Kingdom.

The main objective of the Action was to gain a better understanding of the problems and possible solutions of the forest-based entrepreneurship in small-scale forestry, wood processing and non-wood forest products and services aiming at improved employment and income in rural areas. The Action operated under the chairmanship of Dr. Anssi Niskanen (Finland) and Dr. Ewald Rametsteiner (Austria) in three working groups (WGs):

- WG 1 on small-scale forestry, led by Prof. Bill Slee (United Kingdom) and Dr. Laura Bouriaud (Romania)
- WG 2 on wood processing industries, led by Prof. Anders Lunnan (Norway) and Prof. Pekka Ollonqvist (Finland)
- WG3 on non-wood forest products and services, led by Prof. Davide Pettenella (Italy) and Prof. Udo Mantau (Germany)

In these working groups, the Action focused especially on three research questions:

- What are the factors affecting the competitiveness of forest – wood / non-wood / services – consumer chain?
- What are the main barriers and prospects to entrepreneurship?
- What kind of problems and opportunities do exist in enterprise development?

In the search for answers for these questions, the action was implemented in two phases. In the first phase of the Action, harmonised information on state-of-the-art in the field of the Action working groups and the Action research questions were collected. These country studies were published in: Jäger, L. (ed.). 2005. Forest sector entrepreneurship in Europe: Country studies. *Acta Silvatica & Lignaria Hungarica*. Special Edition 2005. 811 p.

The country studies and the experiences of the participating researchers were used to determine the key issues for an in-depth analysis in the second part of the Action. The results of these in-depth analyses were published in: Niskanen, A. (ed.). 2006. Issues affecting enterprise development in the forest sector in Europe. Faculty of Forestry, University of Joensuu. Research notes 169. 406 p.

These two main reports of the COST Action E30, as well as other available publications from the Action and elsewhere, scientific papers presented in the Action workshops and the reports of Action Short Term Scientific Mission -programme, were used to compile this report. The purpose of this report is to present an overall summary of the results and conclusions of the COST Action E30.

Making this report was possible, first of all, because of the interest of the enthusiast scientists in COST Action E30 and their work for the Action without any financial compensation. The report was divided into six sections, in which section one was

¹ <http://www.joensuu.fi/coste30>.

prepared jointly by all of the authors and section two by Dr. Niskanen with the help of Dr. Rametsteiner. Section three was written by Prof. Slee, section four by Prof. Ollonqvist and section five by Prof. Pettenella. Section six was written by Dr. Niskanen with the help of Dr. Bouriaud.

Support for the Action and this report was received from the COST Office at the European Science Foundation. Ms Saija Miina made the layout of the report and Ms Henna Snellman the language editing. Our sincerest thank you to all who have contributed in the preparation of this report.

Joensuu, January 2007

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COST (European COoperation in the field of Scientific and Technical Research) is an intergovernmental framework for the coordination of nationally-funded research at a European level, based on a flexible institutional structure. COST research networks are called Actions. Cooperation takes the form of concerted activities. More information on COST: <http://www.cost.esf.org/>

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Summary

Europe is currently in the whirl of globalisation and especially many branches of manufacturing industries delocalise their production in countries where production costs are low. Another major problem in European economy is the ageing of population which means rapidly increasing public expenditure in the social services. For these reasons, many services provided by the public sector today will be increasingly supplied for by the private sector in the future. The role of enterprises and entrepreneurship is thus most likely to expand.

Globalisation and the birth and booming of the so-called information society have deepened the gap between rural and urban areas. Urban areas provide better facilities especially for enterprises to succeed due to the accumulation of knowledge in large information agglomerations. Rural areas provide fewer opportunities not only for the enterprises, but also for their workforce. Cities, towns and their close-by neighbourhoods are more attractive for companies and their personnel than the rural areas with poor infrastructure in communication and transportation.

Due to the urban environment becoming more popular form of dwelling also the largest growth in purchasing power for products and services exists in the urban and semi-urban areas. Meeting the demands of the urban and semi-urban population is a key challenge to the rural areas. If the demand of urban and semi-urban residents can be transformed into that of rural production and rural services, it would benefit employment, income and economic development in these areas.

To interconnect the demands of the urban and semi-urban residents into the products and services that forests provide is a challenge to the forest sector. Enterprises hold an essential role in understanding the characteristics of the evolving demands and efficiently satisfying those. This will be increasingly the case also in the forest sector, which has – unfortunately – paid only little attention on entrepreneurship until recently.

But how prepared is the forest sector to actually meet the future challenges in order to develop new entrepreneurship and fulfil the goals of the growing rural developments? This particular question has been studied from the perspectives of three working group areas of COST Action E30 in this report.

The report is divided into six sections. **The first section** discusses the driving forces and policies affecting entrepreneurship in the forest sector. It suggests that entrepreneurship has not been a major issue nor has it been emphasised especially in the production of forest resources. This fact together with a high diversity of the patterns in forestry and forest ownership in Europe limits the scope of enterprise development in conventional forestry. At the same time, however, a demand for environmentally friendly products is increasingly providing new opportunities for entrepreneurship. For example, some particular food products which originate from the forests, various forms of nature tourism and recreation services are increasingly requested in Europe.

The demand for wood products in the future appears to polarise towards two basic subgroups: (i) standardised, mass produced commodities and (ii) design and quality products frequently supported by a high-level of customisation. The options for development in primary and secondary wood product industries follow this particular grouping. Small-scale wood processing entrepreneurship may develop either (i) together with the international wood product value chains arranged by international companies,

or (ii) more autonomously through qualitative development with intra firm arrangements inside industrial districts or vertical value chains.

The second section introduces some theoretical approaches relevant to the regional economic growth, firm performance and enterprise development. It concludes that due to the evolution of regional economic theories, emphasis has moved from Keynesian applications (supporting, for example, subsidies for forestry investments) and global capitalism (supporting e.g. cost reductions in production) towards more innovatively driven development approaches. In other words, according to the current understanding the capital accumulation and the amount of physical resources – though often emphasised in the forest sector – play a smaller role than knowledge, networking and institutions in explaining economic developments.

Industrial economists and management strategists have explained the mutually interesting question on determining firms' performances from distinct perspectives. In the industrial organisation perspective, the structure of industry is explained to be the most important factor affecting a single firm's performance. In the strategic management perspective, firm's endogenous resources and capabilities are seen most important for the enterprise's competitiveness. Recently, it has been accepted that both factors, the industry specific and the firm specific factors, play a role in explaining the performance of the firms.

An increasing number of economic development theories emphasise the role of innovations. In innovation systems approach, the emphasis is put on the institutions, the actors involved and their interaction structuring economic and innovative activities. Following the innovation systems approach, it is important to note that new enterprises, similarly to the innovations, do not follow the linear model from research and development to the establishment of businesses. New businesses or existing businesses expanding are rather embedded in an institutional system which should support the development of entrepreneurial activities.

The third section of the report summarises the key findings of the working group one (WG 1) of COST Action E30 on small-scale forestry. According to these findings, it is evident that the connection between small-scale forestry and rural development is highly varied from one part of Europe to another with small-scale forest owners contributing substantial amounts of wood raw material into the wood supply chain in some countries and almost nothing in others.

Without a clear understanding of the characteristics of demand on forest products, the high diversity of forest owners' goals, motives and attitudes whereas the development of local wood and non-wood processing or services is discussed, or without clear ownership and property rights, efforts to develop the forest-based entrepreneurship may be vague. Unfortunately, the characteristics of demand of many non-wood forest products and services or the possibilities for new uses of wood and forests are less understood in forestry (and/or by forestry professionals) than the demand of timber and traditional wood products.

Given the substantial diseconomies of small size, there is a need for co-operative or other institutional structures (such as forest owners' associations) to deliver scale economies in the non-industrial private forestry sector, if the small-scale forests are to contribute more to the rural development through a provision of wood and non-wood products and services. Forest owners' co-operatives or associations which create

preconditions for entrepreneurial activity among forest owners exist already in many countries.

One of the major challenges facing forest owners' associations is the multi-functionality of forests and the enormous diversity of owners' motivations and values. Since forest owners are such a broad church of values and attitudes, how are the forest owners' associations able to adequately cater for all? The historic mission of forest owners' associations to ensure a controlled wood supply to industrial processors may be challenged in the future by a range of needs of the forest owners, which creates perhaps dissent and disagreement about the roles and modus operandi in the everyday life of these associations.

The fourth section of the report summarises the key findings of the working group two (WG 2) of COST Action E30 on small- and medium scale wood processing enterprises. It also includes results of a research on enterprise development in forestry contracting.

The majority of problems in business infrastructure of forestry contracting are related to low profitability, poor business growth opportunities and limited opportunities of new entrepreneurship. Pressure on the prices of forest operations are driven by a hard global competition on wood products markets that emphasise the cost efficiency of wood harvesting, perhaps more strongly than elsewhere in the forestry wood chain. Hard competition between harvesting enterprises and customers' overriding power either through tendering systems or through an imbalance in size in direct negotiations also restricts business development opportunities in forestry contracting. Entrepreneurship is further impeded by low credit ratings and consequently high interest rates on loans. The majority of the harvesting enterprises are often small which make the owners face with problems arising from a parallel management of the operational, business and strategic issues.

The resource based and the competence based views, respectively, provide a more concrete theoretical basis explaining the competitive advantages of primary wood processing enterprises than the views emphasising innovativeness or the developing of superior business concepts. This is due to standard products' production where majority of the production is sold in bulk product markets. Therefore the competitive advantages of primary wood processing industries mainly rely on the well functioning production and management processes and the related process technologies. Innovations are not only dependent on the available technological opportunities, but they also rely on the performance of the innovation system, and on a supportive regulatory and competitive environment.

Firms in the primary wood processing industries are typically weakly integrated with the secondary wood processing industries producing structural timber products and system components. The weak integration downflow is evident also among the firms of the secondary wood industries. This is indicated by a low degree of prefabrication and integration of secondary wood industries into construction industries. For example, the wood product manufacturers have fewer contacts with the on-site operators than what is typical within the concrete industry.

Today, the SMEs in wood processing industries should develop their business strategies more on the customer needs than on the maintaining of competitive edge based on the cost efficiency alone. Some mills operating in the United Kingdom, for example, have focused their business strategies on the house building markets with structural

timbers. There are business opportunities for timber frame solutions also in the house construction markets elsewhere in Europe.

Business delocalisation means a transfer of production potential from one area to another. Recently, many forest sector enterprises and even whole industrial groups, have reallocated their productive units outside their national borders. The strategic decisions on delocalisation are aimed towards lower production costs or expanding the product markets of a particular firm. These targets were identified among Italian firms but can be considered valid also in other regions. For example, access to new timber resources was found valid in the delocalisation of Finnish corporations to the Baltic countries.

Delocalisation can be of help in the overall developments in the country of destination. Especially, if the relocation of activities is broad – including investments in physical infrastructures (transport and logistics), business-friendly institutional infrastructure, education and training (such as reduction of local bureaucracy), safeguard of access to financial resources and establishment of organisations being able to represent the interests of the investors – delocalisation can provide concrete benefits. In other words, it is necessary for higher benefits not only to relocate individual business activities abroad, but also to transfer the whole system of operations to a new location.

The fifth section of the report summarises the key findings of the working group three (WG 3) of the COST Action E30 on non-wood forest products and services. Among other things, the issues relevant for a better conceptual understanding of the factors affecting the competitiveness of non-wood forest products and services are being discussed. Among those is a system of classifying terms for forest products that has been developed in the Action² to create a scientific clarity thus removing negative connotations from forest resources and presenting them as a broad variety of attractive goods and services. Based on the system of the classifying terms a new taxonomy on the *definitions* for non-wood forest products and services has been suggested. This particular system is open to all forest associated goods (commodities) and services without excluding any of the product categories, as the ‘non-wood’ -classifications tend to do. The suggested definition for forest resources is:

FOrest Goods and Services are of resources of biological origin, associated with forests, other wooded land and trees outside forests (FOGS).

Beside the system of classification and includable definitions for forest goods and services, the fifth section also discusses the common frame of non-wood forest products and services’ *indicators*.³ A critical look of the empirical examples of non-wood forest products and services (NWFP&S) shows that it is almost impossible to take regional and local variations concerning the importance of indicators into account within a country. According to certain regions and social structures, NWFP&S are predominantly relevant in rural livelihoods but also in urban areas when related to the demands of the citizens’ lifestyles. This heterogeneity is probably among the most essential reasons why NWFP&S have had only little success in finding institutional, marketing or business development support in many countries.

Other forest services and products than wood are playing an increasing role in the rural economies in Europe also as a consequence of the decreasing prices of the wood products. Based on the case studies related to the recreational services of forests from

2 Mantau et al. (2006)

3 Seeland and Staniszewski (2006)

five European countries, it seems that the impulses from outside the forest sector have been of primary importance for the development of the forest-based service businesses. Similarly, the impulse to develop ideas into products and services also tends to originate from individual innovators rather than as a result of an organisational impetus.

When it comes to the delivering of products and services, a broader range of actors become critical. The cases studied indicate that knowledge and information to reduce risks of operations, financing to develop infrastructure and services, and the co-ordination and development of linkages between actors across the forestry, tourism/recreation, economic development and environmental protection sectors are fundamental. In some instances, however, whilst the forest land is utilised, products and services are delivered without any interaction with the forestry actors.

From a marketing point of view, the sector of non-wood forest products and services is very heterogeneous. It includes a large variety of both products (from food products to handicrafts) and services (from recreation to funerals), and it is connected with many branches of the economy and social life, such as food industry, education, recreation and tourism, decoration, medicine and health care, sport, and even art and music. Both marketable (food specialities, nature tourism packages) and non-marketable (landscape, clean air, biodiversity) products and services are supplied, which makes marketing efforts even more complicated.

Despite the heterogeneity, the whole sector can still be seen as product oriented which should be shifted clearly to a more customer oriented direction. Market research to obtain precise information on customer needs and demands is essential. Since in some cases small and micro enterprises in the rural areas cannot access this information alone, public institutions and the so-called gatekeepers of the marketing intelligence could support these developments.

To increase the possibilities of commercial success in the non-wood forest product enterprises, producers need to develop greater product differentiation and move up the value chain towards more innovative specialised production. A very important tool for successful marketing is quality control which logically leads to a better standardisation and recognised trademarks for various non-wood products.

The sixth section of the report consists of overall conclusions of this report. It appears, as prior to the work in COST Action E30 that entrepreneurship has not been a major research issue of the forest sector in Europe prior to the work of the COST Action E30. Historically, the focus in forest research has been in wood production and forest ecology, although a wider perspective on the resources and their use could have supported the overall aim of forest sustainability equally well. In the future, more attention should be called for the forest sector entrepreneurship simply for the reason that private actors often are efficient and flexible in supporting and developing the demanded use of forest resources. It will be most interesting for the future research to explore opportunities on how forests could contribute to the different demands of societies, and their different value chains including communication, living and housing, packaging and logistics, energy, health care, nutrition and tourism, just to mention a few.

1. Entrepreneurship and the forest sector

Summary of key findings in chapter one

1. The role of enterprises and entrepreneurship in economic development is likely to increase in Europe in the future due to the limited possibilities in expanding public sector activities. Many services currently provided by the public sector will be increasingly supplied for in the future through markets and enterprises of the private sector.
2. Entrepreneurship has not been a major issue especially in the production of forest resources. This fact together with a high diversity of the patterns in forestry and forest ownership in Europe limits the scope of enterprise development in conventional forestry.
3. At the same time, demand for environmentally friendly products is increasing. Some particular food products which originate from the forests, various forms of nature tourism and recreation services are increasingly requested in Europe.
4. A demand for wood products tends to polarise towards two basic subgroups: (i) standardised, mass produced commodities and (ii) design and quality products frequently supported by high-level of customisation. The development options in primary and secondary wood product industries follow this particular grouping. Small-scale wood processing entrepreneurship may either (i) develop together with the international wood product value chains arranged by international companies, or (ii) more autonomously through qualitative development with intra firm arrangements inside industrial districts or vertical value chains.

Key messages from chapter one to policy makers, practitioners and forestry institutions

1. Forest sector enterprises and entrepreneurship is affected by many policies that can either impede or foster decisions on engaging entrepreneurship. For example, privatisation of public forest services would immediately support private entrepreneurship. If developing entrepreneurship is set as an objective in forestry, public policies should be re-evaluated and revised accordingly.
2. Clearly defined property rights, good understanding of the motivation of root-level forest owners and the development of forest owners' associations are among the key issues to maintain the interest of forest owners on forestry.
3. Improved access to international value chains through business partnerships and investments on intra-firm abilities (e.g. innovations and business knowledge) would support the development of sustainable competitive advantages in small and medium size wood processing enterprises.
4. Successful marketing and understanding the characteristics of the demands of urban consumers, in particular, are key issues in meeting the growing demand for many non-wood forest products and services in the future.

1.1. Driving forces for entrepreneurship in rural Europe

Due to a general decline in the prospects for commodity agriculture in Europe, and a similar trend in the forest sector, many rural areas have faced economic and socio-economic down-turns during the last two to three decades. Lack of supplementary sources of livelihood in many of these areas has resulted to increasing unemployment and emigration. Though some rural areas have been able to overcome the structural changes in agriculture and succeeded in developing new and viable livelihoods in services and manufacturing, many areas, especially those remote from urban centres, have not been as successful.

For different reasons but with similar effects, neither the farm nor forest sectors have a recent history of being highly entrepreneurial. First, in the farm sector many would argue that subsidies have stifled entrepreneurship⁴. The production of undifferentiated commodities carried little risk when there was a policy-framed floor to the market. Second, in areas of large-scale forestry, the frequently oligopolistic structure of the wood processing sector in many areas has given the primary producer weak negotiation power.

Despite some advantages of the rural areas, such as lower land prices, attractive environment for living and housing, and occasionally lower labour costs, the prospects for economic development are generally better in the urban or semi-urban areas. Though exceptions do exist, as in the case of specific recreational activities which need to take place in a particular type of area, the disadvantage of especially remote rural areas to most economic activities is clear.

Economic development in Europe in 2000s has been rather moderate. The growth in Gross Domestic Production (GDP), for example, has been around one or two percent at the early 2000 in most Western European countries (UNECE 2006). Europe is currently in the whirl of globalisation, and especially many branches of manufacturing industries, in particular, delocalise their production to countries where production costs are lower. Another major problem in European economy is the ageing of population which means fast increasing public expenditure in social services.

Globalisation and the birth and booming of the so-called information society have deepened the gap between rural and urban areas. The urban areas provide better facilities especially for global enterprises to succeed due to knowledge accumulation in large information agglomerations whereas the rural areas provide fewer opportunities not only for the global enterprises, but also for their workforce. Cities, towns and their close-by neighbourhoods are found more attractive for companies and their personnel than the rural areas with poor infrastructure in knowledge and transportation (Hytinen et al. 2002).

Due to the urban and semi-urban environment becoming more popular form of dwelling also the largest growth in purchasing products and services exists in these areas. Meeting the demands of the urban and semi-urban population is a key challenge to the rural areas. If the demand of urban and semi-urban residents can be transformed into that of production and services, it would benefit employment, income and economic development in rural areas.

It should be noticed, however, that the land-based sector is a relatively small part of the contemporary rural economy. Even in parts of northern Scandinavia the contribution

⁴ Entrepreneurship is defined here as individuals' perception of new economic opportunities and the subsequent introduction of new ideas in the markets (Audretsch 2003).

of farming and forestry to regional GDP rarely exceeds ten percent. The visual appearance of the landscape and its dominance by primary use masks the economic realities of the actual economic and employment base. The land-based sector has decreased tenfold in the last fifty years.

The role of enterprises and entrepreneurship in economic development is likely to increase in Europe in the future due to the limited possibilities to expand the public sector activities in most countries. Due to the ageing of the population throughout Europe and the fast growing budget deficits particularly in some western economies, such as Italy, Germany and France, sharp cuts in public expenditure are to be expected. As a result, many services currently provided by the public sector will become increasingly supplied in the future by the private sector through markets and enterprises.

The ‘megatrends’ described above, i.e. globalisation, ageing of population and increasing pressure on public expenditure together with the sharpening edge between urban and rural parts in Europe, call for a greater attention for enterprises and entrepreneurship (Figure 1.1.) in rural economic development. With a profit motive, an entrepreneur may act more efficiently and apply more flexible forms of production and services than the public actor.

An increasing role of enterprises in the future provides one additional advantage to economic development. When competing with other enterprises, firms tend to displace less innovative firms in the markets, which should lead to a higher degree of economic efficiency in overall (Audretsch 2003).

The increasing role of the enterprises and entrepreneurship is especially challenging to the rural areas which are generally less attractive to entrepreneurial activities than the urban or semi-urban areas in Europe.

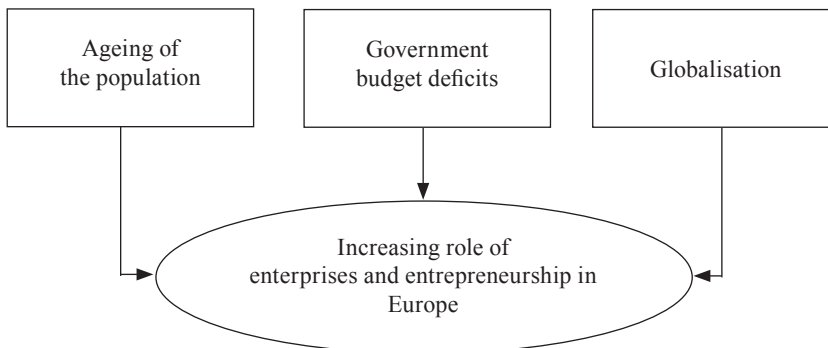


Figure 1.1. Current ‘megatrends’ calling for a greater attention on enterprises and entrepreneurship in Europe.

1.2. Policies affecting enterprises and entrepreneurship in the forest sector

Forest sector enterprises and entrepreneurship is affected by many policies that can either *impede* or *foster* decisions on engaging entrepreneurship. These policies can be divided into those of supporting the demand or to those of supplying for entrepreneurial activities. The *demand* side policies aim to elaborate the opportunities for enterprise development

and entrepreneurial activities. They include, for example, deregulation of entry in the markets, privatisation of public services and promotion of firm linkages or clustering. The *supply* side policies focus on promoting the capabilities of individuals and firms, and facilitating access to resources, e.g. via education and training, incubators, micro-credits and other financial incentives and various promo-campaigns. Policies can also directly change the *risk-reward* profile of an entrepreneur by shaping taxes, subsidies, labour market rules and bankruptcy regulations (Figure 1.2).

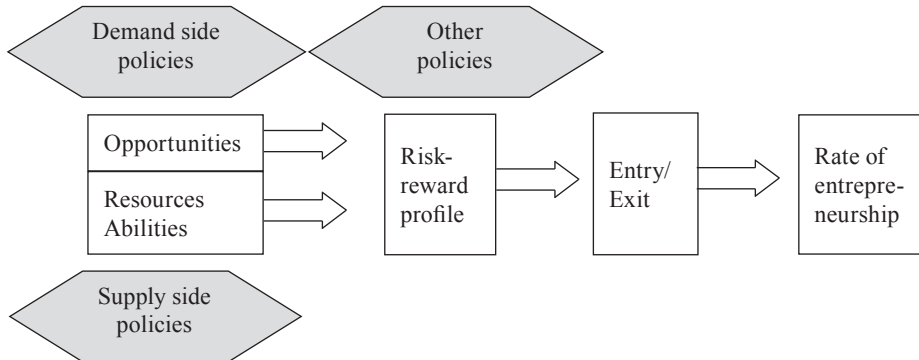


Figure 1.2. Structure of policies affecting forest sector entrepreneurship (modified from Audretsch 2003).

The *demand* for enterprises and entrepreneurship in the forest sector reflects the *opportunities* mainly in forestry, wood processing and forest services and products other than wood. If the opportunities are prominent, it is likely that the existing enterprises will develop further and new entrepreneurial activities will emerge, although due to a path dependency, creating new businesses in totally new business branches may be difficult. Entrepreneurial activities may include wood production, production of other forest products, processing and manufacturing of these forest-based products and a provision of forest-based services, e.g. in the form of nature-based tourism.

If the demand for forest-based enterprises is low, there are few opportunities for forest owners, wood processors and the providers of forest services to engage in the entrepreneurial activities for numerous reasons. For example, if the demand for wood is low compared to the forest growth, it is hard to build new business opportunities on wood production. As a comparison, if the demand on recreational or amenity services is low, as may be the case in remote and inaccessible rural areas, it may be difficult to find viable opportunities for a business in services. If the demand for wood as a source of bioenergy is high, but the ability to pay for wood for that purpose is low, this again provides little opportunities for forest owners’ business developments.

Often the demand for intangible services, such as landscape or noise protection, and for non-marketable assets, e.g. biological diversity, may be high. Despite the high demand, the opportunities for enterprises and new entrepreneurial activities may be low. Without markets where the demand and supply of intangible goods and services are able to meet, opportunities for entrepreneurial activities are minimal.

The demand side policies that encourage enterprise development and new entrepreneurship are different in the production of wood or other forest goods and services as well as in the manufacturing of these goods. Some examples of the demand side policies affecting enterprise development and new entrepreneurship in (i) small-scale wood production on private land, (ii) SMEs in wood processing industries and (iii) in forest-based services and products other than wood are illustrated in Table 1.1.

Table 1.1. Examples of demand side policies that elaborate enterprise development and opportunities for new forest-based entrepreneurship.

	Small-scale wood production on private land	SMEs in wood processing industries	Forest-based services and products other than wood
Deregulation or stimulation of the entry in the markets	Policies supporting joint-forest ownership and the formation of larger forest ownership units.	Policies supporting bioenergy investments in wood processing industries.	Policies supporting hunting tourism through the permission of hunting licenses on public land.
Privatisation of public services	Policies that lower the barriers for private enterprises to engage in services, such as forest management planning traditionally provided by a public actor.	Sales of state owned wood processing companies.	Policies that help to control public access on land to support tourism. Regulations to control common access on non-wood forest resources.
Promotion of firm linkages or clustering	Policies supporting the formation of and work in forest owners' associations.	Research and development programmes to increase the efficiency of wood processing and forest industry clusters.	Policies supporting firm networking, joint marketing and efforts to build-up enterprise associations.
Elaboration of the access to global value chains	Promotion and development of forest certification schemes.	Promotion of wood processing and forest industry companies in industrial and trade policies.	Marketing campaigns on public image of certain regions or areas.
Creating markets			Carbon sequestration, etc.

The *supply* response with regard to enterprise development and new entrepreneurship depends on the *resources* and *capabilities* of individuals and firms, their attitudes as well as on the cultural and institutional characteristics of a given region or country. This is equally important as the evolving opportunities for entrepreneurship. Any of the policies

increasing the opportunities for entrepreneurship illustrated in Table 1.1., for example, cannot be efficient, if there are not enough resources and capabilities among individuals and/or existing enterprises to take the advantage on the new opportunities.

Though the engagement to an entrepreneurial activity, i.e. to become an entrepreneur or to develop existing businesses, is an individual and firm level choice, it can be affected through the implementation of various policies. In the forest sector, policies that promote the resources and capacities of individuals and firms include, among other things, education and training, which help entrepreneurs and firms to run and develop their businesses. Similarly, various research and development programmes may increase the resources and capabilities of existing firms to succeed in their businesses or to provide new resources for new business applications.

Especially important in the forest sector are the supply side policies that facilitate the access of enterprises on wood and forest resources. These include regulations on sustainable forest management to secure long-term wood supply (Niskanen et al. 2006, submitted), development programmes to increase forest growing stock, road and information network building and maintenance. Though regulations on forest management can also stifle entrepreneurship, e.g. by de-motivating forest owners to use their forests due to hard obligations in re-planting, they are important in decreasing the wood processing industries' uncertainty on wood supply.

Table 1.2. Examples of supply side policies that support enterprise development and new forest-based entrepreneurship.

	Small-scale wood production on private land	SMEs in wood processing industries	Forest-based services and products other than wood
Promotion of resources and capacity of individuals and firms	Education and training of forest owners for forest management, timber harvesting and wood sales.	Education and training of entrepreneurs, managers, planners, workers etc. on business management and technical efficiency.	Policies supporting the establishment business incubators for evolving business ideas.
Facilitating access to resources	Regulations to secure long-term wood supply and subsidies to increase forest growing stock.	Policies supporting the building and maintenance of forest road and information network.	Provision of information on the predicted growth and yield of various forest products other than wood.
Improving the views on entrepreneurship	Promotional campaigns, education, research on entrepreneurship etc.	Promotional campaigns, education, research on entrepreneurship etc.	Promotional campaigns, education, research on entrepreneurship etc.
Institutional factors	Policies affecting the administrative level burden, the degree of taxation etc.	Policies affecting the administrative level burden, the degree of taxation etc.	Policies affecting the administrative level burden, the degree of taxation etc.

Supply side policies that help enterprises to get access to financing sources and credits may be important especially for evolving business opportunities. These are not important only for the reason that financing sources are necessary for investments, but also because the access to credits decrease the personnel risk of an entrepreneur in new businesses. Supply side policies designed to improve the views on entrepreneurship, such as promotional campaigns, and institutional factors (like the level of taxation for capital income) also directly affect the supply of entrepreneurship (Table 1.2.).

In principle, both the demand (Table 1.1.) and supply side (Table 1.2.) policies affect the risk and rewards of individuals and firms, and the impact on decisions to invest on enterprise development or to enter into new entrepreneurship (Figure 1.2.). Beside the demand and supply side policies, there are often other policies that directly change the *risk and reward profile* of an enterprise. These include general tax policies, subsidy policies, labour market rules, bankruptcy policies etc. These policies are seldom designed specifically for the forest sector.

One obstacle for the forest-based enterprise development is that entrepreneurial thinking is underdeveloped especially in the first parts of the forest – wood / non-wood / services – consumer chain (Niskanen 2005). In fact, it can be said that entrepreneurship has not been an issue, in particular, in the production of forest resources. Forestry policies are sometimes even used to increase forest resources and their use without any real attention on the demand for the products produced (Bull and Ferguson 2005).

In the forest sector, entrepreneurship of small- and medium-scale enterprises (SMEs) has a much stronger role than in the forest resources production. Forest sector SMEs include firms in wood processing, recreation and forest-based tourism activities. These companies are managed very much alike any other SME. Generally speaking, many SMEs face problems in the access to markets, business management and technical efficiency which is likely the case also in the forest sector.

On the other hand, SMEs in the forest sector as in any other sector have an advantage in being flexible and able to use local materials and resources in their production. Furthermore, business opportunities in local forestry-wood-processing-chains, if innovative and competitive also in the exogenous markets, may bring the highest added value to rural areas and closer to the origin where trees are growing. Essential for the success of local forest-based enterprises, e.g. in wood and non-wood processing industries, is to find suitable market niches, build new innovations and have a good business management competency.

1.3. Small-scale forestry in Europe

Small-scale forestry is a major part of the forest sector in many European countries. However, the exact definition of small-scale forestry is problematic and the term is often conflated with non-industrial private forestry (NIPF). Some NIPF forest units can be large, running from hundreds to thousands of hectares. However, there is a general situation, not found in all countries for particular socio-political reasons, in the NIPF sector dominated by farm forestry, i.e. farm holdings which are managed in association, if not necessarily juxtaposition, with an area of woodland.

There is a desire to gain an appreciation regarding the diversity of the pattern of small-scale forestry in Europe. Three main zones can be identified. First, there is a south-east Europe model of small-scale forestry found throughout the Balkan region

running as far as Austria to the north and Italy in the west. Here the dominant size of the forest holding is miniscule with many private holdings of less than one hectare. This is a product of a restitution process that returned former privately owned forest into the private sector whilst retaining a substantial part of the forest area under state control. The restored forest was often not of high quality woodland and it was located far from the home of the new owner which does not provide a promising seedbed for the growth of new entrepreneurship.

The second zone comprises of the Mediterranean fringe (and the whole of the Iberian peninsula). It is dominated by small-scale ownership units which often are remotely located from the associated farm or the place of residence. Previous uses of the woodland resources revolve principally around subsistence and the shift in rural areas from subsistence to market based activity has often meant considerable neglect of the woodland resources.

The third zone comprises of a swathe of Central Europe, including most of the countries around the core of the Alps. In these areas there has been a strong historical association between farming and forestry. The average size of NIPF is somewhat higher though there are quite significant variations between countries (Switzerland's NIPF sector contains many small units whereas the average NIPF holding in Austria is much larger). There often exists is a long history of regulation due to the need for environmental management with steep slopes and avalanches. The nation states in this zone have well established regulatory structures which often are supportive of the NIPF sector.

The fourth zone comprises of the Nordic areas. In the north the forest is larger and proportionately more important to farm-based enterprises than in any of the other zones. Average holdings are measured in tens of hectares rather than in single digit numbers. Much of the pattern of landholding is a direct response to land settlement and allocation in the 19th century. In the Nordic countries the state has tended to provide various means of supporting the NIPF sector, although there has been a tendency for some of the support to be weakened over the recent years. There are strong forest owners' associations and the historic importance of wood processing as well as the significant share of forest products in exports give forestry a high profile matching the high land cover.

Some might argue that the fifth zone comprises of the countries fringing the southern North Sea, including Denmark, United Kingdom, the Netherlands, Belgium and northern France. At a stretch, Ireland could be included in this zone, too. The average level of the forest cover is low, normally less than 15% of the land area. A typical NIPF unit in this zone is relatively small but in countries with larger sized farms, such as United Kingdom, there are also larger forest holdings. In these areas the amenity function is dominant and the economic activity based on wood production is moribund. The forest owners' associations are weakly developed and in only some parts of United Kingdom and Denmark there is found anything resembling the significant commercial management of NIPF trees.

There are two main transition zones: one from the Balkan model to the Nordic model, exemplified by the Baltic states (in which there is a significant increase in size and much more commercial opportunities in forest management than in other restitution forestry situations) and another across France in a transition from the Central European zone to the North Sea in the east, and the Mediterranean to the North Sea zone north and south of the Loire. Iceland (and some might also add Ireland) can be considered a special case.

In exploring the scope for entrepreneurship in Europe outside the Central European zone and the Nordic zone, with its Baltic transition area where the scale of forest ownership is that of compromising entrepreneurial possibilities, there are some major challenges.

First, we need to understand the motivations of the forest owners better. If they are not motivated to engage in entrepreneurial activities with their forests, there are only two possibilities. They are either entrepreneurial with few opportunities for entrepreneurial activity in their forests or they are not entrepreneurial although the forest resources might offer entrepreneurial possibilities. Given the structure of the forest industry and forest owners' role as price takers, at least with respect to conventional forestry products, the scope for entrepreneurship would seem to be somewhat limited. However, in the areas where non-timber forest products are being exploited, such as foliage, fungi or tourism enterprises, there may be more scope for entrepreneurship, especially where there are niche markets to be exploited.

Historically NIPF has had several roles including generating wood for the processing sector, as well as feeding domestic subsistence demands and providing opportunities for food and game products. In the countries with larger scale NIPF, the timber producing functions remain important. In countries with smaller sized NIPF holdings, a mixture of amenity functions and subsistence functions prevails, depending on the general economic conditions which in post-socialist countries often hinge around subsistence and in the wealthier western countries around game management and amenity.

According to Ní Dhubháin et al. (2006), a number of possible typologies can be suggested to classify forest owners' attitudes. There are groups of forest owners who have *economic attitudes* towards the forests and woodland. These attitudes include formal goals to extract economic benefits from timber forest production, informal goals to benefit from the non-wood forest products and services, and economically motivated goals related to the use of forestry as a secure investment. Another grouping of aims and motives of forest owners relate to their preference to use forests as a place for *consumption-based activities*. These forest owners 'consume' the wood and non-wood products for their personal use. Consumption-related forest owners can also be classified as *environmentalists* whose interests and aims often relate to wildlife conservation, or as those who value especially *social or intangible goods* provided by the forests. Yet another subset of owners can also be defined. These particular forest owners are to a high degree *indifferent* about managing their own forest resources. However, such forest owners are often keen to see the forests retained in family ownership, but are not engaged in the active management and may well live at a distance from their forest resources.

As seen from above, the motivations and values associated with forest ownership are enormously variable. In the Nordic and Central European countries a strong productivist ethos is still evident and it is nurtured by strong forest owners' associations. However, even in these countries, there is a strong amenity motivation of forest owners. They may wish to improve their tree stands, but today it is not a decision based on rational economic calculus. Broadly, it is possible to distinguish between a set of motives which direct a forest owner towards tree production and another set of motives more associated with the consumption of woodland, such as gamekeeping, recreational services and even the warm glow derived from forest ownership.

Considering the fact that NIPF can constitute in some areas the largest part of forest ownership, the decisions of the forest owners to manage their resources, can have profound repercussions for downstream processors. For example, the consumption

oriented forest owner may withhold supply, even when for good silvicultural reasons it would be in the best interest of the forest to receive some management activity. Thus new types of forest owners might be managing in ways that promote biodiversity or recreation interests, but undermining downstream opportunities for entrepreneurship. Nonetheless, woodland management of a 'light touch' might create a valued green infrastructure in which tourism, or just green living space may be enhanced. The marginal values of such opportunities are likely to be greater where woodland cover is light and the position of woodland is good.

There is a need to clarify the property rights especially in relation to non-timber forest products. What might be a commercial opportunity in one country may be a public good in another. Even within United Kingdom, a walk in the forest can be a private or a club-related good in England (members paying to get access in the forest) but is by law a free good whereas in Scotland a free access in the forests is by law. Given the trend in demands on the primary land use towards a greater importance of environmental goods and services, it is not surprising that there should be contentious debate about these new demands. Sometimes an exclusion is impossible and the forests remain public goods, whereas in other places property rights may be renegotiated or it may be possible to construct dynamic entrepreneurial opportunities around their exploitation. Sometimes the state acts in ways that create discretionary incentives for public good provision with which all forest owners will not engage.

There is a basic need to create supportive institutions which can lower the transaction costs and reduce the problems of failing to realise economies that afflict many small-scale forest owners. Forest owners' associations have a long history in some countries and a relatively recent one in others whereas in other countries the associations do not even exist. In those countries where there are well established forest owners' associations they provide crucial support in delivering forest management. These associations are recognised and valued by the government and they provide a degree of countervailing power to monopolistic purchasers of wood raw material. However, forest owners' associations can just as likely be effective blockers of new initiatives by individual enterprises serving forest owners (Kolström and Harstela 2005). In any case, where forest owners' associations are strong, they are the key agents in relation to the forestry entrepreneurship.

To summarise, the scope of enterprise development with conventional forestry is limited except where new woodland management services are able to adapt to the growing conditions of an absentee ownership. In some cases there may be a scope for entrepreneurial activity, but an industrial context of large-scale processors and strong forest owners' associations hardly is a healthy seedbed for entrepreneurship. The opportunities for entrepreneurship are more likely to arise in wealthy countries by providing forest services to well-off forest owners, often in ways nuanced more towards conservation and amenity than wood production. Wood energy is something of a 'wild card'. It has already been established as a household subsistence activity in all countries, but if, as expected, oil prices remain high, the scope for profitable fuelwood enterprise must increase.

1.4. Wood processing industries in Europe

Wood processing industries and corresponding value chains in Europe are characterised by a wide and diversified range of businesses. Wood product industries account to a total

direct turnover of about 148 Billion € employing directly about 1.6 million people in the European Union. Over a half of the turnover comes from the furniture industry. Primary wood processing industries (sawing, planing, impregnation and wood-based panels) cover about 20% and the secondary wood processing industries (building components and packaging) a little less than 20% from the total turnover (EuroStat analysed and processed by CEI-Bois).

There are two fundamental modes of value chains connecting the primary and secondary wood product industries, a) the wood product value chains arranged by international companies as a core firm of production or trade respectively, and b) intra-firm network structures between SMEs inside the relevant industrial districts or vertical value chains respectively. The extent and frequency of production and also capacity delocalisation are among the outcomes from the type a) developments. Large scale retail multinationals frequently apply short term partnership/delivery contracts in their dealing with SMEs. Subsequent competition among the applicant firms imply constant updating of competitiveness amongst those. The competitiveness of an SME is based on competitive and not comparative advantages in the contemporary global business arrangements. There is a distinction between a strong competitiveness implying productive use of inputs and a weak competitiveness created by lowest possible costs in input (Storper and Walker 1989). Cost leadership based on low unit costs of input is considered a weak source of competitiveness due to its temporary characteristics. The comparative advantages based on static structures have been substituted by competitive advantages (CAs) that concern contracts and trade between business partners. The preservation of CAs implies that an entrepreneur constantly evaluates the position of one's own business in the commercial infrastructure concerned.

Innovations play a central role in attaining and sustaining the CAs (see Asheim et al. 2003). Product and process innovations frequently provide CAs to high tech industry firms whereas business and institutional innovations are behind the CAs of low tech firms (see e.g. Hirsch-Kreinsen et al. 2003).

The role and options of SMEs in the business networks of large companies are based on contracting applying partnership or subcontracting. These firms deliver complementary products or accomplish specified stages in the wood product value chain concerned. These places can be, and also often are, involved in wood procurement, production of subsidiary products (e.g. products utilising primary wood industry residue) or in secondary wood product industries. Large firms have their major interests either in primary wood industries or in retail trade/distribution. The positive economies of scale constitute an important source for a strong competitiveness. An effective use of *large scale economies* is important in the forest sector developments which concern wood product value chains. Economies of scale are important for standardised products but do not always contribute to the high added value products (see Hyttinen et al. 2002). The major challenges related to scale economies are due to the inequality between the optimum scale of production in different stages of the value chain. The latter is among the major reasons behind the disassembling of intra firm value chains in firms of large wood product industries.

Construction (house & infrastructure) in general and the constructing of timber house frame especially are the current businesses where the potentials for increased wood product use exist. The furniture sector covers the largest share in the aggregate turnover of wood product industry inside the European Union but is of secondary importance

whereas the wood material use is considered. Wood based energy production is the major sector by using wood byproducts from wood product industries in many European countries.

There has been a gradual development in the integrative activities of large multinational companies in primary wood product industries. The creation of a multinational business especially through consolidations and/or business networking has become more and more common also in the European countries from the 1990s onwards. This development has been parallel to the creation of an integrated European market where coordinated norms, specifications and other institutional structures have gradually substituted the national ones. These multinational companies have in their prior history frequently been multi-product companies applying positive economies of scale in their intra company value chains. These industries tend to internationalise their input in roundwood management by strengthening the upflow of their internal value chains, i.e. by integrating into large scale industrial wood plantations.

The internationalisation of roundwood management is changing the relationship between the input of roundwood management and the location of primary wood product industry plants. Multinational companies create CAs through consolidations by applying positive economies of scale thus locating and relocating their production capacity according to the principles of production cost minimisation thus covering wood raw material and considering the constant availability of wood raw material at a more international basis.

There seems to be a positive relationship between the amount of wood resources and the role of primary and secondary wood product industries in different countries. Strong domestic roundwood resources have frequently provided a necessary condition for the original primary wood processing capacity creation. The strong secondary wood product industries (such as Italy, Portugal, United Kingdom, and Ireland to some extent) constitute their production on the use of imported wood materials irrespective of their national stocks of timber. The value chain solutions without national primary wood product markets have provided arrangements to preserve adequate and maybe also cost inefficient supply of primary wood products available for the secondary wood product industries. There are Italian and Danish firms in furniture industry that have recently delocalised their secondary wood component production to Romania and Bulgaria to increase their cost competitiveness. On the other hand, the public attempts in United Kingdom and Ireland to promote domestic roundwood production can be considered attempts to create CAs based on cost advantages in primary and component secondary wood production industries.

The large companies have frequently managed intra-firm downflow activities in their prior history (covering both primary and secondary wood product industries). They have gradually outsourced their downflow business activities (secondary wood product industries and retail businesses) and focused onto primary wood product industries. The economics behind the latter development is due to the global markets of standardised low added value wood based product markets. The effective positive economies of scale do not normally support the same rate of production throughout the value chain. The parallel globalisation of capital market investments has also accentuated these tendencies.

There are also found large-scale multinational companies at the other end of the value chain, i.e. large multinational retail companies that have upflow business network arrangements with companies producing secondary wood and fibre products (furniture,

house components etc.) or secondary and primary wood and fibre products (such as processed sawnwood and wood plates). These retail multinationals apply scale economies in marketing and logistics. In addition, the firms in the upflow of their value chains frequently apply production cost minimisation strategy. These multinational companies have been successful among the fast growing market segments of urban consumers whose consumption is characterised by the preferences to the standardised low cost products produced by the network of low cost subcontractors in the global network.

The growth of multinational retail companies has challenged many intra-firm networks of type b) between SMEs inside the relevant industrial districts or vertical value chains in the European context (primary producer, agent, distributor secondary producer) respectively. The latter is especially true with the value chains that have applied CAs based on their home markets. The SMEs applying craftsmanship traditions and CAs available in their local industrial districts have started to rearrange their value chain networks in European countries and especially in countries with high production costs. They intend to create high customer value in their products among the relevant market segments and arrange international marketing through professionally joint interest. The economic life of wood products has become shorter and the willingness to pay on craftsmanship quality has concentrated more on specific customer segments. The latter challenges high cost SMEs especially in the secondary but also in the primary wood product industries. The expanded market integration through EU enlargement process has challenged the national business CAs more and more through institutional harmonisation and consumer taste changes on the fundamental basis of production delocalisation solutions from downflow (market expansion options) to upflow (accessibility of wood and other input factors at competitive prices).

1.5. Forest resources other than wood in Europe

Forest services and products other than wood are playing an increasing role in the rural economies in Europe also as a consequence of the decreasing prices of wood products. Price reductions mainly affect rough wood products (trees sold standing and logs sold roadside) with remarkable consequences on profitability levels of timber production by the private and public forest owners. Small-scale low quality supply of wood products is mainly affected by this trend with the remarkable exception of wood for energy.

At the same time, a demand for environmentally friendly products is increasing in all highly industrialised countries (Burrows and Sanness 1998; Lober and Misen 1995). Many traditional products that once used to be strictly connected to the needs and consumption behaviour of low-income people are now regarded as natural health products which has become a remarkable factor positively affecting their competitiveness (FAO 1995; Meadley 1989).

Some particular food products and drinks are more requested in Europe than in the past as a consequence of the development of new trends such as the 'Mediterranean diet', the Italian/Spanish/French traditional quality cooking, the increased demand for organic products, natural cosmetics, cosmeto-food, products used in the aroma-therapy, bio-architecture, green-building etc. Rural development policies are also creating favourable conditions to stimulate Non-Wood Forest Products and Services (NWFP&S) markets: the reform of the Common Agriculture Policy has promoted the diversification of rural

activities and new sources of non-agricultural income in the European Union (EU) member countries.

In some Balkan countries outside EU, NWFP&S, such as mushrooms and chestnuts do sometimes play an increasing role as instruments of the local development (Yavuz et al. 1999). In many countries a positive integration has been observed between NWFP and tourism (Campos Palacin 1993; Pettenella 2001). In Mediterranean areas NWFP&S have positive trends in supply and demand and an increasing economic importance in the rural development. As reported in Table 1.3., NWFP&S play a remarkable role both in relation to commercial objectives and in terms of Total Economic Values (TEV) of the forest benefits. As stated by Merlo and Croitoru (2005), while wood and grazing are diminishing their roles as sources of income of the forest owners, tourism and non-wood forest products are increasing their importance to support rural life, especially in countries of higher income countries (see ‘northern’ Mediterranean countries in Table 1.3., i.e. Portugal, Spain, France and Italy).

Table 1.3. Average values of benefits from Mediterranean forest areas (Euro/ha/year) (Merlo and Croitoru 2005).

	Wood	NWFP	Grazing	Recreation	Hunting	Total	TEV
- Southern	12	4	32	n.a.	-	46	67
- Eastern	22	5	10	1	1	40	48
- Northern	67	16	10	32	3	125	176
Total Mediterranean	47	12	13	21	2	95	133
% Total	49.5	12.6	13.7	22.1	2.1	100	-
% TEV	35.3	9.0	9.8	15.8	1.5	71.4	100

On a global scale, NWFP produced and consumed in Europe have a leading position among the most traded NWFP in the world. In Essmann et al. (2005), Vantomme analyses international trade patterns related to NWFP and gives a good explanation to the relevant market share of European NWFP in the international context:

“International trade increased significantly for natural cork, mosses and lichens for bouquets, truffles, mushrooms, chestnuts, bamboo, palm hearts and maple syrup. Interestingly, these NWFP&S originate mainly from, and are traded among developed countries. Also, these commodities are processed locally into semi-finished products with raising unit prices. Of particular interest is the fast increasing value of trade in “specialty” food products (...) Specialty foods are among the fastest growing segment in the food catering business and several edible NWFP are ideally fit for niche marketing, such as pine nuts, bamboo shoots or wild edible mushrooms. The reduction (and/or elimination) of import tariffs, increasingly globally applicable (food) quality standards and changing consumer (food) preferences are creating global markets for products which previously were only locally available”.

Nature tourism and recreation services are one of the fastest growing branches in tourism sector at the moment. For example, during 2002–2003 the turnover growth rate in Finland exceeded up to 6.8% concerning big safari enterprises (Ryymin 2005). Due to urbanisation and the ‘new rise’ of the green values, there is a continuously growing customer group especially among the urban population which causes significant demand to the recreation services.

Several studies from Finland and other countries in Europe have shown that the income originating from nature tourism remains typically in the rural regions and the sector is labour intensive (Saarinen 2003, Honkala 2001) which makes the nature tourism especially attractive for rural development policies. In addition, the indirect economic impacts are more significant than the direct income to tourism enterprises. It has been estimated in Finland that 2/3 of the income benefits other businesses than the actual nature tourism entrepreneurs (Finnish Ministry of the Environment 2002).

Even if the demand for the NWFP&S sector is increasing, there are still many barriers to entrepreneurship to overcome before the potentials can be fully utilised. One of the most significant problems lies in successful marketing as the NWFP&S sector is traditionally very product oriented (Luostarinen 2005; Kelly and Whelton 2004; Matilainen and Aro 2002). The companies are typically located in the rural areas and distances to reach the customers are long. Especially in smaller companies the level of segmentation is low, even though to be able to develop high quality products to the demanding customer groups, it is essential in rural micro enterprises to target their services to selected customer groups due to the wide product range in the sector. Besides understanding the customer groups and their demands, finding adequate marketing mechanisms in the sector are needed.

In NWFP&S supply the problems for enterprise development are those traditionally connected with small-scale production of niche and well differentiated goods (Collier et al. 2004; Kelly and Whelton 2004; Pettenella 2001; Shanley et al. 2005):

- Promotion, with e-marketing as a new, powerful instrument.
- Product quality development, with standardisation, labelling and certification are playing a major role as marketing instruments.
- Integration, both horizontal and vertical in order to reach critical mass of products and services supply and to increase the added value of the products.
- Technical, administrative (e.g. contractual) and financial assistance to the forest resources manager.

The above mentioned problems have been very clearly considered the main obstacles in enterprise development by one of the leading instruments of the EU rural development policy, the so-called Leader approach. The implementation of this instrument is now providing, also in the NWFP&S sector, some positive lessons to be analysed and spread all around Europe.

1.6. Aims of this report

The need for more knowledge on the value added chains which link consumers’ demands to the supply of various and increasingly numerous forest products and services from the rural areas motivated a joint research work under COST Action E30. To find a better linkage between consumption and forest production was seen as a promising means to improve business opportunities, employment and income in the rural areas.

The purpose of this report is to present an overall summary of the COST Action E30 results and conclusions, especially when related to the questions:

- What are the factors affecting the competitiveness of forest – wood / non-wood / services – consumer chain?
- What are the main barriers and prospects to entrepreneurship?
- What kind of problems and opportunities do exist in enterprise development?

2. Theoretical background for forest sector entrepreneurship

Summary of the key findings in chapter two

1. Different theoretical foundations exist to explain regional economic growth, firm performance and enterprise development.
2. Following the evolution of the regional economic theories, emphasis has moved from Keynesian applications in the 1970s and 1980s towards local millieux and innovation models in the late 1990s and 2000s.
3. In industrial organisation perspective, industry structure is explained to be the most important factor affecting single firm's performance. In strategic management perspective, firm's endogenous resources and capabilities are seen most important for enterprise's competitiveness.
4. Many economic development theories emphasise the role of innovations. In innovations systems approaches, emphasis is put on the institutions at different levels that structure economic and innovation activities.

Key messages from chapter two to policy makers, practitioners and forestry institutions

1. A shift in theoretical emphasis from Keynesian applications (supporting, for example, subsidies for forestry investments) and global capitalism (supporting, for example, cost reductions in production) towards more innovatively driven development approaches means that theoretically capital accumulation and the amount of physical resources – though often emphasised in the forest sector – play a smaller role than knowledge, networking and institutions in explaining economic development.
2. High number and a diversified application of theories on regional economic growth in decision making means that companies and entrepreneurs (and their developers) in the forest sector need to be aware of a high number theoretical foundations behind different EU, national and regional economic development policies.
3. From the viewpoint of forest sector enterprises and entrepreneurship, the innovation system approach brings in a number of principles and approaches that can be considered relevant to entrepreneurship. For example, it is important to note that starting enterprises, such as innovations, do not follow the linear model from research and development to the establishment of businesses. Rather, starting new businesses or expanding existing businesses is embedded in an institutional system which should support the development of the entrepreneurial activities.

2.1. Regional economic perspective on forest sector entrepreneurship

Since rural economics as a discipline does not exist, the closest link to economic development in rural regions is through regional economic theories and multidisciplinary field of rural studies (Terluin 2001). Regional development theories and their relative importance in implementing rural development strategies have changed over the last decades, as illustrated in Figure 2.1. The variety of regional economic theories reflects

the varying emphasis of interests in explaining development, a certain historical stage of development, the different intellectual environments and the evolution of theoretical ideas (Tykkyläinen et al. 1997; Hyttinen et al. 2002).

From the viewpoint of the forest sector enterprises and entrepreneurship, it is interesting to note the shift in emphasis from Keynesian applications (supporting, for example, subsidies for forestry investments) and global capitalism (supporting, for example, cost reductions in production) towards more innovatively driven development approaches after the 1980s. This means that under the current understanding, both capital accumulation and the amount of physical resources – though often emphasised in the forest sector – play a smaller role than knowledge, networking and institutions in explaining economic development. At the company level, the shift in emphasis towards innovatively driven economies means a necessity to succeed not only in the traditional (and often linear) business areas with increased cost efficiency, but also in evolving business areas as a part of complex local, national and global value chains, markets and institutional environment.

Another way of classifying theories on regional economic development is presented in Terluin (2001) in which the competitiveness of companies is taken as a key element for the regional economic development and theories on regional development are classified accordingly. Terluin (2001) groups regional economic theories into ‘traditional models’, ‘pure agglomeration models’, ‘local milieux models’ and ‘innovation models’ (Table 2.1).

The work of Terluin (2001) indicates not only the high number of theories on regional economic growth, but also the parallel application of different theoretical foundations in decision making. For the forest sector enterprises and entrepreneurship this provides a clear message. Companies and entrepreneurs (and their developers) need to be aware of the parallel foundations behind different EU, national and regional economic development policies which is important to gain from various public policies and grant schemes available for business development in the sector.

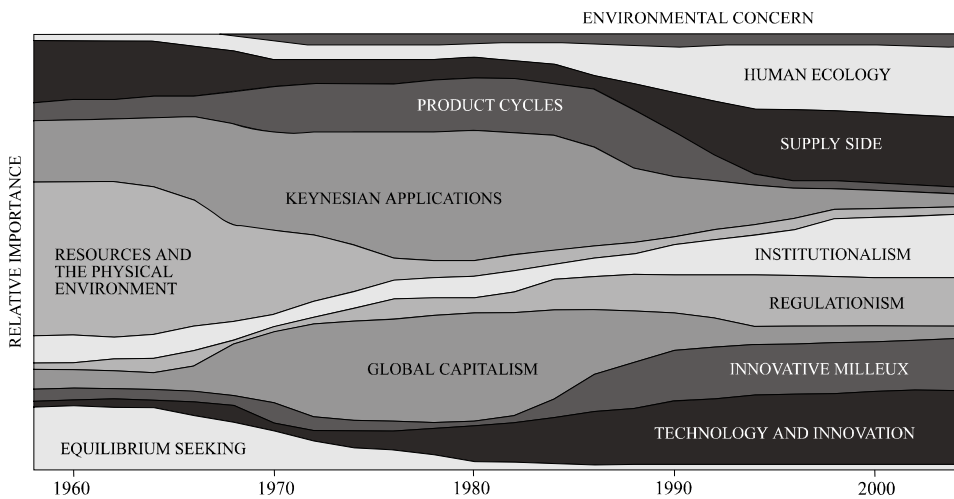


Figure 2.1. Importance of selected development theories in the late 20th century (Hyttinen et al. 2002).

Table 2.1. Classification of theories on regional economic growth after Terluin (2001).

	Theories
Traditional models	Neo-classical growth theory Keynesian approach: Export base theory
Pure agglomeration models	Cumulative causation theory Growth pole theory
Local milieux models	Endogenous growth models Theories based on the changes in the organisation of labour
Innovation models	Incubator theories Product life cycles Theory of innovative milieu Porter's theory on competitive advantage of nations Storper's theory - region as a nexus of untraded interdependencies

2.2. Industrial economics and strategic management perspectives on forest sector entrepreneurship

Industrial economists and management strategists have for long been interested in the determinants of firm performance. There are two dominant although contrasting perspectives on firm performance: the industrial organisation perspective, represented, for example, by Porter (1980) and the so-called strategic management perspective (see Wernerfelt 1984).

The main argument in industrial organisation perspective is that the industry structure is the most important factor affecting a single firm's profitability. Industry structure determines the competition within an industry and also its overall profitability. In this frame, CA of a single firm depends on its actions to minimise the impacts of competition from other firms in the industry.

In the industrial organisation perspective firm's ability to gain CA depends on how well has the firm been able to position and differentiate itself within an industry. Four characteristics of a firm environment are instrumental to the firm's competitiveness:

- (i) factor conditions,
- (ii) demand conditions,
- (iii) related and supporting industries and
- (iv) firm strategy, structure and rivalry.

Together with political and legal conditions, technological and macroeconomic conditions and coincidence, these factors have an impact on a single firm's competitiveness. Under these conditions, a firm's CA is based on the ability of the firm (i) to produce products or services with lower costs than its rivals or (ii) to differentiate products or services in a way that the firm can charge a premium price exceeding the extra costs of doing so (Porter 1991).

In strategic management perspective, in comparison with the industrial organisation perspective, firms' endogenous resources and capabilities are seen most detrimental for

enterprises' CA. The intra industry variation in competitiveness is therefore based on each firm's unique bundle of resources and capabilities (Wernerfelt 1984).

According to Husso et al. (2006), resources include technological, personnel, management, geographical location and other similar sources of advantage to help firms to succeed in competition. A firm's ability to utilise and further develop these resources is called 'capability', differentiating the ability to use resources from the existence of resources.

From the point of view of forest sector enterprises and entrepreneurship, the organisational perspective and strategic management perspective illustrated above provide useful insights. First of all, according to both perspectives, it is a matter of enterprises and entrepreneurs to find their advantages to succeed in competition. This is the case irrespective to the source of CA, i.e. whether it is due to firm's ability to position and differentiate itself within an industry (the industrial organisation perspective) or due to firm's endogenous resources and capabilities (the strategic management perspective).

Secondly, the organisational perspective and strategic management perspective indirectly define the role for public sector to facilitate business environments. The public sector should provide similar opportunities for all enterprises to operate, but it should not take part in businesses of having CA over private enterprises. The latter may be the case, if the public sector facilitates its own businesses in tourism, for example, with an access to publicly owned conservation areas. Instead of competing with private business sector, the role of the public sector is to provide access to information, maintain required infrastructure, conduct research and education, secure the stability of business environment and facilitate similar business development opportunities to all companies.

2.3. Innovation systems perspective on forest sector entrepreneurship

Many economic development theories emphasise the role of innovations (introduction of novelties). In institutional economics, for example, a research approach has been developed to study innovation systems that are fostering or hampering innovations. In the systems view on innovations, the relation between different actors in the innovation processes is studied rather than the role of the single actors, together with the frame conditions that shape (promote or impede) innovative behaviour.

Recently, considerable efforts in innovation systems research have been undertaken on national innovation systems (NIS), as well as on the nature of the innovation process at the local and regional level, i.e. the so-called regional innovation systems (RIS). Most of the contributions on the nature of innovation in the RIS refer to innovative dynamics based on a technological change, organisational learning and path dependency. In this respect, interactive regional innovation systems are in the focus, in contrast to the old types of linear innovation models that conceptualise innovation as a one-way street from research and development divisions within (large) companies to market. A third branch of the research analyses is the sectoral innovation systems (SIS). This approach looks at the firm level, inter-firm level aspects as well as the institutional level aspects both of market and non-market relations within a sector.

Innovation models on business to business (b2b) -level use the network concept as a key-element. Networks are in the first instance introduced as intermediate organisational forms between markets and firms, when the latter ones fail in efficiency and efficacy. Trust, demand/supply specifics, and possibilities for co-operation are the basis of a choice

for supplier-producer and buyer-subcontractor network relationships. Extended family networks, co-operative networks etc. have formed the organisational structure of local small production systems where the markets were unavailable for this type of function.

The innovation system approach perspective requires information on innovative conditions as do the other approaches in economic development research. In contrast to the other models, it places considerable emphasis on the institutions at different levels which structure economic activity, and specifically, innovation activity. This particular approach puts a specific emphasis on the actors involved and their interactions in terms of information and knowledge flows, and learning environments, rather than material flows. In terms of information this would require the following information:

- **Company structures and interactions, including business to business networks and intra-firm structures and interactions.**
- **Structures, interaction and instruments used by organisations/institutions such as administration, research, education and training, extension and consultancies.**
- **Institutional frame conditions affecting factor inputs, markets and competition.**

From the viewpoint of the forest sector enterprises and entrepreneurship, the innovation system approach brings in a number of principles and approaches to be considered relevant for entrepreneurship related research and theory. For example, the starting enterprises do not follow – like innovation – the linear model from research and development to the establishment of businesses. The process of setting up new businesses or expanding existing businesses through the addition of new product categories etc. is embedded, similarly to the innovation processes, in an institutional system that should support entrepreneurial activities.

While it has become widely acknowledged fact that entrepreneurship is a vital force in the economies of developed countries, there is little consensus on the constituting of entrepreneurial activities. The concepts of entrepreneurship categorised by the life cycle approach distinguish entrepreneurship related to the creation of new organisations (Gartner 1988) or new ventures, and entrepreneurship in established enterprises (corporate entrepreneurship). The first concept is often related to SMEs, whereas the second one is applied in medium and large enterprises. Practically all forest holdings, for example, fall into the category of SMEs.

The most prevalent and compelling views of entrepreneurship focus on the perception of new economic opportunities and the subsequent introduction of new ideas in the market (Audretsch 2003). Some define entrepreneurship as activities fostering innovative changes. A further widely used definition of entrepreneurship was proposed by Stevenson and Jarillo (1990) who define entrepreneurship as: *'...the process by which individuals pursue opportunities without regard to resources they currently control'*. This definition was empirically tested and subsequently adjusted to read: *'Entrepreneurship is the process by which individuals pursue opportunities without regard to alienable resources they currently control'* by Hart et al. (1995).

The systemic conceptual model to study innovation puts the focus on many aspects particularly relevant for sectoral development policies. Some of the most important aspects covered by the analysis of the actual entrepreneurship supporting systems are:

- Who are the actors in the sectoral institutional system and which actors are perceived to be relevant in entrepreneurship related aspects of the sector?
- What do these actors do to foster entrepreneurship, what overall functions are fulfilled, and who is fulfilling them?

- Which forms of interaction and co-operation, and between whom, is taking place in relation to entrepreneurial activities?
- Which fostering and impeding factors for entrepreneurial activity do the various actors identify and which suggestions do they make for changes?

Over the last decade a lot of research efforts have been undertaken to understand institutional, economic and human dimensions of entrepreneurship better. The most systematic international attempt to establish an empirical database on entrepreneurship is the Global entrepreneurship monitor (GEM). GEM is an international monitoring effort of entrepreneurial activities in several countries around the world led by Babson College, the Ewing Marion Kauffman Foundation and the London Business School. The GEM has assessed entrepreneurial activities worldwide each year since 1999. GEM (2003) surveyed samples of over 1000 persons in 31 countries in 2003 and found that on average about nine per cent of adults between 18 to 64 years of age were either actively engaged in the start-up process or in managing a business less than 42 months old. However, around 70% of the entrepreneurial respondents were expected to have no or little impact on the goods and services in the marketplace. In fact, only about three percent provided strong evidence that a new market niche or economic sector would be created, if the business were successful, while 29% provided some indication of market expansion. This means that a vast majority of new businesses are basically replications of existing business activities in a new form, at a new location, using new procedures or with a new price structure, but not producing radical departures from the status quo.

In terms of innovation system or entrepreneurship support system, GEM (2002) assessed the importance of the following nine entrepreneurial framework conditions through expert interviews in 34 countries:

- Presence of financial support
- Government policies
- Government programmes
- Education and training
- Research and development transfer
- Commercial and professional infrastructure
- Internal market openness
- Access to physical infrastructure
- Cultural and social norms related to entrepreneurship

Everyone of the 1 000 experts contacted for GEM 2002 clearly emphasised cultural and social norms as a leading strength or the second most important weakness. Two other areas, government policies, and education and training, were also strongly considered either a major strength or a significant weakness. With few exceptions, these three domains were consistently considered the leading national issues around the support of entrepreneurship.

GEM (2002) partly concentrated on the differences in institutional infrastructure or support systems needed between two major groups that participate in the entrepreneurial activities for different reasons. They either perceive a business opportunity or see entrepreneurship as their last resort. Necessity start-ups are considerably more frequent amongst 'agriculture, forestry and fishing,' and 'retail, hotels and restaurants'. They found a consistent negative relationship between the quality of the infrastructure and the level of necessity entrepreneurship. This led the authors of the GEM 2002 report

to the conclusion that the current programmes designed to facilitate entrepreneurship may reflect a bias towards the opportunity-motivated rather than the necessity-motivated entrepreneurs. Institutions may consequently need to develop a different set of policies and processes for the support of necessity entrepreneurs.

Box 2.1. Entrepreneurship in forestry in Central Europe

In respect to forestry related entrepreneurship Rametsteiner et al. (2005) conducted representative surveys in five Central European countries among forest owners to analyse sector specific situations. They found that in Austria 81% (or 9 out of 11 start-ups) of small forest holdings and 60% of large forest holdings' start-ups were network activities. In comparison, in the Czech Republic 2/3 of start-ups were by single forest holdings and less than 30% of the start-ups were networks. From the size category up to 10 hectares no start-ups were reported except for Austria. However, all five cases in Austria were related to the foundation of a forest co-operation, which might be a prerequisite for further entrepreneurial and innovation activities based on the scale effects that such co-operations can provide.

In Central Europe, on the average, 1/3 of all start-up projects were implemented without some kind of an external support, according to the respondents of the surveys. Consultants supported 16% of the projects, 12% received some support from their interest group, and another 12% received support from the administration. Only a few start-up activities were financially supported by a financial institution. Germany had the highest share of start-ups that were supported by consultants (31%) and by financial institutions (15%). The administration was the most active supporter of start-ups in the Czech Republic where few additional funding opportunities seemed to be widespread.

In Austria, with its high activity in setting up networks, related support by interest groups and administration was emphasised often as the most important supporting factor for engaging in a start-up activity. Supportive financial conditions and successful co-operation were also found as the main fostering factors. Single entrepreneurs identified their personal efforts and financial subsidies as being the most important factors. In the Czech Republic mainly forest ownership, informational events (such as seminars, courses and excursions), and subsidies specific to forestry were quoted as the most fostering ones. The Hungarian forest owners/managers active in start-up most often quoted their own experiences, support by the state forest services, and a trained workforce as the main fostering factors. Overall the findings indicate that strategies of institutions intending to improve the entrepreneurial activity should support forest owners/managers by providing information and consultancy.

In terms of impeding factors for entrepreneurship in overall, more than 50% of the impeding factors named were related to the institutional factors. In Austria, in a country with high activity in setting up forest co-operation, problems related to co-operation were quoted as the most common impeding factors followed by financial problems and factors related to legislation and administration. In the Czech Republic, where had the lowest start-up activity of the countries that were analysed existed, administrative issues, environmental and forest laws as well as envy were seen as the most common impeding factors in the course of setting

up a new entrepreneurial activity. The Hungarian forest owners/managers, having the highest start-up activities in Central Europe, most often complained about a lack of information, problems with the structure of ownership of properties and bureaucracy.

In order to assess the entrepreneurial orientation of the forest owners/managers five statements were used as a basis for an aggregate indicator with an opportunity-seeking-entrepreneurial-orientation on one end and a traditional-prudent-orientation on the other. Empirical results show that forest owners/managers in all countries surveyed perceived opportunities for the introduction of new products and services. This view is most strongly expressed in the Czech Republic and in Hungary. The relatively strong Hungarian entrepreneurial orientation, supported by evidence, is emphasised by the complete disagreeing on the passive statement and by affirmative answers to the willingness to take risks. In comparison, forest owners and managers in several other countries recognise opportunities, but prefer to be more passive and to avoid risks. This seems to be especially the case in Austria and Slovenia where a tendency to answer similarly to the same statements prevails.

3. Small-scale forestry production to support the development of local wood and non-wood processing industries

Summary of key findings in chapter three

1. In general, the primary sector and its associated supply chains have become and are becoming minor contributors to aggregate rural well-being in the economies of developed countries.
2. The connection between small-scale forestry and rural development is highly varied from one part of Europe to another, with small-scale forest owners contributing substantial amounts of wood raw material into the wood supply chain in some countries and almost nothing in others.
3. In the post-socialist economies of eastern and Central Europe, private woodlands have the capacity to contribute to the subsistence of the rural economies and beneficially impact the well-being of the households. This contributes to rural development, even though the supply chain is bounded by the household economy.
4. Small-scale forest ownership is characterised by a wide range of attitudinal differences among forest owners reflected in differing styles of ownership and management, ranging from productivist styles to conservation-motivated styles.
5. Given the substantial diseconomies of small size, there is a need for co-operative or other institutional structures (such as forest owners' associations) to deliver scale economies in the non-industrial private forestry sector, if small-scale forests are to contribute more to the rural development through the provision of wood and non-wood products and services.
6. The rising costs of energy combined with a wider adoption and improvement of wood energy technologies has the capacity to incentivise the management of small-scale forests and contribute beneficially to sustainable rural development.

Key messages from chapter three to policy makers, practitioners and forestry institutions

1. Given the heterogeneity of the forest owners' values, it is important to have a tailored policy and practical solutions that reflect their interests and aspirations of owners rather than the dictated top-down solutions of agencies or government.
2. Forest owners' associations have a vital role in supporting private forest owners to overcome the structural disadvantages that the current ownership structures create.
3. Forest owners' associations must embrace the diversity of forest owners and adopt an inclusive approach to recruitment and support.
4. Forest owners' associations should encourage active learning amongst the forest owners (including absentee owners) rather than to foster passive dependency among their clients.
5. Forest owners' associations and the supportive bodies of the public sector should support forest based entrepreneurial developments in both wood and non-wood supply chains.
6. Where the public good issues are at stake, such as the prevention of forest fires, there is a case for preventative interventions by public or voluntary bodies under tightly controlled conditions without the permission of the owner.

3.1. Introduction

Working group one (WG1) of COST Action E30 was tasked with analysing the conditions under which small-scale forestry and wood supply can meet the demands of locally based wood and non-wood processing industries. Specifically it was asked to undertake the following tasks:

- Analyses of woodlot owners' attitudes on forestry and forest utilisation and current small-scale forest practices.
- Analyses of practical restrictions and problems in small-scale forestry to support local wood and non-wood processing.
- Evaluation of the potential solutions and formulation of practical recommendations on how small-scale forestry can be developed and better integrated into the local wood and non-wood processing.

In practice, the work of WG 1 focused on two main themes. First, it was recognised that a better understanding of forest owners' attitudes and values was needed. Although a number of disparate studies had been undertaken, there was little comparability of national level studies from country to country, even as the broad categories of values and attitudes were thought to be rather similar.

In addition, two other contributions were made to WG 1. First, an analysis was undertaken of the influence of ownership and property rights on enterprise development (Bouriaud 2006). Second, a contextual summary of demand changes for a range of wood products was made (Mitchell-Banks 2006).

A number of studies have been undertaken of forest owners' attitudes and values in the last decade. Although different descriptors are used, it is apparent that a number of distinct sets of values and attitudes can be discerned which are considered likely to impact directly on the way in which particular types of owners manage their forest resources.

In an exploration of the means to overcome the obstacles of small-scale forest ownership, it rapidly became apparent that there were enormous variations from country to country in the institutional structures to support non-industrial private forestry. Forest Owners Associations (FOAs) provided an important structure in some countries and were wholly absent in others. These FOAs provided the principle means of overcoming the obstacles of wood processing, although they are likely to be less important in the more individualistic non-commodity based actions relating to non-wood processing activities and their associated supply chains.

In the context of COST E30, 'small-scale forestry' is considered as synonymous with non-industrial private forestry (NIPF). As a category, NIPF normally excludes all public sector forests, all industrial forests owned or leased by processors and all forests held by charitable organisations and NGOs. However, 'small' is less of an objective category and more of a set of culturally conditioned perceptions, in that a ten hectare forest holding in Hungary might be deemed large by local standards and small if viewed through Nordic eyes. Indeed, a small proportion of non-industrial private forest owners occupies quite large forest holdings, rendering the equation of 'small-scale' with NIPF problematic.

The supporting papers of this action use the term 'forest-based entrepreneurship' as a key term. It is implied that through a more entrepreneurial approach to small-scale forestry and its associated supply chains, new sustainable rural development opportunities will arise. This assertion is not contested here other than to observe that some types of

forestry behaviour, especially the productivist management of forests almost as a way of life, may represent the antithesis of entrepreneurship and more a form of ritualistic behaviour (or reproduction of symbolic capital) associated with the particular identity of being a private forest owner. Equally, the restitution of the right of ownership in eastern Europe may be of enormous symbolic importance but little commercial value to many new forest owners, although the obvious capacity of forests to support subsistence needs, particularly related to energy, should not be underestimated.

Consequently, we should not uncritically equate the management of the wood supply chain with entrepreneurial values. Indeed, the continued management of trees for timber may represent an economically irrational lock-in to a productivist mind-set. At a time when green infrastructure values have become a powerful motor of the rural development, the management of timber for non-timber functions may be of a greater importance to rural development than the management of forests for timber.

3.2. Demand for forest products in Europe

The scope for entrepreneurial development in the small-scale forest sector is conditioned by the demand for forest products. In general, growth in the demand in western European markets for wood-based products has been strong in the last few years after a slackening of demand in the early 2000s. However, the openness of timber markets and the commodity nature of many wood products are often associated with a long-distance movement of the wood products both before and after processing. A strong demand in one nation may not necessarily be associated with increased exploitation of small-scale forestry in that particular country, though at the margin, a rise in the price of wood products should be associated with an increase in domestic wood-related economic activity.

According to Mitchell-Banks (2006), six principle drivers of demand can be identified.

- Population
- Income
- Forest accessibility
- Environmental factors
- Societal demands and changes in human needs
- Changes in industrial demand for forest products

To this list of six drivers a seventh might be added: the cross elasticities of demand. Few globally traded products (with the possible exception of precious metals) have experienced the high price volatility that has characterised the demand for hydrocarbons in the last five years. Between the beginning of 2004 and the beginning of 2006, crude oil prices rose by approximately 100% in real terms to a current price of over \$70 USD per barrel (August 2006). The general expectation of most commentators is that a strong demand from China and other developing eastern economies and continued supply instability will hold crude oil prices high into the foreseeable future. This has profound implications for the price of low-grade forest products and waste products from processing. It is also likely to give a major boost to investment in bio-energy technologies.

Several of these demand drivers have impacts more beneficially on the demand for non-timber forest products than on the timber products, potentially creating a tension between a more entrepreneurially focussed wood sector and a more public good oriented

non-wood sector. However, great caution should be exercised in any simplistic assertion of a dualistic relationship between entrepreneurial activities in one sector and public good delivery in the other (Mantau et al. 2001). Mantau et al. (2001) show how it is possible to develop significant enterprise around non-wood forest products, a theme supported by an increased range of examples in this volume and elsewhere (Pettenella and Secco 2006).

Wood energy markets are of a particular interest as hydrocarbon prices have been raised by increased global demand and political uncertainties in major sources of supply. However, the data in this sector are notoriously unreliable. The demand for wood energy has the potential to impact significantly the small-scale forestry, if appropriate supply chains can be developed to move the resource to where it is can be transformed into heat energy or power under Combined Heat and Power (CHP) systems.

Conditions of demand are also strongly framed by relative values of currencies. For example, a strong Pound Sterling (£) compared to the Euro favours imports of wood products rather than domestic production and processing, although a strong demand has also impacted modestly on the volumes exploited domestically. Equally, a relatively strong Euro against, for example, the Russian rouble will favour raw material imports from Russia as a substitute for Nordic-produced timber.

3.3. Ownership and property rights

Property rights with respect to forests vary substantially from one country to another in Europe. The nature of these property rights frames the opportunities for new product developments. A small-scale forest owner may have unambiguous property rights over the trees, although those are mediated by the state, sometimes quite profoundly, normally through the prerequisite that felling is licensed or approved by the state or by some other competent authority. Thus the forest owner owns the trees but has no right to fell trees according to his/her wishes. In situations where the state imposes post-felling obligations, such as replanting, without a significant financial recompensation, the owner may be deterred from felling because of a lock-in to costly post-felling management actions. Small-scale forestry is associated with high cost of enforcement of property rights. This is especially the case where the forest is at a distance from the residence of the owner and pilfering/theft of both wood and non-wood products is widespread. It is also likely that pilfering/theft will be greatest where there is substantially impoverished population in the rural areas, for whom the forest provides subsistence and/or saleable products. These are most likely to comprise Non-Timber Forest Products (NTFPs), such as woodfuel, mushrooms and berries.

The issue of the small-scale of ownership is often compounded by asymmetric information problems, whereby sellers do not know the value of the products that they own. Although these problems of asymmetric information have been reduced substantially in some countries by the actions of the forest owners' associations, these only have limited geographical coverage in Europe. Many areas do not have forest owners' associations and, even where they do exist, their activity may not extend to acting as a sales agent or intermediary for private forest owners. Similar problems of information asymmetry may well exist for NTFPs, although they are likely to vary from product to product.

A variety of means can be used to address these problems. Regulatory and incentive means can be used as well as the enhanced enforcement of the property rights. Co-

operative management may address some of the problems of small scale and certainly has the capacity to reduce information asymmetry problems.

Not only are the current structures of property rights highly variable in different parts of Europe, but the historic pathways of development have resulted in highly different structures and sizes of ownership in different European countries. These bundles of property rights and the size and other characteristics of the holdings in the NIPF sector are instrumental in shaping the possibilities for entrepreneurial development in the forest sector.

In Chapter 1, a descriptive classification of geographical patterns of small-scale forestry in Europe was offered. This suggested five main European regions with respect to structures of the private forest ownership. These include:

1. The Nordic region
2. The Central European region
3. The eastern European region
4. The North Sea periphery region
5. The Mediterranean region

In addition to these regions, there are two intermediate regions. First, the Baltic States represent a transition region between eastern European region and the Nordic region. Second, there is a transition region between the North Sea periphery region and the Mediterranean region in northern France and Belgium.

The common characteristics of these regions create broadly similar platforms for rural development potentials with respect to the small-scale forest sector. Their general characteristics frame opportunities and embody constraints.

The Nordic region contains variable but normally high proportions of its total forest estate in the NIPF sector and the region is characterised by a high average holding size in excess of 25 ha. There is also a high degree of forest cover and in the recent historic past a high importance of timber products in national exports. The NIPF sector has been a primary source of raw material for the processing sector.

The North Sea periphery countries include Denmark, United Kingdom and the Netherlands. These countries have a relatively small proportion of their territory under woodland and forest, and have a relatively small holding size compared to the Nordic region. The state forest sectors are often relatively large and forests are seen as multifunctional resources rather than a raw material source for the timber and paper industries. In these countries, there has been a high demand of land for agriculture which has tended to displace forestry to a land of a poorer quality. In general, there are high population pressures.

The Central European region comprises of Germany, Austria and Switzerland, and of areas with a high proportion of woodland cover and a significant but by no means a dominant NIPF sector. Holding sizes vary across the region with quite a large spread of forest holding sizes but with an average normally lower than in the Nordic region and higher than in the North Sea periphery region. Historically, NIPF holdings have been a part of farms, although the pattern of ownership is changing with significant numbers of non-farmer owners. There is a strong residual farm forestry culture and NIPFs have been a major source of wood raw material for the processing sector.

The Mediterranean region is characterised by a relatively high percentage of private forestry and a low average size of forest holdings. Historically, the NIPF sector has satisfied subsistence needs especially for woodfuel, although in some areas other regionalspecific

functions are found, such as cork oak in Iberia and greater proportions of commercial timber in northern Italy. There are strong traditions of NTFP exploitation in these areas ranging from mushrooms to chestnuts, hazel nuts and berries.

The fifth major region comprises of the post-socialist countries of eastern Europe, where the average holding size is very small, the average (restituted) forest owner is often living at a distance from his/her forest, and the greatest share of high timber quality and high environmental quality forest is often retained by the state forest holdings. The average holding size is often less than one hectare. The small size of the forest holdings and the lack of forestry traditions among most owners create a significant obstacle to the development of competitive wood or non-wood supply chains. However, woodlands can also constitute valued assets to support subsistence needs.

The two intermediate regions are the Baltic states representing a hybrid between the Nordic region and the eastern European model, and the north of France and Belgium representing a transition between the North Sea Periphery, the Mediterranean and the Central European ideal types. The average NIPF holding is a much greater in the Baltic states than in the eastern Europe, with the smallest average size in Lithuania being about five times greater than the eastern European average and the holding size in Latvia and Estonia even greater. There is a legacy of timber extraction and processing, although privatisation is creating major restructuring problems.

The Belgian, northern France transition zone shares some of the characteristics of its neighbouring regions. Northern France and Belgium share many characteristics with the North Sea periphery, whilst the eastern French situation merges imperceptibly into the Central European model. In central France, there is a transition zone between the North Sea periphery and the Mediterranean type.

There are two anomalies found. First, Ireland has a relatively distinctive forest sector, which in some way mirrors the North Sea periphery countries, but in others the Nordic model with its emphasis on production values. Ireland was and still is also deeply affected by the anti-forestry attitudes that surrounded the land reform of the 1880s. Iceland is the second anomaly with a low percentage of forest cover, but with a high commitment to multifunctional forestry and a parallel dependence of strong support by the state that mirrors the North Sea periphery countries.

These geographical categorisations are not descriptive fripperies, but offer a means of understanding better the enormous variety of structural conditions prevailing in different parts of Europe. The forestry sectors and the forest industries of these different regions, both for wood and non-wood products are the product of long histories, highly divergent structures of land ownership and differing evolutionary tendencies. Both past trajectories and future prospects are framed by a high degree of path dependence. What these respective forest sectors have developed from their legal contexts of property rights and landholding structures frames their future prospects.

One factor of compelling importance in the NIPF sector and its inter-relations with rural development is the ability of the forest owner to feasibly engage in commercial wood production on his/her holding. This opportunity is strongly shaped by the size of holding, but is equally influenced by the policy-induced constraints that cover substantial areas of European forestry either for protection (often relating to avalanches) or nature conservation. Where average forest holdings are less than five hectares in size, the prospects for commercially viable engagement with the mainstream wood processing

sector is negligible in the absence of a strong cooperative or forest association system which is capable of co-ordinating operations.

In the post-socialist countries of eastern Europe and the Baltic regions and in parts of the Mediterranean region, the role of NIPFs in rural development resides less in their ability to provide a basis for the rural entrepreneurship and more in their ability to meet domestic subsistence needs, not only of woodfuel, but also of minor forest products and building materials to support domestic subsistence. This contribution to household wellbeing should not be underestimated. The role of both agricultural smallholdings and forests in supporting the livelihoods of the poorest rural residents is recognised in other regions as a crucial subsistence platform which provides for the basic needs of food, fuel and shelter.

3.4. Small-scale forestry characteristics in the context of rural development

This section highlights some cross-cutting themes. These include recognition of the range of theoretical positions on rural development, of the multifunctionality of forest resources, of the diversity of the situation in different countries, of the considerable economic pressures on both small-scale forestry and small and medium sized enterprises (SMEs), of the marketability (or non-marketability) of forest services, and of the diverse range of actions that have been attempted to revitalise local wood supply chains.

In developed western countries, the growing interest in *rural development* has arisen largely as a result of the recognition that at the same time as major declines in employment in the primary sector, and an associated diminution in its contribution to national and regional gross domestic product (GDP), rural areas have not all declined. Many have argued that a more holistic conception of rural economic activities is needed to thus capture a growing range of activities taking place in the rural areas, some of which explicitly connected to the land resource base, some indirectly connected and others almost entirely disconnected.

This growing interest in the changes of the rural areas might have begun in a theoretical void, but a substantial amount of theoretical discussion has taken place more recently which may inform perspectives on the connections between non-industrial private forestry and sustainable rural development. Among studies that have tried to take stock of these theoretical developments, Terluin's (2001) work in which four main groups of theories are identified is often cited (see Table 2.1).

Our purpose here is not to compare the relative merits of these different theories or indeed to criticise the classification offered. Instead, we acknowledge that the lens through which we view the economic problems faced by the small-scale forest sector is likely to be coloured by the theoretical perspective taken. Furthermore, it is almost impossible to view changes in the forest sector without acknowledging the much-debated and contentious quasi-theoretical descriptors of rural change, such as the shift from productivist to post-productivist rural space, the emergence of an ecological modernisation paradigm and the more prosaic assertion of a forestry transition, a point at which the processes of deforestation are reversed by new social, economic and political forces and associated new tree planting (Mather and Needle 1998; Rudel et al. 2005). The theoretical vantage point taken may suggest a need to focus on the supply chain innovation or the enhanced delivery of ecological services. We must also be alert to the extent which the

focus for inquiry is necessarily connected to discernible theoretical roots, even if those connections are not always formally acknowledged.

The so-called ‘European model of agriculture’ with its core characteristic of *multifunctionality* is paralleled by the situation in the forest sector. Indeed, it might be argued that multifunctionality, or in forestry parlance ‘multi-purpose forestry’, has an even longer history in the forestry policy forum. As in agriculture, so in forestry, the delivery of environmental services has become a more important part of that multifunctionality in the recent decades. Because of the public good character of many environmental goods and services, the private forest owners’ room for manoeuvre to develop new commercial opportunities may be circumscribed to ensure delivery of the public goods with or without compensation.

In order to address the engagement of NIPF owners with wood and non-wood supply chains that contribute to rural development, it is necessary to engage in a second level of theoretical investigation and endeavour to try to better understand the forest owners’ values and attitudes to the resource. Given the nature of forest-owning households and their widespread engagement with other forms of economic activity, a rational economic man model of engagement with NIPF would suggest that the resource will be used as to maximise household income subject to a set of constraints of labour time, management time, capital etc.

However, there is an abundance of evidence in the literature that forests have become consumption goods as well as productive assets and for many households may not be treated like a normal bundle of resources with potential to generate profit. The sense of household’s attachment to an inherited forest (or even a recently purchased area of forest) and its use as a supplement to living space rather than delivering monetary income suggests that there is a need to think in terms of a household utility maximisation rather than an income generation.

There is also evidence that in some countries woodland resources have become positional goods. In *Social Limits to Growth*, Hirsch (1975) argues that the absolute scarcity of certain products confers increased value on these and makes them much sought after goods once the need for almost universally available consumer goods is satisfied. Hirsch’s classic examples of positional goods comprise of the old master’s paintings. Forests can be seen to provide a real world three-dimensional equivalent (Slee 2006).

There is a great *diversity* of non-industrial private forest (NIPF) in Europe. At the European level there are in fifteen million small-scale forestry holdings covering in excess of 37 million hectares of land in the European Union and the applicant states. The average size of a holding varies enormously from region to region with forest holdings of 100 hectares quite common in some parts of northern and western Europe but less frequent in Central Europe and almost wholly absent in eastern Europe. The prefix ‘small’ is thus almost always appropriate in studies of private forestry in southern or eastern Europe but perhaps less appropriate in the north and west. The overwhelming majority of small-scale forest owners in all parts of Europe are pluriactive, with few NIPF owners wholly dependent on forests for their well-being.

The diversity of response from this heterogeneous structure of ownership of forests is partly framed by market conditions but also strongly influenced by the motivations and interests of the forest owners. Neighbouring woodlands can abut each other but be operated under wholly different management regimes, one based on active silviculture

and the other characterised by a total neglect. This suggests that something other than market opportunities mediates the degree and style of woodland management.

There is no doubting the *economic challenges* under which the European forest sector operates. In general, the small size of European private forests militates against their economic viability in a world in which globalised forest processing firms add value to large volumes of wood raw material. Many forests are managed as part-time enterprises and create insufficient income to support a household. However, in some parts of southern and south-eastern Europe, forests provide an important subsistence function, particularly with regard to woodfuel, but also in relation to food.

The greatest challenges to small-scale forestry arise in the search for cost-effective strategies for forest harvesting on small woodlots. The cost advantage of a harvester-based felling is considerable. Motor manual felling is relatively expensive and unless the opportunity cost of own labour is very low, the commercial viability of motor manual felling on small woodlots is questionable.

However, the small-scale forest owner may not be treating his/her woodland as an income-generating asset. The ownership of the woodland may be more important as a symbolic capital (Bourdieu 2005) than as a source of income. The retention of ownership of small-scale forests by family members living at a distance from the forest reinforces the notion of the forest as a source of symbolic capital rather than as an income generator and also raises questions on how effective arm's length management can be ensured from a distance.

In addition to providing a stock of symbolic capital, recent North American evidence suggests that private forest owners do not respond to forest management in narrow economically centred ways. Where they are owners of native hardwoods, these resources may be managed for conservation because of an intrinsic desire to sustain the legacy rather than any narrow economic motive. Forests and woodlands can be important identifiers of place and through cultivation of woodland, forest owners can explicitly cultivate that sense of a place (Stedman 2003).

One of the inevitable consequences of moving from market-based timber outputs to increased demand for environmental and recreational goods and services is the impact of the quasi *public goods* status of so many of the new service demands on forests on the development of forest product markets. Working groups two (WG 2) and three (WG 3) of the COST Action E30 considered these opportunities further thus recognising that marketability is very much a function of the disposition of the property rights.

On a superficial examination, the forest sector occupies a contrasting position to the farm sector, in that it is lightly subsidised, at least in terms of market subsidies. This gives forestry a relatively 'clean bill of health' from a World Trade Organisation perspective. However, a highly variable raft of *policy measures* exists from country to country which to differing degrees in different places offers incentives to new planting (mostly on farmland), to forest management, to public good delivery, and the private sector forest owner now operates in a significantly regulated policy environment.

3.5. Two perspectives on the challenges of engendering entrepreneurship in the non-industrial private forest sector

The ongoing discussion highlights two key issues. First, the heterogeneous values of different forest owners will mediate their management activities. By no means all private

forest owners are motivated primarily by economic rationality. Other motivations relating to stewardship, their sense of place in a rural community, the warm glow derived from ownership, the existence of forests as a source of symbolic capital, and the use of the forest as a place of repose can all drive particular strategies of forest management and are likely to shape the scope for the development of new wood and non-wood supply chains. Second, the principle mechanism for overcoming the obstacles of small size is a membership of and/or engagement with a co-operative or membership organisation that can reduce the costs and/or increase the benefits of a small-scale forest ownership. These two dimensions of small-scale forestry are considered in detail below.

3.5.1. Goals and attitudes of private forest owners

There is a long-standing interest in forest owners' attitudes which has been reflected in many country-specific studies. Most studies are based on largely atheoretical taxonomies of attitudes and underpinned by a belief that there ought to be a connection between owners' attitudes and actions. Compared to the farm sector where there is a substantial body of work on farming styles (van der Ploeg 2003), studies of forest owners have been empirically based and weakly grounded in theory. The farming styles literature posits a relationship between farming style and the collective values of the farm household. Typically, four to six farming styles are discernible within any one production sector some of which are much more explicitly entrepreneurial and market-oriented and others which are much more connected to lifestyle.

The attitudes and values of the forest owners were the explicit object of interest in one of the sub-groups of WG 1 in COST Action E30. The attitudes and values of private woodland owners have been investigated in a number of studies. Although economic motivations are often cited as an influence on management behaviour, entrepreneurial attitudes are not normally separated out and, with the exception of one Norwegian study, the relationship between attitudes and entrepreneurship must be inferred rather than elicited.

The purpose of typologies is usually to group individuals into similar classes. In the case of typologies of forest owners' attitudes, one might anticipate that armed with the results of such studies, it would be possible to make inferences about forest-related decision-making. However, it is rare to find an explicit connection in the literature.

A number of possible typologies can be suggested. Different studies in a number of developed countries and in some rather less developed countries with economies in transition indicate broadly similar groupings of attitudes though the inferences regarding the supply of wood into the wood supply chain are by no means straightforward.

There is a group of owners who have economic attitudes towards their forest and woodland. For some, the income derived from the woodland is an important contributor to their economic well-being. However, this economic motivation can manifest itself in at least three different ways. First, there is what might be termed a *formal* economic goal, a desire to extract economic benefit from forest production. Second, there is a goal of some forest owners described by Lönnstedt (1997) as '*informal*' and economic. This appears to differ from the formal goal in that it relates to NTPF rather than to timber. A third group of economically motivated goals relates to the use of forestry as a *secure investment*. This goal thus relates to investment rather than to profit and it may be motivated by the desire for security rather than for short-term income gain.

Those regarded as having economic goals are described in North American literature as ‘timber agriculturalists’ (Kurtz and Lewis 1981). These are business-oriented farmers who are essentially treating trees as an alternative farm enterprise. It might be expected that many traditional European forest farmers might be described as having similar goals. In post-socialist countries such as Lithuania (Mizaraitė and Mizaras 2005), one type of a new forest owner is classified as a forest businessman who is explicitly viewing the forest as an income-generating investment.

Lönnstedt (1997) distinguishes between what he terms economic goals and *production* goals. Other Swedish studies have also identified this type of a forest owner motivation based on the desire to manage a productive stock of timber. Many farming studies have identified similar goals, which although often giving an appearance of being motivated by financial or economic motive, are actually motivated by the desire to be identified as a good forester or a good farmer.

The second major grouping of aims and motives of forest owners relate to their preference to use the forest as a place for *consumption-based activity*. Some forest owners consume the wood and non-wood products for their personal use. Timber can be especially important as a source of fuel but, in addition, a range of other products to support subsistence can be harvested/extracted from the forest.

A second type of consumption-related forest owner is the forest *environmentalist* whose interests and aims often relate to wildlife conservation. Others label this group of forest owners as ‘ecologists’. This might be thought of as a subgroup of consumption motives. Some in this broad grouping may be more interested in landscape and the aesthetic aspects of the forest than in those of the wildlife values.

A further group of forest owners are identified as having *intangible goals*. The associated values of the forest owners vary from author to author but it is clear that social goals are of importance whereas for others the social goals are linked to leisure pursuits, such as hunting.

Many forest owners do not have single goals for their forests. They are rather motivated by a range of factors and their forestry goals may be as broad as their forests are multifunctional.

Another subset of owners is to a high degree *indifferent* about managing their forest resources. Often such forest owners are keen to see the forest retained in family ownership but are not engaged in active management. They may well live at a distance from the forest resources.

The actual evidence of behaviour suggests that multi-objective forest owners tend to manage their woodlands most intensively. However, paradoxically, the owners most interested in stand improvement tend to be amenity owners.

The most decisive evidence of entrepreneurial attitudes influencing behaviour is found in Lunnan’s et al. (2005) study of Norwegian forest diversifiers. These risk-taking entrepreneurial forest owners were diversifying their forest service offer by developing letting accommodation and hunting and fishing enterprises. This implies a productivist, commodity-producing but largely non-entrepreneurial set of values of many production foresters who may nonetheless be feeding wood raw material into a much more aggressively entrepreneurial and highly competitive processing sector.

Any conclusions from the work of attitudes and values of forest owners must be couched in caution. It would appear that there is a small proportion of private forest owners who are explicitly entrepreneurial in their forest management practices and

business orientation. In some countries, the activities of this group are more related to forest services and in others, to conventional forest products. They are probably a minority of forest owners in Europe. Many forest owners do have some economic motivation for owning woodland, but they bear little resemblance to profit-maximising entrepreneurs. Instead, they resemble what some economics textbooks (following Simon 1955) term ‘satisficers’. A further significant grouping relates to the use of forests for self-consumption of timber, fuel, game or amenity products. This category may or may not be economically motivated. It is not clear whether an economic calculus is used by the forest owners in considering, for example, the trade-off between own-produced woody biomass for fuel and purchases of hydrocarbons.

3.5.2. Forest owners’ associations

Another sub-group of WG 1 in COST Action E30 explored the role of Forest Owners’ Associations (FOAs) in creating preconditions for entrepreneurial activities among NIPF owners. Forest owners’ associations have been established at very different times in different parts of Europe. They have a long history in Nordic countries, Austria and Germany and a much more recent history in other countries including post-socialist countries in eastern and Central Europe, in Ireland and in parts of southern Europe.

Given the recent evolution of FOAs in some areas, there is a case for exploring their evolution and potential functions. Whether or not their evolution is a conscious rational act or a more subconscious and uncertainly motivated emergence of a set of institutions to support forest owners is immaterial. These institutions exist and have a discernible if variable role in supporting non-industrial private forest owners. *Inter alia* such institutions can address

- Lack of economies of size and scale
- Absentee ownership and the delivery of management and work functions
- Countervailing power in selling forest products
- Certification and regulation
- Management of externalities/public goods through internalisation and regulation
- Management of public relations
- Support for innovation
- Rent-seeking behaviour on behalf of the forest owners

One of the major challenges facing forest owners’ associations is the multi-functionality of forests and the enormous diversity of owner motivations and values. If the owners are such a broad church as in intimated in studies of forest owners’ goals and attitudes, how can FOAs cater adequately for all?

A critical area of action by forest owners’ associations is the intermediation on behalf of positive and negative externalities. In many parts of Europe the management of unmanaged woodland to reduce risk of forest fires is a major priority. This function for collective action is a direct result of the inability of individuals acting alone to deliver the public benefit of reduced fire risk. FOAs also have the capacity to assist in the delivery of positive externalities. However, if FOAs do no more than act as a lobby on behalf of the forest owners there is a danger of free-riding by those who do not subscribe to these organisations.

The preconditions for formation of FOAs are potentially varied. They may arise because of a trigger factor or they may be constituted as arm’s length agencies by

government as part of a corporatist alliance between state and private sector. Restitution of forest land to former owners and their successors or those with other claims and the search for a just settlement in the partial restitution processes in post-socialist countries seems a plausible rationale for their formation. A second rationale is that such institutions can become delivery agents for combinations of public and private goods in ways that incentivise membership. Thirdly, there may be an evolving state of critical mass which at low levels of membership delivers few members but as the power of the FOA increase, it can engage additional partners in the collective enterprise as the marginal returns to a membership rise.

The scope for FOAs to intervene on behalf of their members is considerable. Their firm position in the institutional structures of some European countries is testament to their functional utility. This utility is not only about delivering financial returns to forest owners, although this may well be a concern for absentee owners who regard the FOA as a sort of low-risk, relatively low-cost consultancy. Instead, the FOAs are likely to deliver a range of functions from knowledge transfer to public good management in addition to what might be termed commercial services and support for forest management to generate wood raw material flow into the wood supply chain. However, their historic mission to ensure a controlled wood supply to industrial processors is now tempered by a range of complex functions which creates perhaps more scope for dissent and disagreement about their roles and *modus operandi* than was the case in the past.

3.6. Adaptive institutions and creative forest owners

The focus on WG 1 on two facets of private forest owners, their goals and values and the FOAs which have been formed to act on their behalf expose two contrasting perspectives on the challenges of engendering entrepreneurship in the NIPF sector.

On one hand, the study of forest owners' goals suggests a very wide range of goals with consequences that are not always supportive of greater delivery of wood raw material into the wood supply chain. It seems probable that the heterogeneity of ownership motives is increasing with, if anything, new owners being more ill-disposed to engage in overtly commercial and entrepreneurial activities in their woodlands. For many owners the value of the resource resides in the warm glow of ownership and the private amenities that the ownership confers. However, where there are newly restituted forests, other values and motives may prevail.

On the other hand, the case for FOAs seems to be made convincingly where there is a large pool of similarly disposed forest owners and, given the flexibility by the FOAs, it may be possible for such organisations to cater for a broad range of interests, certainly a range which includes both resident and absentee owners. However, at times it seems that the FOAs may be tainted by a productivist mind-set that was more appropriate a) when farm foresters were more dependent on wood sales for their well-being and b) when reasonable profit was made by the FOA operating on the owners' behalf. The value of a FOA is most apparent when the FOA can negotiate prices and deal with complex assortments of timber, handle regulatory demands and deliver through its or the state's forest management guidelines, the desired public goods. It is also advantageous when the FOA has political clout with the relevant ministries. However, the value of an FOA is determined by situational specificity as well as path dependence. It depends on the forest management challenges of private sector forest owners as well as on the history of the FOA and its position of acquired power and mediation in the forest management.

The competitiveness of the existing and emergent wood and non-wood supply chains associated with small-scale forestry is highly variable. In remote depopulating areas with relatively low amenity values, a high percentage of forest cover and a high degree of lock-in to the wood products industry competitiveness depends, *inter alia*, on the costs of growing and harvesting wood in small scale, compared to larger scale forests, the opportunity cost of forest labour, the competitiveness of the processing sector, the competitiveness in local wood markets (i.e. the absence of local monopolies) and the efficiency of the services provided by FOAs. However, where forest ownership units are small and FOAs weak or non-existent, the supply chains are likely to be very weakly competitive.

The competitiveness of non-wood supply chains is contingent on the strength of demand for such goods and services as well as on supply conditions. The extent to which the range of non-wood goods and services can be captured by entrepreneurial action is shaped by the disposition of the property rights as well as by the strength of market demand. There is no doubt where the constellation of supporting factors come together that the growing demand for non-wood goods and services can create vibrant enterprises often based on local- or region-specific product identities.

The relationship between these observations and rural development in Europe is indeterminate and complex as well as shaped by path dependency. On one hand, a primary sector centred model of the problem focuses on the weaknesses of the NIPF sector in delivering wood or non-wood raw material into supply chains which will contribute to the rural development. Small-scale forest owners are stigmatised for not selling and they are regarded as failing to contribute to the rural development. On the other hand, a more broadly based model of multifunctional forestry values, evidenced especially strongly in more affluent and densely populated countries, has the capacity to contribute to the rural development indirectly through the provision of highly valued green infrastructure. If affluent people choose to live in rural areas because of the greenspace provided by forests, traditional forest exploitation, especially where it involves activities, such as large scale felling, may reduce the values of the residential space the new rural residents inhabit. The expenditures of these new rural residents may provide multiple opportunities for rural entrepreneurship, but they are likely to be related to opportunities for the purchase of niche products or products which affirm their association with particular places. The attitudes and values of these incomers may result in tensions in the traditional occupational community and engender what has been described as 'defensive localism'. The aggregate economic impacts of defensive localism on one hand and the new rural economy on the other are not well known, although it is highly likely that an impoverished and structurally disadvantaged primary sector is a less bountiful platform for the rural development than a rural economy benefiting from in-migration of affluent incomers.

There are some certainties, such as NIPF surviving as a form of forest ownership. But there are also some uncertainties. The evolving nature of forest owners' goals and values will necessarily change alongside evolving understanding of how NIPF can contribute best to sustainable rural development. If the global crisis predicates carbon storage as a market-driven function, it would not be wholly improbable to anticipate a reduction in the felled volume of timber alongside the emergence of a more entrepreneurial approach to the management of forest resources for carbon storage. Whilst the wood supply chain might lose out, society at large might be better off as a result of the public good value of the climate change averted. Further uncertainties emerge through consideration of

local energy supply chains based on renewable biomass rather than on fossil fuels. The scope for biomass entrepreneurs seems considerable, but such opportunities cannot arise without policy leadership, supply chain development and institution building.

We are at an important point in the development of forests. The demands on forests will almost certainly change and there is a need for creative adaptive institutions and creative forest owners to meet these changing demands. Some will take an entrepreneurial route towards niche products, others will continue to meet the demand for commodity timber in the wood supply chain, and others will engage more fully with public goods, the composition of which will vary from place to place. The need for creative and adaptable forest owners and institutions has never been greater.

4. Options and challenges to SMEs in European wood product value chains

Summary of key findings in chapter four⁵

1. Small and medium sized enterprises (SMEs) in solid wood production value chains are identified as low tech⁶ which concerns the firms in wood harvest and procurement, primary and secondary wood production and solid wood energy production, respectively. These SMEs frequently apply high tech equipments as well as Knowledge Intensive Business Services (KIBS) implying high knowledge adoption potentials.

2. Position to mediate between non-industrial private forest owners and wood based industries make forestry contracting entrepreneurship important for sustainable development. Weak business profitability and poor internal investment financing options in forestry contracting challenge the positive development of sustainable forest management.

3. SMEs in primary wood product industries need horizontal and vertical co-operation with others in the value chains to fully use the economic potentials available. Steps towards participation in the wood product value chains can improve the identification of new pockets of demand in product niches, e.g. in wood frame construction.

4. Product design activities and knowledge resources have substituted the scale economies in production as the primary source of competitive advantages (CAs) among enterprises producing wood construction components, wood furniture or wood interior solutions, thereby contributing to the creation of high customer value products and services for their business activities.

5. The potentials related to the use of wood frame in residential construction have grown from the externality issues of sustainable development and transferred into consumer tastes. Low energy intensity in production processes and carbon storage properties characterising wood frame construction value chain can become a source of sustainable competitive advantages together with consumer preferences on wood aesthetics, natural construction materials and cost efficient custom solutions.

6. Wood furniture and interior producers have frequently derived competitive advantages from traditional, craftsmanship-based knowledge and design. The competitiveness in production has deteriorated in high production countries and SMEs have started to focus on commercial activities in the businesses of their home countries and delocalise production through investments or subcontracting solutions into low cost industrial districts. These districts must provide superior values through roundwood, labour or primary wood product supply, respectively.

5 The group was entitled 'Human development, niche production and innovation related to SMEs in wood processing industries using local forest resources'.

6 The terms low-tech (and medium low-tech) according to the OECD (1994) classification are based on the relative expenditure of a firm or sector for R&D. The ratio between turnover and R&D is in high-tech industries higher than 5%, between 3–5% in medium high-tech, between 0.9–3% in medium low-tech, and less than 0.9% in low tech industries.

7. Wood energy production from solid wood materials (chips, sawdust, pellets, waste wood etc.) has traditionally provided local demand for wood energy products whereas large-scale wood based energy production have excluded SMEs from the value chains (transportation entrepreneurship as an exception)⁷.

8. Delocalisation of wood industry production capacity (primary wood products and secondary wood product components) to areas with primary wood resources have created options to new cost advantages as well as to low cost SMEs to compete for subcontracts in the networks of international retail companies. Industry delocalisation provides new business options to local SMEs also through wood residue energy use.

9. Deficiencies in the business culture of post-socialistic economies have impeded the formation of business network applications based on partnership and jointly owned marketing companies.

Key messages from chapter four to policy makers, practitioners and forestry institutions

1. New entrepreneurship in forestry contracting is an important potential source of rural employment and income. The development of forestry contracting entrepreneurship implies business oriented entrepreneurs and adequate financing to be able to use the current technology opportunities available in modern harvesting machinery. The wood energy value chains can also be developed more efficient parallel to the forestry contracting development.

2. Positive scale economies dominate the search for competitive advantages in non-integrated primary wood product industries (sawmills and wood plate industries) supporting their localisation to low cost countries with relevant local wood resources.

3. Large multinational companies have widely substituted national tastes and marketing channels in furniture and wood interior value chains. The typical competitive advantages in the currently growing furniture business apply to

a) Cost leadership accompanied by certified added value chains and retail chain branding.

b) International brands with brand specific high quality products.

The former creates business partnership with SMEs meeting the cost efficiency and process certification standards and the latter applies partnerships where designers and producers are together able to create tailor made wood product solutions to high income class customer segments.

4. National programmes to support good business practices in wood frame construction could help entrepreneurs to manage the risks in investing in wood construction business in countries with no significant tradition in the construction of wooden buildings. Positive examples from Scotland and Finland to create business to business interactions in wood frame construction networks support a wider establishment of these programmes in Europe.

⁷ Concentration in low tech qualification logically excludes wood based biofuel industries in which the R&D investments are high.

4.1. Content of the analysis of SMEs in European wood product value chains

The summary from the activities of the working group two of COST Action E30 (WG 2) are reported in this chapter. The value chains discussed include solid wood products as well as wood energy production utilising solid wood materials (wood chips, sawdust, pellets and wood residue). Enterprises in these solid wood value chains have typically low tech characteristics. Since the wood product value chains are not currently integrated into forestry and timber procurement, the issues relevant for wood procurement entrepreneurship are being discussed separately in this chapter. The major sources of competitive advantages (CAs) for SMEs are value chain specific and differ between the chains. The CAs of these wood based value chains, including wood frame construction and wood furniture as secondary industries, will be discussed covering the issues of barriers to entry and industrial districts, respectively.

4.2. Competitive advantages of SMEs in wood product value chains

4.2.1. Sources of competitive advantages in consumer product markets

The cost minimisation strategy applying positive scale economies has dominated the business strategy of standardised (primary and secondary) wood product industries. Cost minimisation provides limited CAs for the SMEs in primary wood product industries. The latter promotes SMEs to focus on strategies utilising local demand advantages or niche market concentration. SMEs in secondary wood product industries have acquired CAs by value chain cooperation with strong marketing companies. Other ways of requiring CAs might have been through high craftsmanship skills and traditions or by adapting to the domestic market specifications and solutions supporting nearby customer taste.

The current structural key tendencies related to the changes in wood product value chains can be summarised by the following:

- First, the availability of adequate roundwood through profitable wood harvest entrepreneurship is among the primary issues of the value chains implying tailor made wood supply for the primary wood industry SMEs. High quality wood material supports the creation of sustainable CAs among secondary wood product industries.
- Second, new participatory solutions through business infrastructure or business network behind the strategic solutions to be applied in the SMEs of wood product value chains are needed. These new solutions covering vertical and horizontal networking with Knowledge Intensive Business Services (KIBS) and relevant schooling and research institutes are of primary concern towards CAs.
- Third, new CA potentials parallel to those achieved through the economies of scale or cost leadership are needed among SMEs. The potentials identified through firm specific innovations (radical or incremental) are of a major concern. The shift towards innovative economies implies success among SMEs not only in the traditional (and often linear) business areas with cost efficiency objectives but also in evolving business areas as a part of complex local, national and global value chains, markets and institutional environment.

Connected business interests among primary and secondary wood production industries inside an industrial district have not been typical earlier. On the contrary, the major success stories of furniture industry, north-east Italy and Denmark as important examples, have been based on imported roundwood and in many cases also on imported sawnwood. Wood frame construction in United Kingdom has also been to a great extent based on imported sawnwood. Adequate and up to date knowledge base from product markets, production technologies and related innovations has been among the major CAs for secondary wood product industry SMEs.

There are successful examples on the establishment of high value added production systems that do not benefit large local customer agglomerates. The key issues in those cases have been the unification and partnership in craftsmanship based on local SMEs and international companies with strong market orientation and adequate marketing channels. These arrangements have created strengthened links between rural production and urban consumption.

SMEs in the European wood processing industries are becoming more and more involved in the international interconnections around the primary and secondary wood product industries. The surveys from the participating countries of COST Action E30 (Jagér 2005) do not provide many examples of current CAs available to SMEs in secondary wood product industries. The current practices applied by the SMEs in secondary wood product industries are a) low technology solutions (measured by R&D investments to innovations) and b) standardised or products applying local preferences (leading to low price competitiveness in markets determined by international benchmarking firms)

Box 4.1. Small furniture product entrepreneurship in Salling, Denmark

Danish furniture industry agglomeration is an example of secondary wood product industry district characterised by the local SMEs and a joint interest of commercial activities in international trade. The key CAs among these secondary wood product industry SMEs can be traced into the structures adopted in the industrial district. The gradual growth of internationalisation in the Danish wood furniture industry represents endogenous rural development based on a regional knowledge and craftsmanship resources. The use of imported sawntimber must be noted in this context. The growth of production was based on the use of imported sawnwood and other primary wood products mainly from Scandinavian countries. Success in the growing international furniture markets was achieved through coordinated activities in education, innovation implementation and vertical co-operation between SMEs and resources related to international business knowledge.

The origin of the industrial district development can be traced to a) the local banking system providing risk financing to local SMEs and b) the public subsidies issued in Denmark to employ the rural people who had lost their jobs in the post war circumstances in the 1950s⁸. The production of furniture and related wood products expanded and spin offs increased the number of firms during the boom of

8 Increased productivity in agricultural professions released idle people in rural communities and provided options to establish small, craftsmanship communities. The growing number of the Salling Peninsula SMEs in the western area of Central Jutland started wood furniture production and constituted an industrial district through the growth of their export business that has continued since 1961.

demand for solid pine furniture in northern Europe during the 1980s and 1990s⁹. The growth of international business through endogenous development was based on regional resources coupled by coordinated activities in education, innovation implementation and vertical cooperation between SMEs and large scale commercial operations (see Hyttinen et al. 2002). The key feature of the Jutland wood furniture manufacturers was their dynamic informal inter-firm relationships that enabled the region adapt quickly to the shifts in demand (Selby and Petäjistö 1992, Asheim et al. 2003). Frequent meetings arranged by the local producers' guild provided information on technical opportunities as well as current trends in international product markets. Local capacities expanded through substantial co-operative innovations when many companies operated as sub-suppliers for their colleagues in the region allowing thus a greater flexibility. The latter developments demonstrate options of low-tech and traditional manufacturing sector to high innovativeness. There are collective and individual abilities among entrepreneurs to innovate and change to shifting market conditions allowing for flexible specialisation, innovating through interacting and jointly addressing problems of export market penetration and scale economies¹⁰. Low barriers of entry and local financing retained both the capital and the talent in the area. The matched patterns of social trust and flexible inter-firm communication have promoted the growth of annual turnover, new entrepreneurship, and the average size of firms remaining small in spite of others growing to a considerable size.

The CAs of local production among the Danish furniture SMEs have disappeared during the last century. These firms have delocalised their production activities into the countries of low costs in the Baltic Sea region and focused into design and trade activities in domestic business.

The multinational companies with strong retail business networks have increased the secondary wood product import from low-cost countries and taken a dominant position in the markets of standardised low-priced mass wood products for European consumers. The frequent solutions of delocalisation among the European primary and secondary wood product industries indicate their cost competition challenges with respect to the low cost imports. The countries and districts with harvestable roundwood resources have substituted roundwood exported to high cost countries with domestic production capacity. The supply of other factors of input (labour, energy) at competitive prices have promoted delocalisation as a solution. Large fraction of the secondary wood product SMEs in Denmark and Italy delocalised the production of components and semi-products for standardised wood products to their subsidiaries or their subcontractors in the European low cost countries. These products are frequently distributed by international warehouse chains¹¹ with the distributor's brand. The wood products in high end demand segments are still marketed by applying the brand names of the producers or districts among European secondary wood product industries.

9 source: www.danishfurniture.dk

10 The local innovative network has created the traditions of interacting and learning among SMEs as well as with the local technical school, the local producers' association, and local industrial service institutions.

11 IKEA as an outstanding example.

The specialisation of the value chains aimed to create high customer value through professional design products and high craftsmanship provide an alternative way to SMEs to continue their local production activities. Creation of brand names and business knowledge in marketing is the major source of CAs connected with high craftsmanship that can be supportive of branding to specialised demand segments. A broad definition of innovation ‘the transformation of knowledge into novel wealth-creating technologies, products and services through processes of learning and searching’ can be alternatively called decentralised industrial creativity (DIC) in this context (see Bellandi 1994)¹².

Participation in the international markets and business implies access to effective and skillful joint interest marketing among SMEs (plus their wholesalers and agents). Creating the Danish furniture brand (quality and design) was part of this marketing effort. The craftsmanship production has provided CAs for many European countries by adapting to national tastes (e.g. Portugal) or by international market success (e.g. Italy).

Small and medium sized enterprises in Denmark can often be characterised by geographically immobile combinations of place-specific experience based knowledge and competence, artisan skills and R&D -based knowledge (Asheim 1999). Similar kinds of CAs are available for SME activities in other wood based product value chains. These CAs come from a) local market specialities and b) individual customer values (custom made products/solutions) and imply strategies focusing on high customer adaptation and specialisation in product or service development. The custom made products have high added value and CAs are frequently defined by geographic proximities with or without partnerships with large wood product companies or their marketing or distribution network.

4.2.2. Wood product SMEs and industrial districts

Three separate issues, traditions of craftsmanship, socialist industrial complex and market orientation, are among the important origins of the recent challenges to restructure wood product SMEs’ business in Europe, all illustrating the impeding factors from path dependency behind the factors determining the economic development.

- First, it is typical among SMEs following carpentry or more generally craftsmanship culture to use imported wood or primary wood products in their production. For example, countries with a strong carpentry culture in wood furniture/woodworking products (doors, windows etc.) industry based on SMEs (e.g. Denmark, Italy, Portugal) have for long relied on imported primary wood products (sawn timber/wood plates) in their production. The use of imported (frequently standard) sawn timber and wood semi products focus the creation of knowledge based on CAs to design and product innovations without much concern with the quality derived from the wood resources used.
- Second, majority of the new EU countries (e.g. Bulgaria, Croatia, Hungary, Lithuania, Poland, Romania) have the history of large vertically integrated forest industry complexes. Those are inherited from the period of centrally planned economy and they have gradually been dismantled through the political

¹² DIC comprises of a) tacit knowledge (learning based on practical knowledge (experience) of which specialised practice is a prerequisite), b) creative collective potential available to the small firms in industrial districts or regional clusters concerned (Belliandi 1994).

restructuring of Europe in the early 1990s. Many of these complexes suffer from low productivity, inadequate products and old technologies. Some are still state owned but now majority of the enterprises are privatised. Some are also dismantled into specialised producers or taken over by international companies. However, majority of the companies still have difficulties to sustain competitiveness in open markets.

- Third, the division of enterprises with local market and international market orientation, respectively, is relevant both in the primary and secondary wood product industries. Participation in either a vertical value network or joint business activities in national SME networks tends to be an essential factor to wood product industry SMEs to be able to enter international markets. The participation in the international markets has strongly concentrated in many countries through consolidations and the expansion of international merchant activities in retail business (cf. furniture business above). The full use of CAs in the two business modes implies frequently the reorientation among the SMEs in their resources and managerial skills. Business strategy aimed at cost leadership benefits from craftsmanship skills and technical orientation whereas business strategy towards high customer value creation imply market knowledge and adaptive coordination skills related to value creation.

The introduction of product and process innovations, primarily identified as CAs in high tech industries, are frequently accompanied by an organisational change and a competence creation among the employees of low tech industries. New solutions as well as solutions of new outsourcing belong to organisational innovations. The formation of value chain through vertical integration or inside the industrial district implies the use of distributed knowledge base among the participating firms (Smith 2000). Knowledge flows within a distributed knowledge base can take place between industries with very different degrees of R&D -intensity. The latter obscures the analytical distinctions related to knowledge-based economies.

Clustered firms enjoy the potential advantages of localised learning in terms of their innovation performance. A Regional Innovation System (RIS) can in principle stretch across several sectors in a regional economy (Asheim et al. 2003). Regional clusters can stimulate economic activity level, if adequate resources and collaboration structures are available (see Isaksen 2005). The learning process becomes increasingly inserted into various forms of networks and innovation systems (at regional, national or international levels). Firms in the regional level can in some cases even preserve Sustainable Competitive Advantages (SCAs) without carrying the innovative processes of their own but not without external knowledge attendance (Isaksen 1999). The increased presence of multinational corporations (MNCs) supports the proposal over the progressive character of the regional clusters. The learning process becomes increasingly inserted into various forms of networks and innovation systems (at regional, national or international level).

4.3. Factors creating competitiveness or entry barriers for SMEs

4.3.1. Roundwood market balance and knowledge

There are structural imbalances in the local wood input markets among some COST Action E30 participating countries (e.g. the excess supply of pulpwood and sawmill residue in

Hungary). The imbalances are mainly due to the deficit in demand on pulpwood or wood chips. Excess supply can occur due to a) a lack of pulp and paper or wood plate capacity or b) long transportation distances to the relevant industries' markets transmitting the demand of these fractions. The difficulties caused by these imbalances could be passed, if a demand for bio energy wood was created on a regional or local basis. A low price or a lack of demand for bio energy wood challenges the profitability in primary wood product industries and forestry when using local wood resources.

The investments of the multinational companies made on delocalisation can improve local and national roundwood balance, if the pulpwood and sawmill residue market pricing is improved. Large scale production units of wood plate industries dominate in countries with a remarkable capacity available (such as Portugal, Finland, Germany and Norway). These particular industries using small diameter timber/sawmill residues are important wood plate suppliers to furniture and some interior craftsmanship industries. They constitute a strong potential and infrastructure for integrated industrial synergies with sawmill industry through the demand of sawmill residue.

4.3.2. Business infrastructure in forestry contracting

Forestry contracting entrepreneurs suffer from low profitability, lack of business growth opportunities and shortage of options for new entrepreneurship (Rummukainen et al. 2006). The fragmented capacity structures dominated by micro entrepreneurs lead to the deteriorating profitability among forestry contracting firms (e.g. in Finland, Germany, Lithuania, Poland and Romania). Wood delivery prices are stagnating or remaining on the same level when all the costs are growing at the same time. Entrepreneurs in forest harvesting and transportation are frequently considered to follow the strategy of survival rather than seek profit due to the continuous low profitability. The latter impedes both the new entrepreneurship and the growth of the current companies. Low credit rating and a consequent high interest rate due to the credit risk promotes internal financing. There are large country specific deviations, however, from the benchmarking determined by the Scandinavian countries.

Ergonomic problems caused by long working hours and difficult work conditions are among the reasons of a constant shortage of employees in logging and forest transportation. Many forestry contractors are well trained in mechanics and may even have completed forestry schooling but they are, however, frequently equipped with inferior managerial and business skills. When accompanied with a shortage of one's own assets, these circumstances tend to impede entrepreneurship and investments in modern machinery. Challenges related to customer needs in wood processing industries are increasing which concerns the precision of deliveries. Public governance has raised awareness related to sustainable forest management which affects the forestry contractors with more and more restrictions and regulations appearing in forest certification schemes. Forest operation management must be able to meet the environmental and ecological requirements without higher prices and increasing costs.

When a forestry entrepreneur acts as a harvest and transportation contractor to a single or few buyers s/he is dependent on these contracts due to the minimum annual harvest volume that the entrepreneur must acquire to maintain his/her business profitable. The latter effectively restricts options to develop entrepreneurship based on simple market transactions without permanent contracts. Only a small minority of the forestry

entrepreneurs is independent from permanent delivery contracts and only few of them are business oriented with procurement activities.

The structure of the forest contracting business depends on the wood purchasing structure of the area. Competition among the contractors is typical in countries where the buyer structure covers many SMEs as timber using industrial firms or trade middlemen. There is potential for positive economies of scale in the different dimensions of the forest contracting business.

Potential for new entrepreneurship is mainly found in the virgin markets where new cutting resources are supplied into the market. The low rates of profits make the business uninteresting to capital investors and imply large internal financing in investments.

4.3.3. Primary wood industry capacity structures and major competitive advantages

Capacity distribution is skewed (major companies producing the majority of the aggregate volumes and numerous SMEs) in almost all of the countries surveyed in COST Action E30 whereas sawmilling was concerned (see Annex 1 and Jagér 2005). The majority of SMEs in primary wood industries are sawmills. Large industrial sawmills (producing more than 100 000 m³/a) are oriented towards international sawn timber markets frequently belonging to and competing with international forest sector companies processing not only sawn timber but also wood based panels, pulp and paper. Large wood product industry firms can be found in each country participating the COST Action E30 (see Annex 1). These countries apply new, often high tech, equipments and produce the majority of the aggregated national volumes of wood products. These firms often have two or more sawmill units and frequently also wood plate producing units. These companies are export oriented many of which are owned by international companies.

A majority of the sawmill companies in the participating countries are SMEs producing less than 10 000 m³ sawn timber annually. These enterprises have their business in the local markets, but they are also frequently participating in the business networks in the downflow or upflow of the value chain. In Portugal, for example, large sawmills have increased their productivity and integrated business activities downflow into carpentry industries.

Micro and small sawmill enterprises often serve local markets with low productivity machinery. The presence of large scale units supports a high forest use but has frequently had negative impacts on SMEs due to their dominant position in the roundwood markets. Large companies can also provide options to SMEs through co-operative activities along horizontal or vertical lines of business (see Hyttinen et al. 2002).

Major CAs among the primary wood product SMEs imply strong mental capacity among managers and employees, respectively. Two major managerial modes, technological and organisational orientation, have been identified in the comparative study of sawmills in Norway and Finland. These modes imply different portfolios of skills and mental resources. According to the study, the key CAs related to technological orientation imply capital resources and technical skills, and the key CAs related to organisational orientation imply resources of day-to-day business operations with a flat organisation and a multitiered management. Firms with technology orientation frequently have scale economies available (see Husso et al. 2006).

Wood frame construction and wood based bio-energy are the major modes of providing enlarged solid wood use potential. Primary wood product industries using locally produced resources and secondary wood product industries applying local craftsmanship and knowledge of national standards and tastes are under a rapid reorganisation in Europe.

Resource based and competence based sources of CAs substitute innovativeness and superior business management among primary wood processing enterprises. Their CAs rely on the well functioning production and management processes and the related process technologies. Enterprises in the primary wood processing industries dominated by low technology production (with some extensive exceptions, such as laminated veneer lumber solutions in wood plate industries) are weakly integrated downflow in the value chain towards structural timber products and system components. Traditionally, it has been typical for every participant in the chain to develop their own independent value creation and concentrate on benefitting from the specific CAs of their own.

The excess demand of softwood logs constitute a permanent threat to the competitive position of SME sawmills whereas multi product capacity utilising the supply distribution of logs, pulpwood and sawmill residue supplied in the local market occupy sustainable CAs in the regional roundwood market. The capacity of the local markets can thus make a bargain of all timber assortments supplied by a single private forest owner contrary to the sawmill SMEs which may only use relevant logs in their processes.

The CAs of primary wood processing SMEs are frequently acquired through market penetration based on the present product portfolio instead of the economies of scale available to large companies. The major sources of CAs lie in input purchasing conditions and customer services and less on the core product performance. Specialisation can be developed through a specific demand segment (based on locality, special requirements etc.), penetration or through the upflow or downflow integration (e.g. through networks) in the vertical value chain.

The product portfolio of the sector as a low-tech industry is dominated by simple mature products making it difficult to appropriate the factor or product CAs among primary wood industries due to their characteristics (market domination or strong ties to suppliers and customers instead of patent protected objects). Currently, the sector is in a maturity phase of its technological life cycle and it can either impede or support the exploitation of technological opportunities. In the short run, there is no sign indicating revolutionary break-through in technologies or products which would profoundly change the competitiveness of wood products in the markets.

4.3.4. Value chain identification in secondary wood product industry SMEs

Visibility in the international markets

There are strong consumption potentials for new added value wood based products among countries¹³ with a high GNP per capita. The products that command unique design and material solutions together with high level craftsmanship are needed to acquire SCAs in countries of high production costs. The high end product groups imply well functioning

13 Austria, Denmark, England, southern Finland, west (esp. south) Germany, northern Italy, the Netherlands, Norway and Switzerland.

marketing and retail networks to make the customer value created visible in the market¹⁴. The average SMEs need joint interest activities with similar kind of trade partners to achieve the visibility in the international markets. The countries¹⁵ characterised by a rapid increase in the GNP per capita provide markets for both niche and standard products. The latter type of markets is typically available for SMEs through partnerships in a strong business network with a strong network core firm. Countries of low GNP per capita have limited domestic markets for wood based products except for standardised products from which the competition of the international retail companies is hard.

Some key factors supporting the competitiveness of SMEs in secondary wood product industries can be specified by the following:

- The competitive infrastructure faced by the SMEs can support incremental innovative activities through learning by doing and learning by using both assisting in the creation of new tacit knowledge in an enterprise. The knowledge infrastructure induces knowledge transfer either through intended firm co-operation or through imitation or copying diffusion inside the industrial districts.
- The endogenous inter-firm structures of vertical and horizontal co-operation have supported the creating of trust among entrepreneurs for the joint efforts to arrange access to relevant market information and international marketing.
- The use of regional knowledge capabilities rooted into the patterns of inter-firm networking and inter-personal connections may create SCAs.
- Public incentives, both those issued to individual firms and those for the development of knowledge and business infrastructure, have frequently been valuable in the creation of the business infrastructure for wood product SMEs in the secondary wood processing. The scope and extension of public interventions are important to identify to attain incidences with the case specific needs.

Value chain reorganisation

Business delocalisation means a transfer in the existing production capacity from one area to another. Delocalisation of wood product industries to countries of low costs in the Far East is among the major challenges facing European wood product industries. This development may decrease the industrial use of European allowable cut potentials. In addition to the outsourcing, there are two fundamental types of solutions to reorganise wood product value chain by delocalisation. First, delocalisation in an area where industrial process starts using roundwood locally (instead of the prior roundwood export), and second, in a place where secondary wood product industry creates new industrial infrastructure with the existing primary wood product industry. Positive and negative spill-over impacts can be expected from both of these delocalisation modes on the current networks and industrial districts where SMEs cooperate.

The delocalisation of production plants or even of whole industries causes negative direct employment and roundwood utilisation impacts and in addition, indirect multiple income impacts. Impacts on SMEs relate frequently to subcontracting options because

14 Danish furniture industry won the competition to furnish the Museum of the Modern Arts in New York City thus increasing their visibility among the customer segments considered relevant for the Danish furniture and interior value networks in the US markets.

15 Croatia, Hungary, Ireland, Lithuania.

the major delocalisation decisions are those of large companies (Ollonqvist et al. 2006). Tangible conditions related to low production costs or product market expansion can frequently be traced to the delocalisation solutions in wood product value chains. These targets were identified among the Italian firms (Cesaro et al. 2006) but may be considered valid in other regions, too. Access to new timber resources has been valid when considering the delocalisation of some Finnish corporations to the Baltic countries (Ollonqvist et al. 2006). The CA targets on delocalisation are typically derived from cost leadership objectives that in turn may create barriers to new entrepreneurship. The receiving country may take supportive action towards new entrepreneurship when promoting foreign direct investments.

Wood furniture industry clusters have reorganised their value chains through industrial process delocalisations and international subcontracting arrangements. The option to preserve competitive position in standardised mass product markets can frequently be identified behind these reorganisations. The recent delocalisation of secondary wood product industries has the same explanatory factors behind their developments as the primary wood product industries (see the case of north-eastern Italy in Cesaro et al. 2006). Low tech industrial processes apply techniques that are available in the international markets. The increased automation in production has not stopped the need for outsourcing of productive activities to low cost countries. Danish companies have outsourced much of their standardised production into the Baltic countries and Italian companies to Balkan region (Romania, Croatia and Bulgaria) during 1990s and afterwards also into Taiwan and China.

Value chain identification through sustainability arrangements

The share of local value creation in the wood based value chains varies from case to case. The CAs available to SMEs can be extended into national and even multinational markets when accompanied with network memberships and possible solutions to co-operation (partnerships or subcontracting). Consumer markets of the major wood based products are demand driven, i.e. market availability and visibility have become more and more important sources of CAs in those markets implying resources to marketing and delivery network creation.

There has been a parallel development with respect to the CAs from eco-efficiency. The constantly growing challenges towards sustainable production and consumption (low energy use and climate impacts plus recyclability) have improved CAs of wood based products due to their carbon sequestration characteristics (in production and use). European wood product value chains account for 8% of manufacturing industry added value in the EU, utilise a renewable and continuously growing forest resources, count income provisions to sixteen million private forest owners and provide three million industrial jobs thereby demonstrating strong economic and social weight.

Vertical value chains in wood frame house business

The major growth potentials in wood product markets are identifiable in house construction value chains through

- expanded renovation and maintenance construction. House stocks (flats and single housing as well as schools, hospitals and other houses of service) were massively expanded during the post-war urbanisation and all of these houses are currently at the point of major renovation and modernisation needs.

- expanded services block of flats/house construction for elderly people (age groups of 65+). These age groups have high average purchasing power and major current urban structures in Europe are not adequate for their preferences (cf. cities for the retired people in the United States).
- modern living areas in eastern Europe for high income residents.

The current secondary wood product industry indicates low prefabrication and low degree of integration with companies in the construction sector. There is frequently a lack of module and component suppliers that could serve construction companies and drive product development according to the perceived needs of their clients or final consumers (Rimmler et al. 2006). The wood product manufacturers have fewer contacts with on-site operators than what is typical within the concrete companies in the industry. Firms in the latter group provide their components as subcontractors directly to the construction firms and entrepreneurs. There is a strict competition in all major construction markets between wood based solutions and those applying other basic materials (steel/concrete). This competition creates pressure to increase cost competitiveness throughout the value networks of the standardised products.

Wood frame construction has evolved mainly in the areas of a historical wood frame construction culture (such as in Scandinavia, Great Britain, Germany and Austria). Tradition has created CAs in the low rise residential construction in general as well as in single house markets, in particular. The strong position of SMEs in these markets in Scandinavia, Germany and Austria arises from a tailor-made supply that these firms have been able to develop. The expansion of wood frame construction into BtoB markets in Scandinavia and Great Britain has supported the value chain formation with participation of the SMEs. The major CAs of SMEs in the wood frame house business originates from their ability to minimise costs with standardised modules.

Traditionally, it has been typical for every participant in the wood frame house chain to develop their own independent operations creating separate developments for the competition. This firm specific operation mode has established no immediate contacts with the end-users (Kairi 2005).

4.4. Business infrastructure reorientation in solid wood product value chains

4.4.1. Tailor made timber supply in forestry contracting

Roundwood market structures are liable to rapid changes characterised by consolidations and internationalisation of large wood processing companies. The growing annual demand of wood among the individual wood processing companies has been the outcome accelerating dependence on a single buyer among the forestry contracting enterprises. Consequently the market power of an average forestry contractor is weak when negotiating on prices of contracts, equipment, fuel, spare parts etc. (Rummukainen et al. 2006). This weakness can be overcome through the restructuring of enterprises towards a multiple harvesting chain mode. This way the entrepreneurs can allocate their machine capacity better and adopt special machines, such as thinning harvesters and tracked machines for slopes, into their portfolios. There are clear CAs mainly through cost reductions achieved when harvested with special machines compared to harvesting with more general types of machinery.

The harvesting entrepreneur may achieve CAs when contracting with an individual forest owner, if s/he can provide all services from logging to planting. This kind of enterprise will be able to produce all services or subcontract parts of the services to other enterprises. There is empirical evidence of some CAs available in the form of niches as substitutes to the scale economies where the small sizes of enterprises may even be beneficial.

Participation in the harvest contractor association may also support entrepreneurship. The associations provide potential market power through coordinated public policy actions, professional training and schooling, and coordinated research and development efforts. The associations can elaborate tendering procedures and direct agreements so that besides price, work quality, impacts on the environment and the reliability of deliveries are taken into consideration as contractor choice criteria.

Tailor-made timber supply accompanied with more effective operations and logistics in wood procurement are considered potential sources for expanded added value in rural wood production. These systems are needed to be able to provide tailored raw materials for various value chains and at the same time to utilise efficient and environmentally friendly forest operations and transportation systems. There are challenges especially for SMEs in the wood procurement to finance the investments for developing semi-automatic forest operation systems and new solutions for the interface between man and machine in optimised wood supply management (see Forest-Based Sector Technology Platform 2006).

The wood-quality assessment based on the latest IT techniques available at the forest harvesting sites helps to utilise raw-material properties fully in different value chains. New partnership and upflow relationships (with forest owners) can create new CAs in production and logistics. There may exist new CAs for specialised forestry contractors because of the differences in wood procurement and delivery requirements in pulp and paper industry, primary wood product industries and bio-energy industries, respectively. Forest investment services in regeneration, forest stand improvement and restoration may also provide niches for forestry contracting enterprises.

4.4.2. Niche production and focus on business strategy among primary wood product firms

Primary wood product industries (sawing, cutting, slicing) involve diverse processes for the production of semi-products to be used by the secondary wood processing industries. New research in the value chain downflow can promote innovative products and production processes. There are needs for components and modules to be integrated into the production concepts of secondary wood processing industries. Advanced sorting and grading systems for roundwood and advanced processing technologies, for example, provide options for higher material efficiency and qualified product and processes.

Processing techniques can involve incremental innovations adapted to the specific requirements of novel products, helping to enhance material efficiency. The intake of new concepts (e.g. techniques making wood drying faster) to speed up production line would increase productivity and/or decrease energy consumption. Improved competitiveness is needed in the woodworking industries through cost-efficient and added-value manufacturing compared to competing material based (steel/concrete) value chains. The

added-value manufacturing implies new generations of wood-processing technologies to be accessible for the production of high performance products.

Enterprises in the primary wood processing industry can be characterised by mature technology and standardised products. This business infrastructure provides only small technological opportunities to acquire CAs. However, there might exist ‘pockets of demand’ in specific product niches, e.g. in wood frame construction. Part of the options may relate to the recovery improvement and waste reduction. The latter may be available through developing and investing into new sawing technologies (curve sawing or small log diameter sawing). Focusing on product quality and further processed and customised products provide a second potential road towards improved CAs (Rimmler et al. 2006).

4.4.3. System solutions in wood house component industries

Secondary wood processing industries provide new added value potential in conjunction with novel quality assessment techniques (Rimmler et al. 2006). The potential areas for development are identified in thermal smoothing, the application of specialised high performance cutting and planning tools, novel hardening and multi-functional protection techniques, innovative 3-D cutting and forming processes, improved gluing techniques as well as in advanced processing of multi-composite materials. These advances provide a basis towards more efficient wood use, improved product characteristics and new functionalities created by re-engineering particles, flakes, veneers, sawn timber or by chemical, thermal or mechanical modification technologies.

There are niche dwelling house construction potentials available in business-to-consumer (BtoC) construction segments providing appropriate business opportunities for SMEs in the value networks. The major challenge in these niche markets relates to the production costs which tend to be high because of the individual planning component production and the need for high quality craftsmanship in assembling and installations. In other BtoC segments in construction strong market competition limits opportunities for new entrepreneurship without new production or business innovations.

An increased share of wood-based materials in construction, family-houses, office buildings and multi-story buildings implies novel building concepts (e.g. sound and thermal insulation, fire protection, hazard safety) to create CAs for wood frame construction. Modern construction methods tend to proceed in situ construction operations towards assembling from industrial modules and components. This approach provides cost reduction options and simplified construction methods in situ (e.g. pre-fabrication, gluing or joining at the construction site, system solutions). Increased wood frame construction would lead to a sustainable living environment and a better quality of life for European citizens.

There are technical solutions available to increase the use of wood structures in cost-efficient and large-scale constructions that require high quality standards. Multi-material solutions may lead into a more wood-based construction solutions characterised by improved properties in terms of strength, shape stability and durability.

A timber frame house component entrepreneur has to adapt to the best practices in mainstream construction as well as to the customer orientation in their supply chain management. They are among the key sources of CAs to outperform competitors in business-to-business (BtoB) markets. This requires a forefront position in adopting best practices in construction and in the management of related supply chains initiated and

implemented by the construction companies. Options for new entrepreneurship in BtoB market segments are limited by the strong position of large construction companies in urban constructions. These large construction companies dominating the volumes of urban dwelling house construction have their main business interests in the cost efficient subcontracting solutions. The profit margins in these subcontracts are typically low and restrict consequently financial resources and possibilities to develop one's own product or process innovations. Timber frame house component producers need lively research and development activities toward new component and module specifications in order to be competitive in the markets.

There have been public programmes in national contexts (for example, in Finland, Norway and United Kingdom) to promote the creation of vertical value chains related to wood construction (see Rimmler et al. 2005). A major barrier to new entrepreneurship in wood frame construction is the high capital investment need to build up the capacity. There are little opportunities of internal financing because of the low average profitability in business. On the other hand, there has not been enough risk capital investors interested in this business because of the low risk corrected expected returns.

The establishment of enterprises producing new sub-products and components is necessary to create new value chains that may serve construction companies and evolve customer oriented product developing. Access to structural product and subsystem delivery markets require joining forces in collaborative supplier networks among the SMEs. Public policy actions addressing the bottlenecks and evaluating feasible solutions are needed. These challenges cover product innovation, marketing competencies and business resources as well as SMEs' collaboration with large enterprises and suppliers, respectively.

There are no major direct regulatory barriers to apply timber frame in residential construction in Europe. The timber frame meets all current building regulations. Varying practices across countries, nonetheless, complicate or restrict market access. Policy makers should therefore ensure that the harmonisation of wood use regulations in construction proceeds at EU level. Currently, there are a number of Eurocodes but their use is still limited. There are successful examples of primary/secondary wood product value chains (e.g. in Portugal with carpentry products and in Ireland with niche products) (see in Ireland: <http://www.unece.org/trade/timber/mis/market/market-60/ireland.pdf>, Wales: Jaakko Pöyry International 2004) but they are not yet identified in wood frame construction business.

There are options to the participation of SMEs in the advanced prefabrication systems for efficient, rapid and flexible building. The planned building systems addressing individuality as well as tailor-made solutions for families throughout their life cycles,, barrier-free living (e.g. handicapped or elderly people), ergonomics, communication, mobility, and safety aspects can provide access to the creation of CAs. The same is true of the services facilitating renovation, restoration and reinforcement of building structures.

4.4.4. Forest sector enterprise developments in bio-fuel business

The increased use of wood biomass for energy has been promoted by the price increments of fossil fuels, international policies targeted to restrain the impacts of global warming and recently established protocols for carbon sequestration markets. These changes have

promoted business opportunities for sawmills, for example, which are frequently self sufficient in energy use, and some of them can even sell their surplus energy in the markets. The dry waste of the sawmills is used in its entirety and can be sold in a relatively high price (e.g. 45 Euro/t in United Kingdom). Recently, urban heating by thermal stations using wood waste, fire wood, pellets or briquettes have become essential.

Forest residues, wood chips and pellets can be used for heat or electricity and they are tradable through organised commercial markets. District heating or cooling plants need constant amounts of wood waste making these modes of wood use and trade more formal and steady. Aside these, there are two basic principles available to develop production processes towards wood based fuel industry (Lunnan and Padureanu 2006):

- Syngas-process in which wood is gasified providing energy approximately 5–6 MJ/m³ of wood.
- Liquid fuel method, applying pyrogenic distillation of wood. Liquid fuel can be used in small electric plants, dryers and even engines.

Box 4.2. The main barriers in the eastern European countries towards new entrepreneurship in wood energy value chains identified in the COST Action E30:

- Low prices of wood products in energy use
- Insufficient technology solutions and inaccessibility to modern technologies
- Lack of financial support
- Low energy prices

Increasing the share of bio-fuels in the transportation sector, and thereby decreasing the dependence on petroleum oil, is among the challenging goals of current EU energy policy. A large part of the bio-fuels is expected to be produced inside European Union. European forest-based sector has the potential to become the major player in European bio-fuel production. Present-day first generation bio-fuels need constant subsidies at the current levels of competitive fuel prices. In the near future, new processes based on gasification (for example, based on the so-called Fischer-Tropsch synthesis) could become more competitive in the markets (Forest-Based Sector Technology Platform 2006; Kauppa- ja teollisuusministeriö 2006).

A prospering business area can be developed in the production of second generation transportation bio-fuels from the forest-based biomass. The processes, upon which the new business is based, will be developed to operate reliably and efficiently for a wide range of forest-derived feed-stocks. These feed-stocks include biomass obtained directly from the forests and tree plantations, mill residues and certain streams of fibre and wood waste. These developments will result in an integrated biorefinery connected with large scale pulp, biofuel and other biomaterial production. The SMEs have their niches mainly in the production pellets, wood chips etc. for small or medium sized power plants.

4.4.5. Industry integration and market globalisation

Horizontal and vertical collaboration solutions constitute two identifiable modes to create CAs among the SMEs. The horizontal co-operation involves activities between

competitors who are specialised in more or less on the same stage in the production hierarchy.

Horizontal collaboration includes:

- Joint participation in the development of new product lines incorporating e.g. the development of ‘total solutions’.
- Creation of joint brands for new product line within the network of firms or joint co-operation to achieve environmental certification.
- New marketing and sales processes to coordinate marketing efforts and joint attempts in new market introduction.
- Joint production facility investments towards the economies of scale, joint machinery, joint subcontracting or storage, or joint production facility abroad.

The formation of multinational structures in wood industries has become common, in particular, among companies with export oriented business profile in their history. Market globalisation supports domestic/local producers to concentrate more on the domestic markets. The market globalisation developments challenge companies to search for new arrangements enabling them to participate and compete in international business networks.

There are subcontract options available for SMEs in primary and secondary wood product industries with large international merchant houses. These contracts imply high cost efficiency among the participating firms. The contractors need only limited resources, if any, for new product innovations or related R&D activities. The major social contribution of these SMEs relates to local employment and to the use of local timber resources. Contracts are difficult to maintain except for the countries of low costs due to the tight international price competition. Urban demand preferences to standardised low cost products tend to favour international merchant firms and their products. Currently, the CAs of these international companies are based on concentrated market segmentation and strong cost leadership throughout the value chain.

Vertical collaboration is created among suppliers, customers and other agents inside the joint interest value chain. Vertical relationships between SMEs include subcontracting assignments and established relations with new suppliers. User-producer interaction is particularly essential when arranging new product designs. Some firms use specialised services outside their local innovation system (e.g. designers) where a high proportion of the ‘normal’ innovation and learning activities take place. Flexible interaction patterns are of great importance. New varieties of products can be offered to the market through numerous solutions on the supplier structure arrangements. The suppliers have implications on new product designs in the sense that users and suppliers can work out together to find new designs valid for the market and feasible to production (see extensive Nordic survey in Asheim et al. 2003).

The major difference in horizontal cooperation is due to the complementary of added value creation inside the value chain. It is of great importance to recognise that the stable relations between collaborating SMEs are often trust-based both in vertical and horizontal collaboration.

Business structures and networks viable to SMEs frequently utilise territorial solutions. The basic types – industrial districts and industrial clusters – differ from the extent of value chain configuration. The industrial districts comprise of processing firms sometimes complemented by knowledge intensive business services (KIBS) (e.g. firms providing design and CAD/CAM services). The industrial cluster comprises of producers

and a whole spectre of fixed input factor suppliers. It has been possible to identify a wide variety of territorial solutions among the participating countries of the COST Action E30. Some of the integration solutions, such as in Portugal, Norway (Sunnmøre) and Finland (southern Pohjanmaa and Lahti regions), have provided CAs to SMEs through territorial agglomeration.

Box 4.3. Wood product SMEs in the business infrastructure dominated by multinational forest industry corporations – case Finland (Hazley 2000).

Wood processing industry has constituted slightly smaller proportion than that of pulp and paper industry in the industrial use of roundwood in Finland. Three large multinational corporations with their home base in Finland, have their core business interests in the pulp, paper and paperboard industries. The production units of these corporations cover almost all annual production of wood based panels and about a half of the total annual sawn timber production in the country. There are, in addition to these, also a) large export oriented family companies producing about a quarter of the annual sawn timber production and b) family owned SMEs sawmilling enterprises with properties below the limits of the previous group (group a). Over a half of the aggregated industrial sawmill production is exported and sold mainly to other European countries. Almost a half of the firms in group b) operate in the domestic markets.

The business activities in the secondary wood processing industries comprise of (i) the manufacture of prefabricated wood frame houses, and (ii) joinery, including windows, doors, casings, stairs, handrails, roof trusses, flooring etc. One third of the total production of wood houses is exported (doors and parquet). Less than nine large firms in the group (i) and in the subgroups of doors and parquet in (ii) cover 80% of the total production in these sub-industries. The large firms have their major interests in the international markets. Many SMEs focus on the demand segments which only provide satisfying levels of turnover without any potentials to growth. In most SMEs the interest on entrepreneurship includes self-employment and other social reasons (Mäkinen and Selby 2006).

The gross business turnover of Finnish wood product industries has more than doubled in the past twenty years. Still, the profitability has been equable or on a deficient level in many sub-sectors of the wood processing industries. Outsourcing and focusing on core competence have been delayed due to the lack of qualified subcontractors. There are only few examples of horizontal integration and networking among forest cluster SMEs in Finland in spite of the extensive public promotion activities by TEKES¹⁶ and SITRA. There are a few successful examples of vertical partnerships between sub-contracting component producers and large furniture companies (Humala and Peltoniemi 2001). These SME producers aim to benefit the economies of scale in production thus leaving product design and marketing efforts to the furniture companies. There is a high threshold to entrepreneurship and expanding business, irrespective to the extensive subsidies to new entrepreneurship, innovations and heavy public investments into various R&D programmes.

16 TEKES (Finnish Funding Agency for Technology and Innovation. The main public funding organisation for research and development in Finland, funds industrial projects as well as projects in research organisations, and particularly promotes innovative, risk-intensive projects.) <http://www.tekes.fi/eng/>

The pricing of roundwood has been more based on the competitive markets from 1999 onwards. The market structure reform supported market information production among independent institutions and progressed increased competitive features of the roundwood market. The competitive roundwood markets may impede the price/quality ratio for the SMEs dependent on the high-grade wood raw material. The expansion of the roundwood markets due to the enlargement of EU may cause threats especially for Finnish sawmill SMEs, but on the other hand, it may also mean opportunities for innovative high quality special products with competitive price/quality ratios.

Low profitability among the SMEs in the different stages of wood processing value chains motivate for participating in and creating of value chains. Low profitability typically impedes access to risk capital markets and the creation of value chains managed by capital investors. Forestry and the wood product value chains differ from region to region in Europe due to the differences in business infrastructure, timber resources or ownership structures. The major concerns are in the urban demand base. The key competition in the markets can be identified between the input factor specific value chains. Competitiveness among the European wood product industries implies accessibility to the markets of high-quality wood material supply. Improved wood-supply systems and forest management models are therefore needed. The links in the vertical value chains between the forest owners and the secondary wood product industries need more focus as well as the strengthening of the existing links in most parts of Europe. The improvements of competitiveness in the upflow segments of the value chains imply raw material provisions, tailor-made wood products, efficient and environmentally friendly harvest and forest transportation operations as well as managerial patterns for wood market actions (Forest-Based Sector Technology Platform 2006).

4.5. SMEs in wood based added value chains in the future

Enterprises in wood based business networks require different types of managerial knowledge and infrastructures. SMEs in forest contracting mediate between non-industrial private forest owners and primary forest industry firms in order to be able to utilise the forest stand properties and harvested timber optimally to support biodiversity in forests, logistics and firms in the value chain. Options to new SMEs in the forest management and timber harvesting are connected to the development of new practices and schemes in timber harvest and regeneration activities. There are also potentials in wood grading for different wood-based value chains. The wood harvest enterprises should improve their knowledge base in these options between the forest owner and the wood processing firms.

Primary wood product industry SMEs are more and more dependent on globally distributed knowledge and R&D. A majority of those lag behind the development frontier created by radical innovations. On the other hand, the efficient creation of tacit knowledge through user-producer learning implies localised interactions and constitutes part of their CAs. Firms need analytical knowledge base with a strong scientific background to have access to R&D driven global knowledge flows. Local interactive learning with KIBS can substitute a part of internal resource requirements and create a synthetic knowledge base

when there is only strong engineering background available on the firm level. A parallel command of these areas of knowledge is a challenging task to the SMEs. The small and medium size entrepreneurs have little intellectual resources to be allocated to business strategy developments due to the predominance of the ongoing business management activities. This is a great challenge when the current market integration and geographical expansion are evolving. Innovative SME solutions inside wood product value chains have been, nevertheless, identified in the recent European survey (Rametsteiner 2005).

The CAs among the SMEs frequently imply innovative performances, i.e. abilities to implement new and improved management in novel product marketing. This is due to the limited abilities of the SMEs to apply positive scale economies and create standardised solutions. Technological innovations are frequently complemented by changes in the organisation of firms and the abilities to learn, use and develop solutions. Technological learning is important especially for SMEs applying partnerships inside networks. Vertical collaboration or partnership models upflow in the supply chain can create complementary CAs to production and logistics, and downflow to products and services.

Currently, there are limited options available for the SMEs to integrate into wood related value chains. Networking is one of the main stream factors in creating CAs among SMEs in the consumer markets at the time of an accelerating globalisation. The actors and stakeholders promoting the formation of business networks can also promote new entrepreneurship and support the emergence of necessary skills towards the jointly acting SMEs in the market of forest products. The creation of value chains and also the modes of participation in the emerging international markets must be actively promoted by national public agencies.

Local entrepreneurs in wood product SMEs have traditionally relied as businesses on the domestic markets and external export agencies. Small enterprises have little or no direct presence outside the local markets except for cluster and networking solutions discussed earlier. Trade guilds focusing on specialised markets and marketing expertise have provided solutions to cluster related SMEs to meet the challenges of the international markets.

The enlargement of value chains in EU and/or global dimensions raise new challenges in the local business infrastructures of wood product SMEs. Primary and secondary wood processing industries have developed the conditions to realise the potential value of high quality woodlands thereby connecting the resource flow from forests to the markets. This connection may help to build-up high quality branded solid wood products and also assist the value chains of standardised, low price mass products.

The wood furniture and interior product markets seem to develop towards two basic structural solutions: a) standardised, mass produced product portfolios based on cost minimising value chains¹⁷ and b) high added value product portfolios providing user-friendly and high-quality solutions for consumers. These value chains are organised by local, national or multinational networks. The basic alternatives for participation in these value chains imply different qualifications and knowledge base among the managers and workers. The managers and the owners of the SMEs must understand and create a required level of knowledge and skills among their workers. Multi-skilled individuals are needed in the SMEs contrary to large firms which can afford to appoint high-level

17 International retail companies dominate in organising and managing the value chains and command SME participation in the chains through cost leadership arrangements.

specialists. Public policies should thus aim to stimulate specialised training and capacity building in the SMEs.

House construction business is developing towards the mode based on the assembling of factory produced and also frequently finished components and modules in situ. This development leads into a transfer of qualified workers indoors creating specialised assembling professions and businesses. The wood module and component industry will be able to provide high quality, easy to use items with adequate system solutions when open access specifications and connecting interface standardisations are established. Common specifications and standards are necessary to develop for creating jobs for wood-based businesses from new constructions and also from renovation or replacement constructions.

Full engagement of wood products and wood-based panels as integral parts of building-systems are needed. This would help to achieve wood-based alternatives for steel and concrete based house construction solutions. The vertical value chains in house construction are typically multinational and provide options for SMEs through partnerships with module and component producer, core firms or business networks. Large scale industries are necessary in wood construction BtoB value chains (Rimmler et al. 2006). They can create arrangements based on specialised expertise in international projects or create constant flows of materials in the vertical value chains as well as maintain infrastructures for multinational solutions.

Price increments in non-renewable energy sources have gradually improved CAs in wood based energy solutions. Energy production integrated into pulp and paper or primary wood product industries have long traditions. New process innovations of integrated solutions can improve harvest and wood procurement profitability and create new entrepreneurship. Solid wood energy product value chains, such as pellet production, have a long tradition as integrated business in primary and secondary wood product industries. These value chains provide opportunities for SMEs particularly in local energy production. Wood energy value chain applying wood chips provide challenging options to wood harvesting SMEs. Small diameter wood from thinning and young stand improvements are gradually providing opportunities for business activities in wood procurement.

5. Non-wood forest products and services

Summary of key findings in chapter five

1. Better conceptual understanding of non-wood forest products and services is introduced at two levels: (i) system of classifying terms and definition for all forest products without negative ‘non-wood’ connotations and (ii) common frame on non-wood forest products and services indicators.
2. Impulses from outside the forest sector have been of primary importance for the development of forest-based service businesses. Similarly, the impulses to develop ideas into products and services also tend to come from individual innovators rather than as a result of established organisational structures.
3. Human and social capital, for example, knowledge in the subject of the product/service being developed (such as guided bird watching tours), skills in the delivery of services or business activities (such as marketing), and trust between actors, are fundamental to successful innovation. Trust is particularly important in ensuring productive networking between the actors.
4. From a marketing point of view, the sector of non-wood forest products and services is very heterogeneous. Marketing efforts should be separated from mass market and specialised market products and services as well as from products and services that complement other products or services (such as trails of chestnut in Italy). Often each product or service still needs their own marketing strategies.
5. Despite the heterogeneity of NWFP&S, the whole sector can still be seen as product oriented and this approach should be clearly shifted to more customer oriented direction.
6. For many NWFP&S, clear property rights’ regulations and rules and product standardisation (also certification) are prerequisite for developing new markets.

Key messages from chapter five to policy makers, practitioners and forestry institutions

1. To increase the possibility of commercial success in non-wood forest product enterprises, producers need to develop greater product differentiation and move up the value chain towards more innovative specialised production.
2. Heterogeneity is probably among the key reasons why NWFP&S have had little success in finding institutional, marketing or business development support in many countries. The systems of classification and indicators should be developed into a better conceptual understanding on NWFP&S, as it is fundamentally important for any institutional development efforts to support NWFP&S sector development.
3. There is a need for adaptation and diffusion of new product ideas, and exchange and development of knowledge and skills, to build-up better changes for innovations in forest recreational services. Attention should be paid especially on the institutional conditions in which innovations occur and evolve.
4. An important tool for successful marketing is the control of quality, helped by standardisation and trademarks in the case of mass products and by different certification systems in the case of specialised products.
5. Integration and networks can be created through producer/grower associations, external institutions, partnerships and coordination of initiatives between public authorities and private operators. Territorial marketing is one form of effective support.

5.1. Introduction

The activities of the COST Action E30 Working Group three (WG 3) on ‘Non-wood forest products and services (NWFP&S)’ have been initially based on the analysis of the case studies presented in the Country Reports of phase one of the Action (see Table 5.1.).

Table 5.1. Case studies related to NWFP&S and reported in the COST E30 phase one country reports (Jáger 2005).

	Case studies (products)	Case studies (services)
Austria	-	Nature conservation (country + FMU examples)
Denmark	Christmas trees and greenery (country)	Recreational activities (2 FMU)
Finland	Birch sap (FMU)	Bird watching (FMU)
France	Biodiversity protection (region)	Forest recreation (country)
Hungary	Mushrooms (country)	Forest recreation (FMU)
Iceland	Berry wine	Mushrooms
Ireland	Christmas trees and foliage production (country)	-
Italy	Truffles and chestnuts (both at country and regional level)	Environmental education
Lithuania	Mushrooms (country and one region)	Countryside tourism (country)
Norway	-	Tourism (region)
Poland	Forest fruits and mushrooms (country)	Recreation (FMU: a landscape park)
Portugal	Cork Forestry based livestock production	-
Romania	-	CO ₂ sequestration (country) Hunting (country)
Switzerland	Chestnut (one region)	Alternative funerals in forests (country + 2 enterprises)
United Kingdom	Moss (region and 3 FMU)	Mountain biking (enterprise and region)

FMU= Forest Management Unit

A comparative evaluation of the cases studied has been carried out with using different criteria to reach a common understanding of the problems and potential of NWFP&S marketing related aspects (see Table 5.2.). Looking at the main elements considered in the case studies of the country reports and to the background experiences of the Working Group participants, five main subjects were selected to develop a conceptual framework for understanding the factors affecting competitiveness, barriers and perspectives to enhance entrepreneurship and the problems and solutions for enterprise development

with special reference to marketing strategies. According to these objectives four Sub-Groups (SG) have been organised as follows¹⁸:

- SG 1 dealing with NWFP&S taxonomy
- SG 2 with the aim to monitor national experiences and to develop a common frame of NWFP&S indicators
- SG 3 considering the role of innovation in supporting or impeding the development of NWFP&S
- SG 4 dealing with NWFP&S marketing problems

Table 5.2. Main aspects considered in presenting NWFP&S sector in the E30 Action country reports.

	Products	Services	Property rights	Marketing, Innovation	Sources of information
Austria	Y (no figures)	Y (no figures)	Y	Y	Y
Denmark	Y (no figures)	Y (no figures)	N	N	N
Finland	Y (with figures)	Y (few figures)	Y	Y	Y
France	Y (with figures)	Y (few figures)	N	N	N
Hungary	Y (few figures)	Y (few figures)	Y	Y	Y
Iceland	Y (no figures)	Y (no figures)	Y	Y	Y
Ireland	Y (no figures)	N	N	N	Y
Italy	Y (with figures)	Y (limited examples)	Y	Y	Y
Lithuania	Y (with figures)	N (only hunting)	Y	N	N
The Netherlands	N	Y (no figures)	N	N	N
Norway	Y (few figures)	Y (no figures)	Y	N	Y
Poland	Y (with figures)	Y (no figures)	Y	Y	Y
Portugal	Y (with figures)	Y (with figures)	N	N	N
Romania	Y (with figures)	Y (with figures)	Y	Y	Y
Switzerland	Y (no figures)	Y (no figures)	N	N	N
United Kingdom	Y (with figures)	Y (with figures)	Y	Y	Y

¹⁸ These works are reported in detail in Niskanen, A. (ed.). 2006. Issues affecting enterprise development in the forest sector in Europe. Faculty of Forestry, University of Joensuu. Research notes 169. 406 p.

As reported in Figure 5.1., the activities of the four SGs have been conceptually interlinked with SG 1 working more on general theoretical concepts, SG 3 and 4 considering more applied aspects connected to entrepreneurship enhancement, and SG 2 dealing with systems of monitoring and evaluating the sector development.

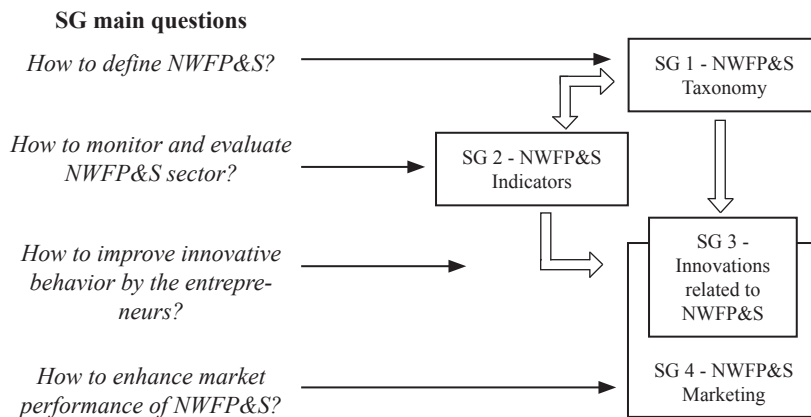


Figure 5.1. Conceptual framework of the Working Group on NWFP&S and links among the Sub Groups' activities.

5.2. Results of the studies on NWFP&S

5.2.1. Taxonomy of NWFP&S¹⁹

The FAO (2006) defines NWFP as 'products of biological origin other than wood, derived from forests, other wooded land and trees outside forests. NWFP may be gathered from the wild, or produced in forest plantations, agro forestry schemes and from trees outside forests. Examples of NWFP include products used as food and food additives (edible nuts, mushrooms, fruits, herbs, spices and condiments, aromatic plants, game), fibre used in construction, furniture, clothing or utensils), resins, gums, and plant and animal products used for medicinal, cosmetic or cultural purposes'. The FAO states that many 'new and practically interchangeable terms have been created: by-products of forests, minor forest products, non-timber forest products, non-wood goods and benefits, non-wood goods and services, other forest products, secondary forest products, special forest products and a multitude of definitions proposed, all covering different aspects, species and products according to the focus of work of the respective author or organization. This lack of a clear terminology causes serious problems'.

A system of classifying terms for forest products has been developed by the SG to create a scientific clarity and remove all negative connotations from forest resources giving them equal attractiveness and presenting them as a broad variety of attractive

¹⁹ Source: Mantau et al. 2006.

goods and services. It is important to look at all of the production possibilities of a forest to determine the best choice between production goals and other pertinent factors. Therefore a new terminology for forest production potential should include wood as well.

Besides the economic aspect, other reasons also lead to the integration of wood into any new system. Wood in the context of energy shortages and CO₂ issues is an increasing ecologically significant resource. Furthermore, the concept of sustainability is so broadly accepted that the contrast of wood production and forest preservation is no longer a theoretical problem although political understanding and action are still lacking this concept.

Finally, all goods and services derived from the forests have their foundations in trees. However, this does not mean that their utilisation requires harvesting of trees. A terminology for forest products that excludes its own basis is not convincing.

The variety of the forest products is so diverse that one term cannot cover all aspects. Thus a new open system of terms for forest dependent resources has been proposed, the FOGS-system in which the acronym stands for 'FOrest Goods and Services are of resources of biological origin, associated with forests, other wooded land and trees outside forests'. The term 'forest associated' should be defined in this context. Forest associated resources are those resources utilised for the production of goods and services that are either biologically dependent upon forest, or those for which the imagery of forests is an integral facet of their marketing. Examples of biological dependence are numerous. However, it is important to bear in mind that these resources need not be restricted to forests, but forest environments are necessary for some aspects of their existence. For example, while deer often range outside forests for browsing, they are no less dependent on forests for shelter.

The second set of resources in this classification are those for which the imagery of forest is integral in marketing. These are typically goods that have been traditionally harvested from forest ecosystems. While not all of these resources are strictly biologically bound to forest ecosystems, cognitively they remain tied to the forests. Several species of mushrooms and berries can be grown outside forest environments.

Services such as various recreational pursuits can be performed outside the forest environment, such as mountain biking and camping trips. However, in both of these cases association with the forest is a major aspect of their desirability thereby providing a decisive market advantage for these goods and services.

Considering the vast differences in cognitive and marketing strategies from one culture to another, it is fruitless to expect these categories to remain constant on a pan-European or global basis. Mountain biking, for example, is closely associated with forests in the British Isles whereas in Iceland mountain biking is rather associated with treeless landscapes. It is futile to expect all resources classified as forest associated to remain constant from culture to culture. However, the use of the words associated to define forest associated goods and services provide the basis and flexibility necessary to deal with these types of resources in a meaningful manner.

Three basic levels of definitions for forest products can be considered. Each level may be divided into several sublevels.

Definition level 1 (resource):

1. A **resource** is the basis for any output.

- Resources for **goods** are: energy, carbon, land, water, material, plants, foodstuff, fibre, medicine, extractives, live, other.
 - o Foodstuff may have sublevels, such as plants, trees and seeds.
- Resources for **services** are: personal, recreation, social, environmental, other.
 - o Recreation can have sublevel, such as cycling and underneath leisure cycling, cycle touring, road cycling and mountain biking.

Definition level 2 (product):

2. A **product** is a marketable good or service or combination of both.

- Products made of goods, such as ‘seeds’ are: animals, plants, seeds, bulbs, other.
 - o Seeds can have sublevels of tree seeds, flower seeds, herbal seeds and other.
Tree seeds will obviously have further sublevels by species.
- Products made of services, such as ‘cycling’ are: bridle paths, forest roads, footpaths, open access. These can be divided into sublevels.
- Products made of goods and services are Christmas tree markets, guided tours with shopping and/or catering. These can be divided into sublevels.

Definition level 3 (user):

3. A **user** is a target group of people who may benefit from a product and may pay for it (client). This level describes the market specialties for a given product.

- Users of goods are households buying branches. Users can buy directly or from one or several middlemen, such as the wholesaler and retailer (market garden).

Box 5.1. Definitions for developing a taxonomy on NWFP&S

A **resource** in the context of a forest is a source of anything naturally occurring and of use to people. A resource may be drawn upon when needed.

An **output** is anything made from a resource (can be a good or a service).

A **good** is any separate entity made from a resource capable of being stored and delivered to a purchaser.

A **product** is anything that can be offered to a market to satisfy a want or a need. A product can be a simple good (fuel wood) or a complicated mixture of goods and services (Christmas tree market).

Services are heterogeneous outputs produced to order. Services typically consist of changes in condition of the consuming units realised by the activities of a producer at the demand of a customer, and those are produced and consumed at the same time. Services are not separate entities and cannot be traded separately from the forest to which they are attached.

A **user** is any person or organisation having benefits or fulfilling any need with or without payment.

A **client** is a user who pays for a product or a service.

These three levels (resource, product and user) are the basic classification scheme of Forest Goods and Services (FOGS). Each level can be subdivided into further levels if

making sense in terms of analyses or marketing. The proposal of the FOGS taxonomy serves three targets:

- Analysis of income possibilities for rural areas,
- Diversification of forest income and market development, and
- Endorsement of all possible forest resources.

5.2.2. Common framework of indicators for NWFP&S²⁰

According to the OECD (1993), indicators are used to ‘reduce the number of measurements and parameters which normally would be required to give an ‘exact’ presentation of a situation. As a consequence, the size of a set of indicators and the amount of detail contained in the set needs to be limited. A set with a large number of indicators will tend to clutter the overview. Too few indicators, on the other hand, may be insufficient to provide the necessary relevant information. In addition, methodological problems related to weighting tend to become greater with an increasing level of aggregation. They simplify the communication process by which the information of results of measurement is provided to the user. Due to this simplification and adaptation to user needs, indicators may not always meet strict scientific demands to demonstrate causal chains. Indicators should therefore be regarded as expression of ‘the best knowledge available’.

To make the specific importance and role of NWFP&S comparable among European countries of different economic structures, environmental and forest legislation and history, SG 2 was established. In order to define a common frame for analysing NWFP&S at European level a draft matrix based on selected national indicators of NWFP&S has been prepared. The purpose of defining these indicators was a comparison as well as a classification through a country-wise assessment of a **first set of indicators**. This classification started with listing products which are traditionally collected or, if they are services, which are rendered by whom to whom. Traditional products were looked at in detail as whether their importance increases, decreases or remains the same. Other indicators, such as whether it is a trend product, a main product as far as quantity is concerned, a rare and highly valued product (e.g. truffles), and whether it is relevant for the export sector, were defined. Services were treated separately as well as questions of access. The main current problems with NTFP&S were addressed in an additional section.

Legal considerations, such as ownership rights and customary law were taken into account as well as disputes and conflicts over entitlements to benefit from NWFP&S. It has to be stressed that there are also services in most of the surveyed countries which are rarely well documented and data may not even be available at a national level, if available at all. All data used in the matrix have been taken from the country reports that were produced by the representatives of each participating country as one of the major tasks of this Cost Action. A more in depth investigation and compilation of primary data would have certainly produced more reliable data, perhaps, but this was beyond the time and working capacity of all researchers involved in the SG. It is essential to mention in this context that despite the often lacking data at the national level there is often a considerable range of NWFP&S at a regional and quite often at a local level which could not be recorded.

²⁰ Source: Seeland and Staniszewski 2006.

The items and indicators in this matrix were classified according to their sheer occurrence in the respective country reports and their quantification had to be left aside. Although it would have been desirable to have a quantitative data bases for reasons of comparability and for an assessment of their economic importance, it was highly doubtful if such a task would have been possible at all or would have deserved the efforts connected with the data compilation. In countries, for instance, where open access to NWFP is guaranteed by law to everybody, irrespective whether they are harvested in private or public forests, quantitative harvesting records were not made because it would make no sense. The same applies to countries where access to NWFP is restricted, although it makes a big difference for the forest owners whether they are harvested in private or public forests. In other words, we have chosen to produce an overview of selected qualitative indicators with fragmentary data.

The **second set of indicators** was selected according to the assumption that they are applicable and relevant in each of the surveyed countries. Five indicators were chosen in order to make NWFP&S comparable:

- Significance: gives an overall assessment whether NWFP or NWFS is important in the general national context of forest use.
- Monetary benefits: denote whether there is a substantial cash flow connected to the goods or services provided.
- Disputed: indicates whether goods or services are disputed among certain stakeholders or whether they are contested domains in public discourse in a country in general.
- Job relevance: gives information whether the goods or services make up a substantial part of employment in the rural sector.
- Access for private or public use: indicates whether there are regulations for the collecting of NTFP or property rights over them.

A critical look at Annex 2 shows that it is almost impossible to take regional and local variations concerning the importance of indicators into account within a country. NTFP&S are relevant, according to certain regions and the social strata of the society that deal with them, for predominantly rural livelihoods as well as for urban citizens and their specific lifestyle demands. As very little empirical research has been done on rural supply and urban demand of NWFP&S (Kilchling et al. forthcoming) at the European or national levels, more scientific work has to be done to analyse their roles and economic potential for the future of the forestry sector and rural development in general. A market survey of urban consumers' demands could lead to a diversification in the structure of rural forest enterprises and a pro-active market strategy to promote new products and services.

Will large, medium or small forest enterprises take the lead in marketing new non-wood forest products and services? What structural changes in the forest sector are needed to promote non-wood products and services and what strategies are adequate to achieve value additions for non-wood forest products and services to compensate rather high wage levels? These questions, for example, can only be answered by comparative in depth case studies among countries in which products and services have a somehow similar importance and a comparable economic stage of development. For the time being, however, the SG was not in a position to go beyond the qualitative assessment of NWFP&S show in a cross-national survey.

5.2.3. Innovations in supporting or impeding the development of NWFP&S²¹

A better utilisation of forest resources will be important to local economic development in the future. An increasing part of the value generation is likely to come from the supply of forest related services and not from traditional timber production. Examples of such services are ecosystem services, recreation, hunting, fishing, biodiversity conservation and cultural tourism. Strong long-term forces both on the supply and demand side make this path of developments very likely. On the supply side, increasing alternative value of labour and decreasing capital costs through mechanisation have led to a rapid decrease in self-employment among non-industrial forest owners. On the demand side, non-timber forest services are growing in importance. An increasingly wealthy population of international tourists are looking for high quality recreation experiences. These often rely heavily on the conservation of natural and the cultural values in forests. Furthermore, the importance of biodiversity and ecosystem services has been recognised and on the rise on political agendas. These trends represent not so much a threat to traditional forestry as a promising opportunity for alternative value generation from the supply of non-timber forest services (Rametsteiner et al. 2005).

The core of the SG work has been a comparative analysis of innovation cases across countries with different institutional settings. More precisely, the SG activity has been focused on forest related recreation services as an example of new services provision. Innovative offers in five European countries with different institutional backgrounds have been analysed in order to define the role of public and private resources in the innovation process. In the countries covered, forest ownership is dominated differently by public or private forest land, and access to forest land is free to different extents. The analysis of the case studies includes the structure of the innovation systems – i.e. public and private actors – and their roles in the innovation processes.

In the innovation processes in general, public and private resources are needed. As forest related services are often seen of a particular public interest, specific public programmes exist in various kinds for provision of these goods and services. Looking at case studies from countries with different institutional settings, the SG aimed at finding out how far public and private resources are used and in which ways public and private activities are coordinated.

The case data have been collected by the participants of the SG in their respective countries using a common guideline.²² The data were collected between 2002 and 2005. The data collection methods comprise personal face-to-face, telephone and e-mail interviews with core actors of the innovation project. Usually at least one personal interview was conducted and at least three persons were approached. Additionally, written sources, such as internal planning documents, internal or official project documentations, press releases, newspaper articles, information on websites and brochures were used. In most cases the sites/enterprises have been visited by the case authors. The case studies are briefly presented in the following pages.

21 Source: Weiss et al. 2006.

22 Very similar versions of the data collection guide were used for the case study collection within the work of the EFI PC INNOFORCE (Weiss 2002/2005; www.efi-innoforce.org) and the EU Socrates Erasmus IP INNO-FOREST (Weiss 2005; www.inno-forest.org).

Forest pedagogical services of a forest holding (Austria)

The forest holding Gutenberg, Styria, comprises of 1 600 ha managed by a private owner Ulrich Stubenberg. Since 1999 the forest holding has offered guided tours to the forest and other 'forest pedagogical' activities for school children and adults. The innovative aspect of this case is that the company is developing the field further with the aim to open up new markets, e.g. manager seminars.

The initiative for the new service came from the company's forester who came across an announcement of a forest training school for a forest pedagogic course. In the year 2002, the forester already took some 1 700 children out. The forestry subsidy programme offers funds for forest pedagogical activities for school children under the title of public relations work. While the school tours – the dominating field – are based on public support, programmes for companies are profitable without any public funding. As the carrying capacity of the forest holding is almost reached for such activities, the programmes for schools shall not be expanded. Further developing, however, is planned for activities that are offered to business clients. For the company, the challenge was and still is to develop this field from a public relations activity to a business field. The activities are profitable but the owner wants to be less dependent on the public funds. Strong engagement of public forestry institutions in the field helped to develop and diffuse quickly this new field of services. The case falls into the diffusion stage, as subsidy programme, training courses and a 'platform of forest pedagogy' already exist. Further developments are taking place in the company with regard to the adult programmes, particularly offered for company clients (manager seminars).

Bird watching services by a nature recreation company (Finland)

A Finnish company called Finnature Oy Ltd. provides bird-watching and wildlife tours. Their innovativeness lies in the business concept. Finnature has found suitable markets by targeting their products directly to foreign tourists in co-operation with international travel agencies. In addition, their network based working method has provided them the needed resources to concentrate on their special area of expertise (guidance and bird watching) and reduced the risks of high investments.

Finnature has used both private and public resources in their development process. The main success has been the wide knowledge of the entrepreneurs on the substance, their experience in organising tours and a good knowledge on the customers' needs already prior to establishing this company. An important actor for co-operation has been Bird Life Finland. This NGO has brought significant image value to the company as well as some customer contacts. Also the co-operation with other companies has been essential, e.g. in providing visibility, ancillary services and knowledge on business management and marketing. The most significant public service in the process has been MEK (Finnish tourism board) offering valuable marketing assistance. Also different development projects have brought public services reachable. In addition, the municipality of Liminka and the regional authorities have been most active in developing nature tourism in the area, e.g. by developing facilities. Finnature operates mainly on a state-owned land areas and the co-operation with Metsähallitus (national Forest and Park Service) thus has a significant role in the process.

Sports and adventure services by an outdoor recreation company (Norway)

Troll Mountain AS is an innovative firm organising adventure packages in the local forest areas. Various key actors, apart from the entrepreneur, are playing an important role in providing the recreational services:

- the local neighbours,
- the 'European outdoor life' network,
- the local communities, and
- Agder Energy which controls water flow.

Troll Mountain AS has organised activities in two different municipalities. With one of the municipalities there is a problematic relationship, but the other municipality is helpful and realises the value of the activities for them. Neither of the municipalities has been triggering the innovation process in the firm nor has the local business activities in the local community.

A lack of cooperation among businesses and public actors is seen as a restraining factor when it comes to the creation of a common strategy of tourism activities within the area. The entrepreneur knows about many landowners who offer their own products without any willingness to cooperate within the same geographical area. The most important area of cooperation would be that of tourist accommodation, adventures and culture.

Nature tourism services in a national park by a tourist company (Romania)

Until recently, Romanian forests were public up to 90% of the areas. Currently, after three phases of restitution, a balanced ownership structure is reached with roughly a half of the areas being public forests, and another half owned by other forest owners (private individuals, private entities, forest communities) and proprietors (the communes). The use of forests for recreational purposes is free of charge, irrespective to the ownership, and irrespective to the fact whether the recreational activities are individual or organised (commercial). An agreement with the land owner is required only in the case of a commercial-based harvesting of forest products, such berries or mushrooms. All the forests inside the National Park where the innovation is located are in public ownership.

The Romanian innovation regards developing of commercial private recreation services on a public land. In 1998, an owner of a local business started cooperation with the Carpathian Large Carnivore Project leading at the time an eco-tourism programme 'Wolves, Bears, and Lynx in Transylvania'. One year later the owner launched his own tour operator (Carpathian Tours). The innovative aspect in the development of nature-based tourism is not only to offer accommodation as many other tourism enterprises of the area, but also services on wildlife observation and organised forest-based recreational activities. The tour operator receives around 500 tourists annually.

The key actors in this case are from outside the forestry sector except for the national park administration. The idea for the innovation came from the eco-tourism programme developed by the Carpathian Large Carnivore Project. They were very active in providing knowledge and co-ordination. Secondly, the national park administration (a public forest management structure) provided their services for wildlife discovering and for practice of nature-based activities. A local branch of ANTREC (National Association for Rural, Ecological and Cultural Tourism) played also an important part in the co-ordination. Members are owners of small accommodation services mainly in the rural areas (guesthouses). Also the innovator is a non-forester. He contributed in the innovation by

bringing his previous experiences in business management acquired abroad. The financial resources involved were exclusively private (the innovator's own investments). The innovation did not need any special infrastructure except for the buildings for tourists' accommodation. The natural capital played most essential role. Without the beautiful landscape and the presence of the large carnivores in the area, the innovation would have not been possible to implement.

Mountain bike routes offered by the UK Forestry Commission (United Kingdom)

The case study explores the developing of mountain biking trails at a state owned forest at Coed Y Brenin in mid-Wales. The development involved the construction of specialist mountain bike routes in the forest and associated services both on and off site, for example, food and drink, bike hire, bike cleaning facilities and accommodation. The product was new to the country but also an innovative approach to trail building was taken which resulted in an internationally renowned technique which is environmentally sustainable. In 1999, the site, which is regarded as one of the best in the world injected around £1 million into the local economy which has supported already established businesses and new enterprises.

The initiation of the trails came from mountain bike riders, (one of whom was the local forest ranger for the FC) and a local mountain biking organisation (North Wales Mountain Bike Association). The adoption of the innovation depended on the support of the FC, the forest manager at Coed Y Brenin, who provided the rugged and robust terrain necessary for the trails. Funding for the trails was provided through European Objective 1 finances, FC funds as well as sponsorship from high profile companies, such as Red Bull and Karrimor. Information from mountain bikers and mountain bike organisations was central in determining the design of the trails. The project was coordinated by the FC in close partnership with other public organisations. Later a broader range of stakeholders (local tourism service providers, local communities and tourists boards) were brought in to provide complementary services, such as accommodation, and food and drink, to reduce conflict between uses and users and to market the enterprise. The Welsh Mountain Bike Initiative was central to the Welsh Tourist Board Cycle Tourism Strategy and the tourist board played a central role in the marketing of the sites by funding the Mountain Bike Wales website (www.mbwales.com). The mountain biking community is relatively close knit and thus the passing of information through users and their representative organisations has been critical in raising awareness and in the use of the trails. Local tourism businesses also market the trails as a way of attracting clients.

Comparative analysis

The case studies explored by the SG cover forest recreation service provisions which can be characterized as being innovative in terms of either the product(s) they offer and/or the process through which products have been developed and supplied. In turn, the products are classified according to whether they are new to the market (the forest sector) or new to the firm. Product innovation dominates, whilst new ways of delivering products are explored in fewer of the cases (Finland and Norway). In the majority of the cases, products are innovative as they are new to the market (the forest sector), rather than because they are new to the firm. If replicated at a wider level, this would indicate that forest recreation service provision is at a 'development' rather than 'diffusion' stage of

the innovation process. Table 5.3. summarises the case studies in terms of their character of innovation.

Table 5.3. Case study innovations.

	Austria	Finland	Norway	Romania	United Kingdom
Product innovation or process innovation	Product (forest pedagogy for adults – locals, tourists and companies)	Product (guided bird watching tours) & process (networking & outsourcing)	Product (outdoor adventure activities connected to nature) & process (partnership)	Product (nature-based socially responsible tourism)	Product (mountain biking)
New to firm or new to market (forest sector)	New to market	New to market	New to firm	New to market	New to market

Modern innovation theory proposes that innovation is dependent on the systems of the actors and, in particular, on institutional situations and actors. Many actors, external to the enterprise, have been actively involved in the delivery of products and/or services considered in the case studies. With the exception of the case from Norway, the involvement of both public and private players has been important and, in most cases critical, to the success of the innovation. The cases also demonstrate a strong propensity for cross-sectoral working between forestry, tourism and economic development sectors with actors who have responsibilities from the local and regional level through to the national and international scale (horizontal integration). Business to business and business to local community co-operation (vertical integration) also plays a fundamental role in all of the cases, particularly to provide complementary services such as accommodation, food and drink but also as means of over-coming conflicts (of attitudes and behaviours) towards the innovations themselves. The role of sectoral actors within the innovation process is summarised in Table 5.4.

As we can see from Table 5.4, ideas for products and services tend to come from individual innovators' personal interests, as in the case a forester's interest in mountain biking in United Kingdom, and in Finland, from the innovator's interest in bird watching. Similarly, the impulse to develop ideas into products and services also tends to come from individual innovators rather than as a result of organisational impetus. Table 5 also highlights (for example, in the Finnish, Romanian and Norwegian cases) that in our cases the ideas and impulses tend to come from actors outside the forestry sector. These findings, particularly if replicated at a broader level, suggest that there is an absence of stimuli for and diffusion of new forest recreation products and services from institutional actors, such as forestry, tourism and economic development organisations.

When it comes to delivering products and services, a broader range of actors become critical. Our cases indicate that knowledge and information to reduce risks of operations, finance to develop infrastructure and services, and the co-ordination and development of linkages between actors across the forestry, tourism/recreation, economic development

Table 5.4. Role of the actors in the innovation process.

	Austria	Finland	Norway	Romania	United Kingdom
Product/ process idea	Forester	Non-forester	Non-forester	Non-forester	Forester
Impulse to take the idea forward	Forester	Non-forester	Non-forester	Non-forester	Forester
Knowledge and information	Forestry organisation (public)	Innovator (private) Nature conservation organisation (private) Tourism businesses and organisations (private & public) Economic development business and organisation (private & public)	Innovator (private) Tourism organisation (private)	Innovator (private) The nature conservation organisation (private)	Innovator (private) Consumers (private) Tourism organisation (public)
Financing	Innovator (private)	Innovator (private) Transport business (private) Tourism organisation (public) Municipalities (public)	Innovator (private)	Innovator (private) Agriculture & forestry organisations (public) Municipality (public)	Economic development organisation (public) Forestry organisation (public) Outdoor recreation (private) Tourism organization (public)
Co-ordination	Innovator (private)	Tourism organisation (private) Economic development organisation (public) Tourism business (private)	Innovator (private)	?	Forestry organisation (public) Tourism organisation (public)

and environmental protection sectors, as well as from local and regional municipalities are fundamental. In some instances, however, whilst forest land is utilised, products and services are delivered without any interaction with the forestry actors (as in the Finnish case study).

Successful innovations are also highly dependent on working with a mixture of public and private sector interests. Although the Norwegian case demonstrates that this is not exclusively the situation and that new products and services can be delivered using only private actors.

Natural resources, and forests in particular, are a central feature upon which enterprise is based in all of our case studies, for example, in the case of United Kingdom, the rugged terrain and visual screening quality of trees were important in developing exciting yet unintrusive mountain bike trails. In the Finnish and the Romanian case, viewing of wildlife is fundamental. The cases from Norway and Austria experience of and interaction with the natural environment is the core. Both public and private sector actors tend to provide land and wildlife. Both the Finnish and Romanian innovations used regional nature based state funded conservation as a platform on which to base their company's development, however, in the Austrian and Norwegian studies privately owned natural resources have been the basis of innovation.

Injections of financial resources directly to innovators have also been a necessity to enable the start up of all of the cases profiled in this paper with both the public and private sector being closely involved in providing finance for innovations. The Norwegian, Finnish and Austrian innovations were strongly financed by private sources, such as personal loans or incoming revenue from the tourism operation itself. This kind of approach to financing may be particularly viable where a low level of investment in infrastructure is required. As a benefit it may enable businesses to be economically sustainable from an early stage and to build up their activities slowly and in a planned manner. Sometimes, as in the case of the mountain biking study in United Kingdom, the role of private actors in providing finance is not particularly critical in terms of the sums of money provided, but rather the kind of image that is gained from the association of sponsors and innovators, such as good publicity for the sponsors and the creation of a high profile and desirable identity for the innovation.

Public sector funding to innovators has come through development projects (as in the Romanian study), European Union structural funds or rural development funds (Austrian case) and European Objective 1 funding (which was used to pay for the construction of mountain bike trails and associated facilities in the UK study). Also important in all of our cases has been the indirect funding of innovations through the provision of man-made infrastructure. Some of this infrastructure is general ancillary services such as roads and public transport, whilst other components are recreation specific (hiking trails, visitor centres and car parks). In our cases, both the public and the private sector provide the recreational infrastructure, whilst the general ancillary services are funded by public sector actors. Public provision of finance is probably especially important in situations where a high level of facility development is required (for example, in the UK study it was used to fund the building of mountain bike trails). Experience in the provision of mountain biking in the United Kingdom has found that public funding is often limited in time and thus may create difficulties for the economic sustainability of enterprises when it expires. For example, the money required to maintain the Welsh mountain biking web site and to pay the salary of the mountain bike rangers has run out. A key challenge therefore lies in

finding reliable sources of funding over longer time scales for innovations. Public funding also plays an important role in knowledge provision and networking. Examples of this are development projects (the Finnish and Romanian cases) or the support of training courses and a platform for forest pedagogy (in the Austrian case).

Our cases also demonstrate that human and social capital, that is for example, knowledge in the subject of the product/service being developed (such as guided bird watching tours or forest pedagogy), skills in the delivery of services or business activities (such as marketing), and trust between actors, are fundamental to successful innovation. Trust is particularly important in ensuring productive networking between actors – a process which, as we have noted earlier, appears to be fundamental to successful innovation. The provision of human and social capital appears to often be split between public and private sectors. In our cases marketing knowledge, in particular, seems to come from the public sector, for example, in United Kingdom it came from the regional tourist board. The private sector, however, also plays an important role in enabling successful innovation by providing knowledge and skills in complementary service provision in areas, such as accommodation, food and drink, and transport. In the case of the Finnish firm, Finnature Oy Ltd, these vertical linkages between businesses reduced the investments required to start the enterprise and meant that the company did not have to operate in areas where it lacked expertise. The risks of the operation were thus reduced. In United Kingdom, vertical linkages with other businesses provided additional marketing for mountain bike innovations as accommodation providers marketed forest mountain bike facilities in order to attract people to their businesses.

Fostering and impeding factors

An analysis of the case studies suggests that a broad range of resources and characteristics of development are critical to successful innovation. These are detailed in Box 5.2. Similarly, a broad range of factors have been constraints to innovation (see Box 5.3.).

Box 5.2. Factors to promote innovation in forest recreation service provision

Social

Personal interest and/or knowledge of the forester/entrepreneur in the subject of the innovation.

Openness of forest owner/manager to the innovation.

An active approach to business development.

Networking/partnership based approach to development and delivery.

Support and collaboration with state authorities and municipalities etc., particularly to provide funding for large scale infrastructure costs and marketing skills.

Support of local businesses, particularly to provide complementary services and reduce risk.

Support of users and user group organisations to inform product development and provide formal and informal marketing.

Sponsors to provide high profile image.

Good relations with local land owners to secure access to and influence over the management of natural resources.

Good relations with those who have penetration into core customer markets.

Public relations work to secure forest land against other uses.

Economic

Externally funded natural resources and man-made infrastructure.

Direct funding to start the innovation, particularly where infrastructure requirements are costly.

Environmental

Access to forested and other land, and influence over land management processes.

Box 5.3. Impeding factors to innovation in forest recreation service provision***Social***

Resentment of local people and opposition from special interest groups.

Lack of suitable or willing businesses to act as partners.

Overwhelming bureaucracy.

Economic

Lack of economic sustainability of enterprises providing supporting services.

Lack of long-term funding for activities and infrastructure.

Limited resources of time and money of the company in the initial stages of development.

Undeveloped domestic market and strong competition in international markets.

Lack of ability to get finance.

Environmental

Distance from markets (relative to competitors).

Difficulty of securing development of high quality trails and other infrastructure.

Conclusions and recommendations

SG activity has explored a range of innovations in recreation service provisions in the forest sector. These innovations have spun new products (such as guided bird watching tours and mountain bike trails) and new ways of working (to take a network or partnership based approach to provision) and illustrate that both product and process related innovations are necessary within the forest recreation sector. In particular, the cases profiled in this paper suggest that:

- Systems of actors are fundamental to innovation.
- Natural capital, financial resources and man-made infrastructure, human and social capital are all required for successful innovation. In other words, knowledge and skills based resources as well as physical and monetary resources are critical for developments.
- Both public and private sector actors and resources are necessary for innovation.
- Cross-sectoral working between forestry, tourism and economic development sectors with actors operating at a range of spatial scales (local, regional, national and international level) is important to successful innovation.
- Vertical integration with businesses and local communities plays a fundamental role in reducing risk.
- Ideas for innovation and impulses for development come from individuals rather than from organisations. This may suggest a lack of support from organisations for the development and diffusion of new ideas in forest recreational services.

- Ideas and impulses in forest recreational service provision come from outside as well as within the forestry sector.
- Resources to enable innovation come from individuals, businesses and organisations from a broad range of sectors.
- In some instances, whilst forested land is used, there is no active involvement of forestry actors within the innovation process. This can lead to problems for the innovator in terms of a lack of influence over land use management activities, and for the land manager due to a lack of resources to instigate activities to promote recreational service provisions.
- Products are less risky if they are developed in line with consumer demands. Co-ordination with partners who have penetration into core customer markets is important to success.
- Both the public and private sectors are important in providing natural capital, financial resources and man-made infrastructure as well as human and social capital.
- The public sector may be particularly critical to innovation when high levels of direct financing are required to start-up an enterprise. The public sector is also important in providing indirect funding of ancillary services, such as roads and public transport.
- The private sector along with the public sector also provide indirect funding of innovation through recreation specific infrastructure provisions, for example, trails and visitor centres.
- Lack of long-term funding for the provision of recreation products and services may jeopardise the sustainability of the sector.
- Knowledge and skills in services, such as the provision of accommodation, food and drink, come from the private sector, whereas knowledge and skills in the substance of the innovation, marketing, and business development, come from both public and private sector actors.
- Institutional conditions are likely to have a fundamental bearing on the extent and nature of innovations. Innovation can occur across a broad range of situations in terms of land ownership and access legislation. These legal conditions are, however, negotiated through customary practices and individual agreements between land owners and innovators to overcome land use 'problems'.

Recommendations for policy and practice

- There is a need for a greater support in the development and diffusion of new product ideas and processes of innovation in forest recreation services from organisations.
- Processes which enable the combination of product ideas with customer demands and actors which have penetration into core markets are required.
- There is a need to provide forest owners and managers with product ideas and an understanding of how innovation in forest recreational services may be delivered and of benefit to them.
- The development of successful models for innovation which bring together actors, in particular, land owners and recreation operators to resolve these land use 'problems' should be instigated.

- Models which promote long-term funding of forest recreation products and services are also required.
- There is a need to build social and human capital to promote innovation in forest recreation services provisions, for example, to develop tools which promote the exchange and development of knowledge and skills and which create opportunities for joint working.
- Attention should be paid to the institutional conditions in which innovation occurs and consideration given to adapting conditions to facilitate innovation in forest recreation service provisions.

5.2.4. Marketing of NWFP&S²³

5.2.4.1. Conceptual framework for analysing NWFP marketing

Three main driving forces are determining a growing attention to NWFP&S all around Europe: the decreasing price of wood products, the rising demand for environmentally friendly products, and the rural development policies.

The real price of industrial roundwood has been decreasing remarkably in the last years, and all major forecasts made by FAO and the Economic Commission for Europe show a constant decrease of real prices of wood products in the near future. Price reductions are affecting mainly rough wood products (trees sold standing and logs sold roadside) with remarkable consequences on profitability levels of timber production by private and public forest owners.

A demand for environmentally friendly products is increasing in all highly industrialised countries. Many traditional products that once used to be strictly connected to the needs and consumption behaviour of low-income people are now regarded as natural health products. Some 'specialty' food products and drinks are more requested than in the past as a consequence of the development of current trends, such as the 'Mediterranean diet', the Italian/Spanish/French traditional quality cooking, the increased demand for organic products, natural cosmetics, cosme-to-food, products used in the aroma-therapy, in bio-architecture, and in green-building.

Rural development policies are also creating favourable conditions to stimulate NWFP&S markets. The reform of the Common Agriculture Policy has been promoting the diversification of rural activities and new sources of non-agricultural income in the European Union (EU) member countries.

In some Balkan countries outside the EU, NWFP&S, such as mushrooms and chestnuts, are sometimes playing an increasing role as instruments of local development. In many countries a positive integration has been observed between NWFP and tourism. In Mediterranean areas NWFP&S have positive trends in supply and demand and an increasing economic importance in rural development. NWFP&S play a remarkable role both in relation to commercial objectives and in terms of Total Economic Values (TEV) of the forest benefits. As stated by Merlo and Croitoru (2005), wood and grazing are diminishing their role as a source of income for the forest owners, tourism and non-wood forest products are increasing their importance to support rural life, especially in countries of higher income.

23 Pettenella et al. 2006.

On a global scale, NWFP produced and consumed in Europe have a leading position among the most traded NWFP in the world. Nature tourism and recreation services are one of the fastest growing branches in tourism sector at the moment. For example, during 2002–2003 the turnover growth rate in Finland has exceeded up to 6.8% concerning large safari enterprises. Due to the urbanisation and the ‘new raise’ of the green values, there is a continuously growing customer group especially among the urban population which causes significant demand to the recreation services.

For the comparative analysis of the case studies presented in the COST Action E30 country reports a conceptual frame for NWFP&S based on the marketing strategy has been developed (see Table 5.5).

Table 5.5. Conceptual framework for analysing NWFP&S marketing.

	a. Products: commodities	b. Services: non-material goods
1. Mass market	a1: raw material with low level of differentiation, large number of consumers easily recognised, high competition, price sensitive, widely available	b1: public goods, not well differentiated
2. Specialised market	a2: niche products, high added value, unique territories, very well differentiated products, high innovation	b2: as a2, but with references to services
3. Complementary products and services	a3: niche products that do not reach critical mass supply or mass products with low added value	b3: as a3, but with references to services

The frame is based on the traditional distinction between products and services. Products are commodities of tangible materials, often perishable goods, removed from the forest to supply existing or potential customers/markets. Services are all non-material benefits for customers and their profit acquisition depends on property rights definition and system regulation, e.g. public goods compensation.

The classic marketing definition is mainly based on two types of markets for products and services, on mass markets and specialised markets. Some NWFP&S are more complex, so we have included a third category of multi-products and/or services markets for complementary NWFP&S.

The nature of complementary products varies a lot. In this report the emphasis is on their complementary role and not on the product characteristics. Thus products (commodities) and services (non-material goods) are studied together when their complementary role is concerned. In addition, they can have different kind of origins other than those of forestry.

The boundaries between the product categories are not always distinct. This is why in describing possible paths of development of NWFP&S marketing strategies a frame based on the two indicators differentiation and complementarity was elaborated (Figure 5.2.).

One product/service category can be transferred to another. In many western European countries the production of mass NWFP&S is not profitable due to the current high production costs. Two paths of transformation are possible:

- Common mass products can be transferred to niche products when additional qualities are added. One example are the Christmas trees certified by the FSC in Switzerland or sold as 'chemical free' Christmas trees in Germany.
- As an alternative path of transformation NWFP&S can be combined with additional services or products to create a package of complementary products.

In the NWFP&S sector complementary products and services may originate from mass products/services as well as from specialised products/services. A very basic mass product with low added value and poor market value can create a successful product when combined, e.g. with some services. A good example of this is combining handicraft courses into selling the raw material collected from nature, such as moss or twigs. As well complementary products can be individually very specialised niche products that do not reach critical mass of supply independently and therefore need to be associated with other products.

The development is invertible. Successful complementary products may also be developed to mass or specialised products during the product development process and changes in the marketing environment. Case studies presented in Country Reports of the COST Action E30 (Jäger 2005) and additional material were used to test the hypothesis related to the conceptual frame described.

In the following pages general considerations on each NWP&S category and examples taken from the case studies are presented. Special attention is given to the most relevant key factors in developing every particular type of NWFP&S presented in the Figure 5.3. These factors have been selected after preliminary analyses of the case studies. They are sometimes hard to separate from each other and strong linkages exist between them. For example, a particular form of quality assurance cannot be made without regulations. Well-functioning networks always depend on the competence and willingness for collaboration of the persons responsible. The selling system and packaging highly influence the choice of a promotion strategy. Labels and certificates are strong tools for promotion and advertisement.

5.2.4.2. Mass products and services

Product/service development, innovation

Mass products are typically commercially produced on a large scale. Consequently, competition can be very high and markets are frequently over supplied. To compensate for these factors, successful enterprises have realised the importance of strategic planning to distinguish themselves from other producers.

The identification of factors is fundamental in creating marketing advantages and providing values to consumers. This need for a continuous market intelligence has been identified as a key factor for success, e.g. in the foliage industry in Ireland.

With little differentiation many producers can only compete in pricing. Mechanisation and investments in technology have been used to improve cost effectiveness of some

mass product production (for example, mushroom production in Poland). However, as many producers operate in the grey economy, prices paid for products can vary greatly.

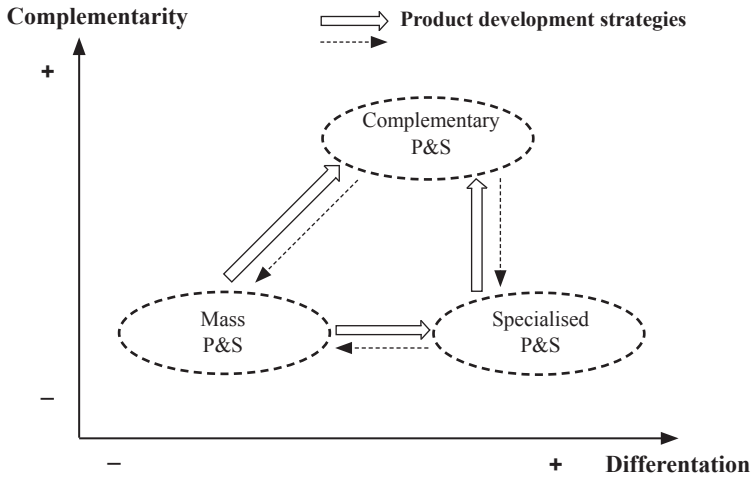


Figure 5.2. NWFP&S marketing development strategies.

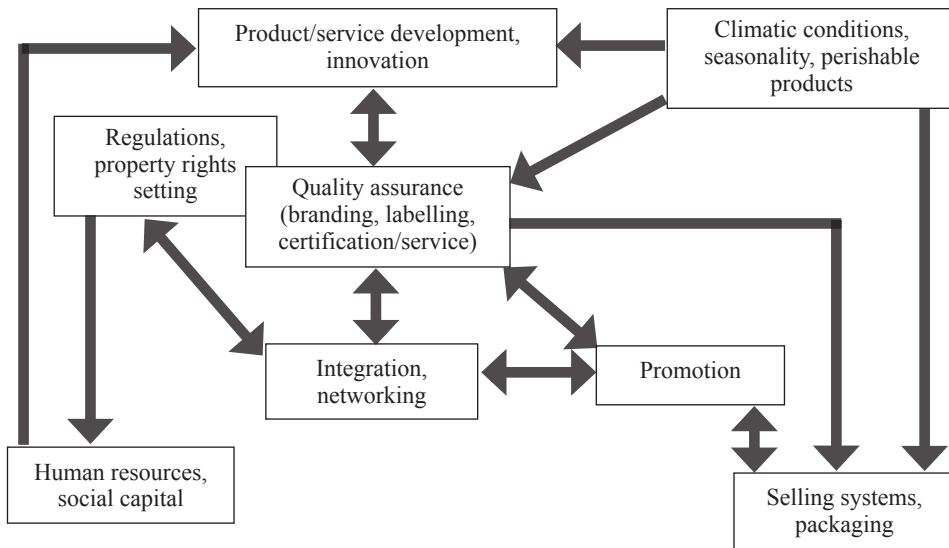


Figure 5.3. Key factors for marketing of NWFP&S.

Quality assurance

Grading and standardisation are factors which have helped successful enterprises stand out from other competitors. In moving up the value chain, branding and certification allow products to be traced to source hence producers of good quality products having good reputations (see specialised products). Conversely, poor quality products can turn

consumers off and also lead to wastage. Foliage is sold in standardised packages, Christmas trees are sorted by species, quality, length etc. The final destination of chestnuts (marrons and chestnuts) and hazelnuts depends on the size of the nuts, so they have to be sorted before further processing.

Regulations and property rights

In the low densely populated Scandinavian countries the everyman's right to collect free of charge NWFP is defined by law whereas gathering NWFP in densely populated countries in Central and southern Europe is frequently defined under strict rules. A shortage of raw material is often problematic to mass product enterprises. Many mass products are harvested in an unregulated and often unsustainable fashion.

In Finland the domestic supply of raw material is the main challenge to harvesters of forest berries. Where the product is in short supply, producers are often individualistic and competition exists for access to the best raw material sites, e.g. for mushrooms in Hungary (Meszaros et al. 2005) and moss in United Kingdom (Slee et al. 2005). Moss gathering in United Kingdom is an example where licensed harvesters have to compete with the increasing number of people involved in illegal and irresponsible collection. As a result, many potential consumers display hostility towards the whole industry (Slee et al. 2005).

Many forest services, such as soil protection, biodiversity, CO₂-sequestration and recreation are mass services free of charge and accessible for everybody. A large field of innovation and opportunities for making these services chargeable for the forest owners to receive profit exists.

Selling systems

The product chain from producer to consumer may follow numerous paths. Larger scale operations tend to operate through a middleman. Marketing companies, buying groups, wholesalers and other merchants are examples of some of the middlemen used in mass product supply chains. In recent times, some producers have been using vertical integration as a way to attain greater control of their products. For example, in the Country Report from Poland documents show that many firms marketing forest mushrooms have now developed processing capabilities. In Portugal, in an attempt to control quality issues throughout the production chain, the cork producers have made large investments in vertical integration upstream towards cork plank preparation.

Growers or producer associations are found to improve the values of NWFP&S business activities. Examples can be found of Christmas trees in Denmark and chestnuts in Italy. Successful marketing of hunting services lead to a high income rates that exceed often the income of wood selling of the companies. Conflicts occur for forest management practices when precedence is given to wildlife management, e.g. natural generation is difficult to combine with large game population as in the Danish case study (Helles and Thorsen 2005).

Human resources and social capital

The availability of qualified staff is a problem in the rural areas, in particular, where advanced marketing techniques are needed for developing local NWFP&S business activities. Recruiting adequate numbers of qualified people in marginal areas may prove a difficult task. Personnel may need to be trained or persons from outside the area will need to be adequately motivated to move in and to thus stabilise the local business.

Promotion

Networks, e.g. in the form of associations, may lead to the development of different kind of trade marks especially to strengthen the success in the international markets. As an example can be considered the ‘Original Nordmann’ – Christmas trees from Denmark.

Climatic conditions, seasonality and perishable products

While certain threats may be controlled or influenced by competent planning, other external factors can still devastate the production of mass products. Climatic conditions can have a huge effect on yields. For example, adverse weather in 1997 led to the loss of 4–4.5 thousand tons of black locust honey in Hungary whereas in Portugal, the cork industry is under a constant threat of forest fires. Disease outbreaks may also have detrimental effects on production as in the case of chestnuts in Italy and foliage in Ireland. Christmas trees have to be harvested and sold over a short period of time. The enterprise examined in the German case study came up with an innovative idea of marketing Christmas trees throughout the year using a credit slip system.

Most NWFP are perishable and have to be sold before they start to deteriorate. If markets are not found for the harvested material, wastage will inevitably ensue. Rapid delivery channels and appropriate storage facilities, such as refrigeration, can play an important role in ensuring that perishable mass products are received in good condition by the customer (e.g. Christmas trees in Denmark).

Many forest food enterprises use processing to prolong the shelf life of their products. Drying, freezing, jam, jelly and syrup production, vacuum packaging, powder making and canning are some of the ways mass products, such as berries and mushrooms are preserved. In Poland, for example, enterprises which are selling vegetables and fruits are selling also mushrooms, using the same production lines and marketing channels.

5.2.4.2. Specialised products and services

The term ‘specialised’ products and services refers to the markets/consumers without any references to the concept of specialised forest management (vs. multifunctional forests). Typically, specialised products and services are well differentiated and have a high added value. Some products are niche products because of a relatively limited quantity of supply (e.g. truffles). Based on the case studies two types of enterprises can be distinguished:

- small- and medium-scale enterprises with limited financial and labour resources, normally working only in the forestry sector, which are specialised in small-scale activities, such as birch sap and bird watching in Finland, or funerals and burial in forest in Switzerland, and
- larger enterprises, not necessarily working only in the forestry sector, that are producing/selling a large range of products and services, including some specialised products, e.g. ‘chemical free’ Christmas trees in Germany and kindergartens in Denmark.

Product/service development, innovation

The role of segmentation and correct customer information is important when specialised products and services are concerned since they are typically targeted to very narrow customer groups. This can be illustrated by an example of Finnish entrepreneurs in the field of nature tourism. The enterprise offered bird watching and wildlife tours and as a result of an intensive market research – clients being mostly solvent foreigners interested

in nature and belonging to the age group of 65 years – the activities for this special group of customers were possible to develop further.

Often the decision of activities in the sector of NWFP&S is made *ad hoc* without a clear business plan and market research. In many cases, the activities are based on personal interests or hobbies from which the business idea has been developed without a proper business orientation to the activities, e.g. bird-watching in Finland and mountain biking in United Kingdom. The advantages of this approach are, however, the wide knowledge base and insider information of the entrepreneur. While mass markets mainly include traditional products and services, many specialised products are ‘new’ products or recuperated traditional products, which were already almost forgotten or out of commercial use for a long time. One example of most traditional products in Finland is birch sap. Other newly found products are, e.g. adventure forest parks, businessmen course centres in Denmark, CO₂-sequestration, alternative funerals for men and pets, music plays or art shows organised in forest areas.

In the sector of food products packaging and processing, in particular, companies introduce different production lines for diversifying their products. For example, more and more different kinds of chestnut specialities have been developed in Italy and Switzerland. As mass products those were only sold as dried or frozen, but nowadays one can find many specialities, such as flour, jam and beer.

Quality assurance

Certification is an important instrument for product differentiation in the forestry sector and thus gives the possibility of price premiums for certified products. Quality assurance and standardisation of mass products are further developed to different certification schemes, labels and brands.

For NWFP there are different standards for certification. As for the wood products, NWFP can be certified under the standards for sustainable forest management and the chain of custody. For food products, similar to agricultural products, certification systems for quality and origin have been developed.

Certification systems have been developed also for some services (e.g. carbon certification standards for forest investments developed by SGS and DNV, or the Sustainable Tourism Management standard developed by Rainforest Alliance). However, specialised non-wood forest services remain a dilemma in this context because no proper patent mechanism exists. Imitation by competitors is a problem of many recreational and educational services. Often ideas are copied, such as topics of courses for environmental education.

Food products and specialties often have a strong link to a particular territory and those are certified for their origin. For example, in the case of truffles the highest prices are paid for truffles from places with old traditions, such as the white truffles from Alba in Piedmont (Italy). In the recent years, cheaper low quality truffles from Balkan region and China have been sold in the Italian markets as Italian truffles. To ensure product quality and to prevent copying of food products the European Commission has developed several certification systems to promote and protect food products, known as PDO (Protected Designation of Origin), PGI (Protected Geographical Indication) and TSG (Traditional Speciality Guaranteed). Some chestnut provinces in Italy, for example, are certified under European and Italian certification regulations.

Certification of the forest management as a marketing tool for NWFP&S is still a new issue. The FSC (Forest Stewardship Council) and the PEFC (Pan European Forest

Certification) as the most common certification systems for forest management has also developed criteria for sustainable management of NWFP. Examples of FSC certificated products are Christmas trees from Switzerland, oak tree bark, onion leaves and herbal tree from Denmark, and Christmas trees and Greenery from Lithuania, and the PEFC certified oil from *Pinus mugo* in Italy.

For extremely specialised products it is also possible to use unofficial labels or quality recommendations. For example, a Finnish bird watching company has close co-operation with an international organisation called BirdLife. This organisation is a familiar and trustworthy organisation for the customers and a recommendation from it is a very highly valued quality guarantee.

Regulations, property rights

For NWFP&S formerly used as public goods, property rights regulation is often a pre-requisite for developing new markets. Numerous experiences in this field have been gained in southern and Central European countries. A common legislative frame related to the property rights of NWFP&S, at least on the EU level, could help in supporting the development of entrepreneurial initiatives. Local, state and international regulations can sometimes create good opportunities for product differentiation as in the abovementioned case of the EU certification of origin, but also serious problems connected to the compulsory respect of quality and sanitary standards.

Providers of NWFP&S need to keep themselves informed on these issues. Private consultants and public advisory services may play an important role on this matter. Although individuals and SME may have limited opportunities to influence changes, by being informed they may be able to adjust their operations accordingly, thus minimising the overall effect.

Integration, network

A well working network offers a possibility for companies to work on their special areas of expertise. This helps to avoid risks of investments and limited resources can be used to develop high quality products and services (e.g. nature tourism enterprise in Finland – primary clients being travel agencies, not the consumers themselves).

Human resources, social capital

Finding qualified staff may create problems, if traditional techniques are required in gathering the products. For example, well educated dogs and people with a good knowledge of the sides are important for truffle collecting. Earlier, the knowledge on the best places for truffle collecting were passed on from one generation to another. Nowadays, more than 30% of the truffle collectors are pensioners and over sixty years of age. There is a danger of long traditions dying out.

Promotion

Marketing must be directed at the target group(s). This is especially true when the service is located in an area remote to the target group. For example, many nature tourism enterprises are working on an international level with foreign clients. It is consequently of utmost importance that the publicity will be able to reach the consumers at a period of planning their trips. One of the factors affecting the enjoyment of these types of experiences is often the availability of information on a cluster of well coordinated products and services. The consumer should not only have direct access to the information, but the gathering of the information and planning his/her activities should also be a positive experience. Often the planning time of the consumer is considered off time by the service

provider. This is, however, a mistake. Unanswered telephone calls and emails will refer otherwise interested clients to providers who do provide answers.

Selling systems

Small production amounts are a problem for marketing and logistics. New selling systems, such as e-business, help to overcome these problems and to limit transportation costs. A direct approach to consumers is often utilised by small scale or family run operations where produce is sold at roadsides or farmers markets. Many NWFP are sold on ‘black’ or ‘grey’ markets, for example, large parts of truffle production and trade are not known processes.

Climatic conditions

Poor weather can effectively shut down a business based on an outdoor recreation. It is therefore imperative that appropriate measures be taken to insure funds to tide the business and its staff over such times.

5.2.4.3. Complementary products and services

Complementary products are generally seen in marketing literature as products that can be manufactured together, sold together, bought together, or used together. From the economical aspect of the definition those are products whose demands are positively related and one aids or enhances the other (Shocker et al. 2004, Nilson 1992). Complementary services are seen as the additional services which individualise the main service or product and enhance its competitiveness.

Complementarity is a concept strictly connected with the idea of a linkage. There are different forms of links in the markets among products and enterprises. In NWFP&S marketing a fundamental link exists among products and services that have a specific territory in common. A new branch in marketing is the so-called territorial marketing. The objective of this particular field of interest is to bundle marketing efforts for the coordinated promotion of specialties from the same area, for example, through roads and paths linking different enterprises’ sites, through exhibitions, fairs and markets, or through a common promotion policy.

Product/service development

Complementary products and services create CAs to product or service development (1) by providing added value to the main product, or (2) by forming new products when combined with other products or services (Figure 5.4).

On the left in the Figure 5.4., there is a situation (1) in which complementary products provide added value to dominating main service or products with image value (see later in the text: Trails of chestnuts in Italy, Coillte in Ireland, Biking tours in Wales, United Kingdom). On the right hand side, there are more or less equal, different kind of products and services, such as described in the case (2) which simultaneously form together a new product with added value or marketing attractiveness that exceeds the value of individual products or services.

Strong image-based benefits can be provided, for example, by different kind of major nature attractions, such as the national parks. Those are in many cases reasonably well-known and also marketed by the manager of the park (often a public actor) via different media. National parks have a well-known image of their own. This brings significant added value to the other non-commercial or commercial services (e.g. nature guiding or

accommodation services *inter alia*) related to the parks when marketed. For example, in Ireland a state owned company called Coillte has included very basic, non specialised accommodation services to the recreational possibilities offered by the public Forest Parks and is marketing those with the brand of 'Forest holidays'. The complementary services in this case are the accommodation services. The cabins themselves would not attract many customers but because of the surrounding landscape and its recreational opportunities which are the main services bringing people to the area, the 'Forest Holidays' are selling well. Moreover, since the same actor is providing both the complementary and the main services, there have been no conflicts of interest.

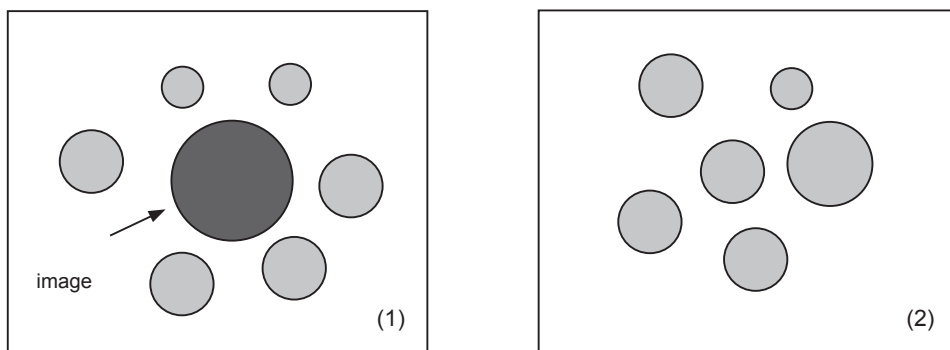


Figure 5.4. Different combinations of main products/services and complementary products/services interaction.

The main product or service can be, as well as the complementary products and services, both free of charge and chargeable. One very basic example of complementary products free of charge can be attractive surrounding nature. For example, a scenery can provide valuable CAs to the nature tourism companies in the area.

In some cases both main product/service and complementary product/service can be free of charge. For example, a national park can be combined with free public complementary services. It can also be combined with chargeable public supported complementary services (e.g. guiding services) which can be delivered at a lower price than the actual market price due to public support. Sometimes these services are competing with similar kinds of private services in the area. To succeed the entrepreneurs utilising these areas need to specialise their products so that the public services do not compete at the same markets with their services.

Innovation

In some cases the complementary services or products may help to diversify the nature of the main product to be targeted to new customer groups. Also by combining several complementary services it is possible to create totally new innovative products. In some cases the products/services can also be successful on their own, but combining those as a package gives added value.

Quality assurance

Since complementary products and services are typically very dependent on the main product or service, the quality image of the main product is also usually connected to the

complementary products. On the other hand, this means that complementary products combined to the main products have to meet at least the same quality standards. Sometimes the provider of the main product can also expect certain values and codes of good practice to be followed by the providers of complementary services. One good example is a birdwatching company Finnature Oy Ltd. (Finland) which provides high quality tours to very selective customers. The company chooses most carefully the providers of the needed complementary services and also expects environmental responsibility to be included, since that is one of the main marketing advantages of the company.

Regulations, property rights setting

Nature attractions used to cumulate the added value to the main products or services can be located on public or private land. Sometimes the land owner and the service provider can be the same actor, but this is not always the case. Taking, for example, tourism into consideration in the land management of the area requires close and well-functioning co-operation between the entrepreneur and the landowner. This highlights also the role of property rights and distribution of profits especially in private land areas. Influencing the land management can be very difficult to the entrepreneurs who are utilising these areas (e.g. landscape) in creating additional value to the main products.

Regulations and property rights setting is also an issue when complementary services are used to complement the service supply of the main product and are used as a CA. In addition to attractive surrounding nature, proper biking or hiking routes can provide valuable CA to the nature tourism companies of the area and create some extra services to the actual product, such as accommodation services. The possibilities to access this kind of complementary services in many cases depend on the country and region specific regulations.

Integration and networks

Since the complementary products are typically very tightly connected to the main product or are a part of the product package, close and well functioning co-operation is essential for the success of any kind of complementary product or service. Sometimes the main and complementary products are provided by the same producer (public or private) as in the case of Coillte, Ireland. This factor has reduced the potential conflicts between the different actors. However, in many cases, e.g. in the case of Biking route Coed y Brenin in Wales, the property owner or supplier of the main product/service and complementary products was not the same actor. Those cases especially highlight the role of good will, property rights and equitable profit distribution between the actors. Clear agreements of the responsibilities and privileges of each partner are one way to support the developments. Also the commitment of all of the actors to a common production and agreeing on quality are essential.

In order to form well functioning co-operation among the different actors for successful complementary products, the role of networks, e.g. associations and institutional actors is often highlighted. The role of the networks can be, for example, in establishing the co-operation in the first place, operating as a trustee or organising the marketing and selling of the joint product/service packages, as in Norway where the Norwegian association for rural tourism, 'Norsk bygdeturismelag NBT' has been trying to establish an independent trade organisation in the sector.

Promotion

As already mentioned, in many cases complementary products and services are marketed jointly with other product/service based on a common, well differentiated territory. This provides more visibility to the products as well as reduces marketing costs for individual products. The experiences of the case studies indicate that the territorial marketing of NWFP&S is concentrated in Central and southern parts of Europe whereas it is possible to find more sectoral aspects in northern Europe.

In NWFP&S sector SMEs are prevailing and the end-customers of these companies are often urban and may be also foreigners. With limited financial resources and competence, it is very difficult to the small companies to reach customers' awareness. Joint marketing creates synergies among the different suppliers. In some cases, there is a possibility to use already existing customer base for a new or a revised product, or to use the same production and marketing chains for different kinds of products.

Since the role of the complementary products is in the first phase to provide added value or CAs to the main products, this can be used also in the marketing and promotion. The complementary products can provide the desired image for the main product which differentiates it from other products of a same kind. A good example is the chestnut days in South Tyrol. The image of chestnuts is strongly used in promotion. Vice versa the main product with a strong image can help to promote the complementary products as well, such as the cabins under the Forest Holiday brand in Ireland.

Complementary services and products must fit in to the agreed image. Some aspects of the image of the main service can also have negative impacts to the complementary services. For instance, in the case of the national parks there can be conflicts with different kinds of interest groups whether to build the image towards a conservation area or a tourist destination. Complementary products and services offer a potential alternative to NWFP&S to reach markets and create earning logic to those products or services traditionally called non-marketable or non-chargeable, such as a scenery or a landscape. The risk is that complementary products and services are usually very dependent on the main products or services in every aspect, in particular, if they would not succeed otherwise in the markets. The providers can equate with subcontractors and when complementing a greatly dominating main service or product, the power they have in production or marketing chain is marginal. This highlights even more the need for clear agreements and sharing responsibilities as well as trust and open knowledge exchange in the production and marketing channels.

Climatic conditions and seasonality

Diversifying the offered products and services by using complementary products or services can help to extend the season of the actual main services, such as hunting tourism by farm tourism companies in many European countries. Complementary services can also provide alternatives for different kinds of product packages which give, e.g. nature tourism some flexibility to adapt to the weather conditions.

5.3. Concluding remarks

The sector of NWFP&S includes a large variety of both products (from food products to handicrafts) and services (from recreation to funerals). It is connected with many branches of the economy and the social life, such as food industry, education, recreation and tourism, decoration, medicine and health care, sports, and as extreme examples,

art and music. Both marketable (food specialities, nature tourism packages) and non-marketable (landscape, clean air, biodiversity) products and services are supplied as NWFP&S. Different system of property rights regulation influences the marketing potentials of NWFP&S in different socio-economic contexts. Each product or service requires different approaches concerning the marketing strategy. Therefore it is very difficult, if not impossible, to lay down rules that would apply to the whole sector.

Taking these constraints into consideration on the basis of the analysed case studies, it is possible to make the following concluding remarks.

The whole sector in general can be seen as a very product oriented. There is a clear need to change the approach to a more customer oriented direction. This requires more efforts for market research to obtain precise information on customer needs and demands. Since in some cases small and micro enterprises in the rural areas cannot access this information by themselves, public institutions could support this development. Those actors who have the knowledge and the 'access to customers' in the marketing channels, the so-called gate keepers of the marketing intelligence, play a very important role in this process.

To increase the possibilities of commercial success in mass product enterprises, producers need to develop greater product differentiation and move up the value chain towards a more innovative specialised production.

A most important tool for successful marketing is the quality control. This leads to standardisation and trademarks of mass products and to different kinds of certification systems for specialised products.

The smaller the business and the smaller the customer group the more important are the organisational aspects for production and distribution as well as for market research and promotion. Integration and networks can be created through producer/grower associations, external institutions, partnership and coordination of initiatives between public authorities and private operators. Territorial marketing is one form of effective support. Highest forms of this development are product packages sold as complementary products. This requires high organisational efforts and indicates that there is a need for organisational innovations.

Regulations and property rights vary from product to product and from one country to another. Services which have been until now 'free of charge' or non-marketable give a market value to complementary products and services.

A lack of qualified staff in the rural areas can be seen as a general issue for all NWFP&S.

Fast selling systems and the use of e-business are important for all product categories, especially for perishable products.

External factors, such as climatic conditions, pests and diseases, and the seasonality of demand or raw material supply are as well a problem for all NWFP&S. The best possibility to overcome these risks is offered by the complementary products.

6. Opportunities for enterprise development in the forest sector

Key messages from chapter six to policy makers, practitioners and forestry institutions

1. The most important documents which should be looked at in the light of this particular report include, e.g. EU Forest Strategy, EU Forest Action Plan and EU Rural Development Policy, Strategic Research Agenda of Forest-Based Sector Technology Platform, and documents elaborated by the Ministerial Conference on the Protection of Forests in Europe (MCPFE).
2. More attention should be paid on the attitudes and values of forest owners in policy development in the forest sector in Europe. Equally important is also to develop the work in forest owners' associations and similar organisations whose mission is to support forest owners' benefits and welfare, since they are in a key position to improve the engagement of forest owners to their forests.
3. Instead of focusing on public intervention in the markets, public policies should rather focus on building capacities of wood working SMEs. Recent experiences in which universities, research organisations and companies are working together under joint programmes (such as centres of expertise) have provided new tools for capacity building especially for many SMEs. These experiences should be fully utilised and further developed to benefit wood processing SMEs in Europe.
4. The key issue in realising NWFP&S potentials forests provide is to have clearly defined rules and rights for commercial activities in the forests. Only then can the entrepreneur be able to gain public assistance in finding relevant customer segments for whom the service innovations are interesting and then to proceed for targeted marketing to reach those willing to pay for these particular services.
5. The basic question for the forest sector is whether a narrow view to the future applies in which timber-based production and industries remain almost the only core area for the sector's developments? Or will the sector's future developments be more based on a broader view in which forests are seen as the origin for multiple products and services, some of those providing opportunities for new entrepreneurship? Public services and institutions are currently focusing more on the first view, although the success of new entrepreneurship would require the broader view to be acknowledged and supporting institutions to be developed respectively.

6.1. Relevant policymaking processes in Europe

This chapter evaluates the relevancy of the COST Action E30 for the forest related policy making processes at the EU level. Relevancy of research is defined as the ability of scientific approach to answer the policy needs and interests (Lubchenko 1998, Cortner 2000, Leshner 2005). Relevant research addresses policy needs in, e.g. assessing, forecasting, monitoring, synthesising, explaining, describing, evaluating, comparing, and in other aspects of the societal life for a better informed decision making.

Policy needs of forest research contribution are explicitly expressed or embodied in the programmes and statements on the needs to secure future developments of the forest sector in Europe and the sustainable management of forests. To identify policy needs and interests more specifically, two categories of official documents can be considered:

- Documents elaborated by the EU, e.g. EU Forest Strategy, EU Forest Action Plan and EU Rural Development Policy, and the **Strategic Research Agenda of the Forest-Based Sector Technology Platform**.
- Documents elaborated by the Ministerial Conference on the Protection of Forests in Europe (MCPFE), e.g. Conferences' Declarations and Resolutions, and the MCPFE Work Programme.

These documents provide the political vision of the world, e.g. the targets for future development which research is called to provide systematic analysis (Costanza 2001). The EU Forest Strategy, for example, notes that research activities on forestry should 'help to promote the sustainable management and multifunctional role of forests and the sustainable and multipurpose utilisation of forest resources as well as to improve research potential and to encourage innovation'. Research and technological development are presented as one of the most important means of the EU Forest Action Plan to improve long-term competitiveness of forest-related industries. Accordingly, the MCPFE Vienna Declaration commits the participating countries to take forest-related decisions based on science, while improving the forest science-policy interface forms a part of the MCPFE work programme. Recently, a formal strategic agenda for research, called the **Strategic Research Agenda of Forest-Based Sector Technology Platform (Forest-Based Sector Technology Platform 2006)** was formulated for particular fields of political or economic interests, in addition to European level documents mentioned above.

The Council Resolution on a Forestry Strategy for the European Union in 1998 also includes two elements concerning the EU forest-based industries: a) the promotion of the use of wood and non-wood forest products from sustainable managed forests as environmentally friendly products in line with the rules of the open market, and b) the contribution of forestry and forest-based industries to income, employment and other elements affecting the quality of life. The Communication on the implementation of the EU Forest strategy notes that while a broad range of actions were taken to enhance the use of wood and the competitiveness of the forest-based and related industries, there still is a need for creating and enabling environments within which the forest-based industries can enhance their competitiveness and foster timber use, and a need for increasing the consumers' knowledge on the advantages of wood from sustainable managed forests.

The role of forestry and forest-related industries in 'maintaining and developing rural livelihoods as well as in meeting the demands of urbanised societies' was emphasised in so called Vienna Declaration (2003)²⁴. The signature of the Resolution 2 in the Vienna declaration commits the parties to promote the use of wood from sustainable managed forests, to improve enabling conditions for market-based provision of a diversified range of non-wood goods and services, to enhance the competitiveness of the forest sector by promoting innovation and entrepreneurship, and to work towards common approaches for the practical valuation of non-wood goods and services. The **pan-European actions** for the implementation of the Resolution 2 in Vienna declaration focus on promoting the use of wood, non wood forest products and services, competitiveness and innovation of forest-based industries, and education, training and safety.

The main objective of the COST Action E30, and this report specifically, was to gain a better understanding of the problems and possible solutions to forest-based entrepreneurship in small-scale forestry, wood processing, and non-wood forest products

24 <http://www.mcpfe.org/resolutions/vienna>

and services aiming at improved employment and income in the rural areas. Through its scientific programme, the COST Action E30 addressed two core issues of pan-European political processes with relevance to forests:

- How can forestry and forest-related industries contribute to rural development, income and employment through entrepreneurship?
- How can the competitiveness of forest-related enterprises to be improved?

During the COST Action E30, a systematic basis to identify the state-of-the-art of enterprise development in the forest sector on a European scale was provided for the first time (Jäger 2005). The nineteen country reports, as a result, were based on a harmonised data collection procedure on the factors impacting the firm's competitiveness. Information on consumption, demand, structure of the wood-based production, and on the characteristics of the forest sector production conditions (resources, ownership patterns and practices) were presented in a synthesised form ready to use in national or European decision making. Some of the problems identified in the state-of-the-art report were further analysed in the Action Working and Sub-Working groups (Niskanen 2006). Both of these works are synthesised in this report hoping to provide substantial support for policy making and promotion of forest sector entrepreneurship in Europe.

6.2. Role of small-scale forestry to support downstream timber industries is decreasing

Social changes affected rural production and forestry in many respects during the last decades in Europe. Earlier, forest owners used to be farmers or rural inhabitants, but the situation has changed rapidly. Nowadays, many forest owners are employed in other sectors or they live in non-farm residents. A decreasing number of active farms, dissociation between agriculture and forestry in farming, and the ageing of the rural population have affected small-scale forest production in all EU countries and particularly the western Europe. Social changes and the decreasing timber revenues have led in some cases to the abandonment of forests, non-management of forests or to decreasing efforts in forest management. In some countries, the abandonment of forests and the unclear ownership situation has become the result of the ongoing privatisation and restitution processes. Large areas of forest land, e.g. 1.2 to 1.6 million ha in Italy, 300 000 ha in Hungary, 350 000 ha in Lithuania, 190 000 ha in Romania and 130 000 ha in Germany, are out of production for the reason of abandonment or unsettled ownership.

Changing cultural factors lagged back to the forest property have a direct impact on the attitudes of the forest owners towards the use of forests. Forests have increasingly become consumption goods, productive asset or symbolic capital, and they may not be treated in many households as a normal good with potential to generate income. Strong patrimonial values of forest ownership, on the other hand, prevent the development of forestland markets, which prevents the land consolidation and the appearance of larger forest estates.

Forest owners' attitudes towards forestry and their objectives on forest property are probably the most important factors affecting the management decisions. Though several typologies of forest owners' objectives and values have been published, there still exists no information on frequencies of different types of forest owners or the links between forests owners' values and objectives and their entrepreneurial attitudes (Ní Dhubháin et

al. 2006). This is surprising as the attitudes and decisions of forest owners largely affect the opportunities of many forest-based downstream industries.

For example, the decisions of the forest owners to manage their own resources and the style of management they adopt have profound repercussions for downstream processors in wood working industries. Decreasing amount of consumption oriented forest owners can withhold wood supply as do those forest owners who promote biodiversity or recreation interests thus undermining downstream opportunities for entrepreneurship in wood industries.

One factor of compelling importance in the small-scale forest owners to downstream wood industries is the ability of a forest owner to feasibly engage in commercial wood production on his/her holding. This opportunity is mostly shaped by the size of the holding. Where average forest holdings are less than five hectares in size, the prospects for commercially viable engagement with the mainstream wood processing sector is negligible, in particular, if there are not enough strong co-operative structures capable of coordinating operations.

Forest owners' associations can have a vital role in supporting private forest owners to overcome the structural disadvantages that the current ownership structures create (Mendes et al. 2006). One of the major challenges facing forest owners' associations is the multi-functionality of forests and the enormous diversity of owners' motivations and values. Since the forest owners have a broad spectrum of values and attitudes, the possibilities of the forest owners' associations to support wood supply to downstream industries may decrease in the future unless new ways to motivate forest owners to manage their own forests beside financial income are not found

Forest owners' associations need to embrace the growing diversity and to adopt an inclusive approach to the values their clients represent. Forest owners' associations should also encourage active learning among the forest owners (including absentee owners) to support entrepreneurial developments in both wood and non-wood supply chains.

The relationship between these observations and rural development in Europe is shaped by path dependency. On one hand, a wood production model focuses on the weaknesses of the private forest owners in delivering wood or non-wood raw material into supply chains which contribute to the rural development. Small-scale forest owners are claimed for not selling and regarded as failing to contribute to the rural development. On the other hand, a more broadly based model of multifunctional forestry values, evidenced especially strongly in more affluent, densely populated countries, has the capacity to contribute to the rural development through the provision of non-wood forest products and services or highly valued green infrastructures. If affluent people choose to live in rural areas because of the green space provided by forests, the expenditures of these new rural residents may provide multiple opportunities for rural entrepreneurship. However, this development, especially important close to urban residential areas, provides entrepreneurial opportunities that are mostly external to the traditional production model of forest use and management.

More attention should be paid on the attitudes and values of forest owners in policy development in the forest sector in Europe. Forest owners' objectives need to be well understood and respected, as the owners are the decision-makers at the beginning of almost all forest-wood chains, and thus their behaviour cannot be ignored in developing policies in this sector. Equally important is to develop the work in forest owners' associations and similar organisations whose mission is to support their clients' benefits

and welfare, since they are in a key position to improve the engagement of forest owners with their forests. These associations should internally focus, according to their clients' objectives, not only on the facilitation of wood production, but also on the provision of services related to non-timber uses of forests and evolving business opportunities in the NWFP&S sector.

6.3. SMEs in wood product value chains should have a tighter business focus

It seems that the role of wood product industries is highest in countries with large wood resources. Apparently, large timber resources have provided a necessary condition for the creation of capacities in large-scale primary wood processing. It is evident that the correlation between forest resources and the primary wood processing industries will remain, although the differences in wood prices between different areas in Europe have led to an industrial delocalisation. In the secondary wood product industries, although recent evidence also proves their delocalization, companies can constitute their production better through the use of imported wood materials (such as in Denmark, Italy, Portugal, United Kingdom, and to some extent in Ireland) irrespective to their national timber resources.

An important link between forest resources and their processing is wood procurement. It is arranged with different forestry contracting means that vary, for example, from labour intensive cable harvesting in the Alps to highly mechanised operations in the flat terrain of Finland. Despite the still evident variations in wood procurement systems, it seems that due to cost efficiency, the Scandinavian-based mechanised cut-to-length method will become a major mode for wood procurement and forestry contracting in the future in Europe. This increases the pressure to update and broaden the forest workers' educational system to meet the growing demands for highly skilled labour.

Currently, many forestry contractors suffer from weak positions between forest owners and wood industries. This has led to low profitability, low credit rating and limited opportunities for business development. An important restriction for business development in forestry contracting is the role of permanent delivery contracts with wood industry companies on which the entrepreneurs depend. One or few customers that they have, are very strong negotiators and frequently able to push wood delivery contract prices down. **New entrepreneurship in forestry contracting requires business oriented entrepreneurs and adequate financing to be able to use the current technological opportunities available in modern harvesting machinery.** The wood energy value chains provide new opportunities for forestry contractors.

When following the forest-wood chain further from wood production and timber procurement, there are basically two types of value chains in primary (**sawmills and wood plate industries**) and secondary (**components and modules for wood construction as well as furniture and interior products and modules**) **wood product industries**. International companies often arrange the first set of value chains, where they control the primary wood products' production and related customer relations through CAs in scale economies, and the ability to operate with large retailers. In these value chains, all companies focus especially on cost efficiency as only the companies capable of cost leadership may earn acceptable profits in the long run. The role of SMEs in these value chains is to work as partners or sub-contractors to the large international companies,

providing complementary products to their businesses. SMEs can also supply their products directly to the markets, if they are price competitive, and if they have been able to sell wood residues to other wood processing factories, such as pulp- or board mills, or if they are able to use these residues in their own energy production.

The second set of value chains includes SMEs with developed intra-firm networks inside the local industrial districts and their vertical value chains. **The key issues in these chains are the unification and co-operation between craftsmanship based on production and international market oriented marketing and trade.** A major arrangement necessary to succeed in these markets, is market segmentation and a tight focus on the products relevant for the segments chosen. **Companies in these value chains can be, in principle, a part of high value added production systems without immediate connections to large population agglomerates as a basic customer base.** Therefore, these **intra-firm networks** can create strengthening links between rural production and urban consumption.

The cost minimisation strategy applying positive scale economies has dominated the business strategy of standardised wood product industries. The cost minimisation provides limited CAs for SMEs in primary wood product industries due to their low cost competitiveness compared with larger firms. This should promote SMEs, and the related industrial policies, to focus especially on strategies utilising local demand advantages or niche market potentials. In the secondary wood product industries, for example, SMEs can acquire CAs through craftsmanship skills, traditions as well as abilities to adapt on domestic market specifications and customer tastes.

Positive scale economies dominate the search for competitive advantages in primary wood product industries supporting also these industries' delocalisation to low cost countries. Business delocalisation in the secondary wood product industries (such as furniture or wood component manufacturing) can create fully new industrial infrastructure in co-operation with the existing primary wood product industries and other local businesses.

Currently, examples of delocalisation of sawing but keeping the further processing of lumber at the original locations exist, as well as examples, where the whole industrial infrastructures are delocalised. Although the delocalisation may in both cases above bring new opportunities for entrepreneurship, and economic and rural welfare to the areas of destination, it may also weaken business development opportunities in the countries of origin. It is apparent, however, that delocalisation will proceed in the future due to increasing international price competition in wood products markets and harmonisation of consumption patterns worldwide.

All in all, it seems that the CAs for SMEs in wood processing need more innovative business solutions to compensate inabilities in reaching positive scale economies and new technological vintages. Innovative business solutions need to be searched from business partnerships with multinational companies (leading to cost efficiency focus) or from the creation of international high-quality products with respected brands (leading to market differentiation focus together with production network management). In furniture industries, for example, the second strategy requires partnerships in which designers and producers are working together to create tailor-made solutions for high-income class consumer segments. This strategy may well be operational also in practice as the competitive advantages of wood furniture and interior products are already based on the knowledge and design of traditional craftsmanship. What may still be less visible but

worth paying attention to, e.g. in industrial policies, is the access to international markets and marketing.

Knowledge and design have already substituted scale economies in firms producing wood construction components, wooded furniture or wood interior solutions through creating high customer value for their products and business network services. In the future, the potential to use wood frames in residential construction, among other uses of wood, may grow due to raising awareness of the impacts of climate change and the need for solutions in sustainable development. Therefore, research-based evidences on low energy intensity in production and long-lasting carbon storage properties of wood constructions may result into the development of sustainable CAs for timber frame industries. This factor together with cost efficient customer solutions (such as pre-fabrication, system solutions and novel concepts in wood house component industries) can support the development of these industries European-wide.

Another promising path for developing entrepreneurship in wood processing and wood use begins from the increasing prices of fossil fuels, international policies targeted to restrain the impacts of global warming, and the recently established protocols for carbon sequestration markets which promote the use of wood for energy. For example, increasing the share of bio-fuels in the transportation sector, and thus decreasing the dependence on petroleum oil, is one of the most important and challenging goals of the current EU energy policy. The European forest-based sector has the potential to become a major player in the field of European bio-fuel production. A prospering business area is based on the production of second-generation transportation bio-fuels from forest-based biomass. The processes, upon which the new business is based, will be developed into operating reliably and efficiently for a wide range of forest-derived feedstock. This feedstock includes biomass obtained directly from forests and tree plantations, mill residues, and certain streams of fibre and wood wastes. These developments are possible to occur in integrated biorefineries interconnected to large-scale pulp, biofuel and other biomaterial production. SMEs have their niches mainly in the production of pellets and wood chips for small- or medium sized power plants.

Although the main responsibility for finding market niches for wood products must remain at the hands of the managers and owners of companies, there are several options for policy makers to help wood processing industries to succeed. One option is to secure open and competitive markets for all producers, and rebuilding market distortions. Subsidies for sawmills, for example, can only temporarily improve firms' success in the markets. In the long run, subsidies restrict the development of real CAs in enterprises.

Instead of focusing on public interventions in the markets, public policies should rather focus on the building capacities of SMEs. Capacities may include developed infrastructures in transportation and communication, elaborated access to research information and technical solutions, or improved managerial and technical skills in SMEs. Recent experiences in which universities, research organisations and companies are working together under joint programmes (such as centres of expertise) have provided new tools for capacity building especially for many SMEs. These experiences should be fully utilised and further developed to benefit wood processing SMEs in Europe.

National programmes to support good business practices in wood frame construction could help entrepreneurs to manage risks to invest in wood construction business in countries with no significant tradition in the construction of wooden buildings. Positive examples from Scotland and Finland to create business to business interactions in

wood fame construction networks support a wider establishment of these programmes in Europe. A joint programme for wood working industries at the European scale, the so-called RoadMap 2010, has improved the focusing of development efforts of these industries. Similar programmes should be continued and perhaps built with tighter production and customer segmentation in the future.

6.4. Innovations and marketing of NWFP&S need more institutional support

Non-wood forest products and services (NWFP&S) – or, as suggested in the COST Action E30, forest services and products other than wood – play an increasing role in the rural economies in Europe due to the increasing demand for environmentally friendly products. Nature-based tourism, for example, is a fast growing economic sector in rural Europe.

Even though the demand for the NWFP&S is increasing, there still are many barriers to entrepreneurs and supporting institutions to overcome before the potential can be fully utilised. NWFP&S sector is traditionally product oriented, which is strategically peculiar as the long distances from rural production areas to the customers would suggest highest orientation in the marketing. Also peculiar is the low level of segmentation in the sector. To be able to develop high quality products or services to the demanding customer groups, it would be essential to target businesses more tightly to the selected customer groups which is even more important considering the wide range of NWFP&S existing in the markets.

COST Action E30 focused on two important aspects to support entrepreneurship on NWFP&S which were innovations and marketing.

According to the case studies analysed, it is apparent that ideas for many NWFP&S tend to come from individuals' personal interests rather than from institutional actors. Similarly, the impulses to develop ideas further into products and services also tend to come from individuals rather than as a result of organisational impetus. These findings suggest that there is an absence of stimuli and diffusion of new ideas among institutional actors, such as in forestry, tourism and economic development organisations.

Considering the delivery of products and services, a broader range of actors becomes more critical than the developing of new ideas. The cases studied indicate that knowledge and information to reduce risks of operations, and finance to develop infrastructure and services are essential. Similarly, co-ordination and development of linkages between actors across forestry, tourism/recreation, economic development and environmental sectors are of high importance. Furthermore, human and social capital – that is, e.g. knowledge in the subject of the product/service being developed and skills in the delivery of services or business activities (such as marketing), and trust between actors – are also important for successful innovations.

The findings of the case studies are in line with the modern innovation theory which proposes that innovation is dependent not only on the system of institutions and actors, but also on their interaction abilities. Unfortunately the institutional support for many NWFP&S remains weak in practice. This may be due to the large heterogeneity of these products and services which does not allow the institutions to develop and evolve, as in the case of forestry in which the institutional support is based on a rather narrow productive structure of forests. Another reason for the weak institutional support may be

the relatively small single business opportunities in NWFP&S sector that has not allowed efficient institutions to evolve. On the contrary, strong traditions elsewhere, as in forestry (e.g. in forest legislation or in the work of forest owners' associations) may have even limited the institutions to evolve and support NWFP&S sector developments better.

From a marketing point of view, the NWFP&S sector is tremendously heterogeneous and the overall marketing of NWFP&S is not manageable. Instead, marketing strategies should be planned for each NWFP&S almost separately.

Fundamental in all marketing is the identification of factors that create a marketing advantage and provide value-added to consumers. An important tool for successful marketing of NWFP&S is the control of quality, helped by standardisation and trademarks in the case of mass products, and by different certification systems in the case of specialised products. Mass products, such as fruits, Christmas trees and honey, are typically commercially produced on a large scale. Specialised products and services are well differentiated and have high added value, such as truffles or birch sap. Complementary products and services are attached to a major product or service, and they are marketed according to the marketing strategies developed for the main service or product (such as berry sales marketing as a part of a nature tourism service).

Public access to forests, everyman's right on forest products, such as berries and mushrooms, and the obligations of forest owners to provide environmental services without compensation, form legal barriers for the development of many NWFP&S. In addition, public institutions offer a significant proportion of forest-related recreational services for free, leaving less space for private actors to develop their market based businesses. Nevertheless, there are potentials for new entrepreneurship in tourist services close to nature conservation areas, carbon sequestration services, hunting rentals, forest pedagogic services, and many other NWFP&S.

The key to realise these potentials is to have clearly defined rules and rights for commercial activities in the forests. Only then can an entrepreneur have public assistance in finding relevant customer segments for which the service innovation is interesting and then to proceed for targeted marketing to reach the core group of consumers willing to pay for the services. Often firm linkages and clustering are needed to be able to provide enough services for the selected customers in a cost efficient manner. Labelling, territorial marketing and marketing research can be used to promote the use of forests in the business of services.

6.5. Narrow and broad view to the future

It is apparent that entrepreneurship has not been a major issue in forestry in Europe thus far. Historically, the focus on forest research, for example, has been in wood production and forest ecology, although a wider and more multiple perspective on forest resources and their market-based use could have supported the overall aim of forest sustainability equally well. It is probable – as known especially from the studies in tropical deforestation – that the quality and diversity of forest resources is best secured when they have high use value (in addition to timber) for the local people, communities and the society.

Growing demands for environmental services in Europe is a sign for the broad use values that forests have. When the demand on these values can be transformed into new entrepreneurship, it is likely that forests are considered more a natural resource than a timber resource. This does not necessarily mean that the importance of wood production

would decrease. Rather, the benefits obtained from the non-timber uses of forests could be incremental to timber use, leading to overall increase in welfare in the societies.

In the future, more attention should be placed on the forest sector entrepreneurship simply for the reason that private actors are often efficient and flexible in supporting and developing the *demand* use of forest resources, whether those are timber-based or more service based uses. It is unlikely that the multiple benefits that forests can provide could ever be efficiently captured through public institutions and regulations, no matter how broad or well defined those were. The public institutions and regulations will remain incapable especially for capturing the rapidly changing demand characteristics in the societies.

The experiences and research reported in the previous chapters provide insights to the forest sector entrepreneurship from three inter-connected perspectives: small-scale forestry, wood processing SMEs, and NWFP&S innovations and marketing. Common for all these perspectives is that there are several demand (see Table 1.1.) and supply (see Table 1.2.) side policies affecting the rate of entrepreneurship. In other words, policies matter when the rate of entrepreneurship in the forest sector is concerned, although the enterprise development, *per se*, will remain at the hands of an entrepreneur.

If the rate for entrepreneurship is not sufficient in the forest sector, as is apparent at the moment, one may well ask whether the policies are properly established. Privatisation, promotion of firm linkages and clustering, creation of new markets and developing institutional capacities to support entrepreneurship, among other policies, are at the core when developing opportunities for the forest sector entrepreneurship. Although this report and the COST Action E30 have opened the discussion on forest sector entrepreneurship, much more research is needed on the impacts of different policies on forest sector entrepreneurship before concrete policy shifts can be suggested. Nevertheless, this research has already illustrated the importance of an approach in which the enterprises are at the core focus, not only in wood processing but also in forestry and NWFP&S sectors.

The basic question before entering into a more in-depth entrepreneurship research and promotion remains. Is the future development of the forest sector seen from a narrow point of view in which timber-based production and industries form almost the only core area for the sectors' outputs (respecting the social and environmental constraints of the society)? Or, is the future development more based on a broader view in which forests are seen as an origin for multiple products and services, some of those providing opportunities for new entrepreneurship? Public services and institutions are currently focusing more on the first view, although the success of new entrepreneurship would require the wider view to be acknowledged and supporting institutions to be developed respectively.

It would be most interesting for the future to search in-depth what are the opportunities on forests to contribute in the different demands of the societies, and its different *value chains* including communication, living and housing, packaging and logistics, energy, health care, nutrition and tourism, just to mention a few. It is hard to say, but we may have experienced thus far only the sharp edge of an iceberg and found only few of the opportunities that forests could provide in improving human welfare through evolving entrepreneurship.

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Annex 1. Characteristics of roundwood markets and forest industry structures in the Cost Action E30 countries.

	GNP share of forestry and forest industries	Roundwood markets (timber availability, market balance, roundwood species)	Number of enterprises	Employees
				1) wood harvesting 2) primary wood industries 3) secondary wood industries
Austria	Forestry 0.4, wood industry 3.9	High level of roundwood import. Considerably higher timber increment than annual harvests.	2) 1400, 3) 250	31000
Bulgaria	5.7%	No data in the Country Report.	2) 1710, 3) 1008	2) 8100, 3) 3800
Croatia	Forestry and wood products industries 2.4%.	Government determines stumpage prices.	2) 530, 3) 234	No data in the Country Report.
Finland	Forestry 2 %, wood products industries 1 %, pulp and paper industries 3 %.	No data in the Country Report.	2) 1300, 3) 1600	2) 15000, 3) 13000
Germany	No data in the Country Report.	Large timber reserves but only partly accessible due to economic reasons.	2) 3700, 3) 16000	2) 122000, 3) 220000
Hungary	Forestry 2%	Large difficulties in forest management. Challenge to sustain allowable cut.	2) 650	No data in the Country Report.
Ireland	No data in the Country Report.	Excess demand of roundwood. Import from Scotland.	2) 70, 3) 410	No data in the Country Report.
Italy	7.5%	Lack of roundwood supply. 70% of roundwood imported.	9000	26000
Lithuania	Wood products industries is 16 % of industrial production and 3% of the GDP.	Local resource base. Close to large roundwood resources in Russia.	2000	40000
Norway	5%	No data in the Country Report.	2) 320, 3) 140	2) 15500, 3) 15000
Poland	Forestry: 0.4%, forest industries 3%.	Wood import 3-4 mill m3 annually.	1) 4000, 2) 3100 (151 large), 3) 500 (5 large)	1) 35000, 2) 61000, 3) 98000
Portugal	Forestry: 0.4%, forest industries 1.5%.	Employment in wood industries deteriorated 1977–92, expanded 1993–1999 and declined thereafter.	2) 1020, 3) 11800	2) 12100, 3) 63100
Romania	Wood products industries share of total export is 10%.	Uncertainty in supply (auction practices difficulties). Decreased allowable cut from 1990. Market based roundwood pricing from 1995.	2) 5200, 3) 3000	53300
United Kingdom	Forestry plus primary industries using British grown wood accounted for 0.22% of GDP in 1997.	85% of wood products consumed in the UK are imported.	1) 2600 (forestry and logging), 2) 800 (sawmilling and planing), 160 (panels), 350 (pulp and paper)	Forestry 7500, harvesting 4800, haulage 1000, primary wood processing 11200

Annex 1. (continued)

	Forest industry structures	Sawmill capacity structure	Business structures & practices in woodworking industries	Primary forest industry business
Austria	Concentration through consolidations.	Total capacity 8th largest in Europe. Sawmills are small and labour intensive.	SME dominance. Craftsman culture disappeared in sawmilling. Professional management increasing.	Expansion to value added production. Increasing international ownership.
Bulgaria	Export orientation. Regional embedded knowledge & industrial districts are missing.	No data in the Country Report.	Small firms dominate. 97 % of enterprises have less than 50 employees.	Old equipments.
Croatia	Ten leading companies create 83 % of sector's incomes. Strong dominance of SMEs in sawmills and furniture industry.	Roundwood use 6.3 mill m3.	Low barriers to business entry. Fragmented industrial structure.	Plywood and veneer industries important.
Finland	Integrated international corporations with vertically integrated businesses.	Sawmilling is of secondary importance to integrated international corporations.	No data in the Country Report.	Enterprises: multinational 51%, national large & medium size 24%, SMEs 26%.
Germany	Large corporations dominate. Skewed capacity distribution between large and small companies.	Half of the production is produced by 2% of the largest sawmills.	No data in the Country Report.	Effective utilization of roundwood in SME mills. Sawmill residue trade important to large mills.
Hungary	Old capacity in sawmill industry.	No data in the Country Report.	No data in the Country Report.	Ownership: state 33%, agricultural co-operatives 67 % (mainly SMEs).
Ireland	Domestic markets dominate in sawmilling. 30% of production exported mainly to Britain.	70 mills produce 1.2 mill m3/a, 5 mills 200 000 m3/a, 4 mills 100 000m3/a, others are SMEs.	Modern mills through high tech investments. Specialised small mills to use low diameter timber species	87 % of SMEs process broadleave species. Large softwood mills process also Russian roundwood.
Italy	Fragmented small-scale enterprises. Mainly in the North.	No data in the Country Report.	No data in the Country Report.	No data in the Country Report.
Lithuania	National ownership 70%. Foreign investors ownership 30%.	No data in the Country Report.	No data in the Country Report.	No data in the Country Report.
Norway	Pre-fabricated house value chains dominate.	No data in the Country Report.	Strong rural sawmill organisations.	Large mills utilize scale economics. SMEs focus on quality.
Poland	Majority of wood product industries capacity is outdated. Only 20% of the capacity is relatively new. Pulp & paper capacity is modern.	12 mills 50 000 m3/a, 151 mills 10 000 m3/a.	Strong national promoting of entrepreneurship & innovations in 2000s.	Large enterprises. Export orientation.

	Forest industry structures	Sawmill capacity structure	Business structures & practices in woodworking industries	Primary forest industry business
Portugal	Constant labour productivity increase during last two decades. Wood furniture industry arranged into industrial districts.	Roundwood use in samills 9 mill m ³ /a.	No data in the Country Report.	Number of SMEs has decreased. Large sawmills are vertically integrated with carpentry industries.
Romania	State companies privatised in 1990. Regional diversification: high competitiveness in the North, while weaker companies & lower timber resources in the South .	Skewed distribution: large mills include only 1% of enterprises.	Privatisation of state ownership.	SMEs share is decreasing. SMEs trend is to specialise in production.
United Kingdom	Family businesses strong in sawmilling. Wood panel and pulp and paper mills are mainly owned by multinational companies.	Large mills 8% or 50 000m ³ /a, medium-size mills 14% and small mills 78% or 10 000m ³ /a.	SMEs dominate sawmilling and secondary wood processing. Low integration of wood value chains.	Mainly family businesses. Share of largest company groups increasing.

Annex 1. (continued)

	Secondary wood product industries tenure & business	Market & business culture features	Human capital & Innovations
Austria	Innovative and competitive. Strong in windows, wood houses, doors and alpine skiiis.	Strong clientele culture. Strong regional clusters but with weak business research interaction.	Strong public activities (Wood K plus Centre, FFF). Slow or very low business R&D (SMEs dominate in production).
Bulgaria	Furniture indusyry strong. Customer orientation well developed. Big investors e.g. IKEA and KRONOSPAN GROSS.	Managerial skills underdeveloped. Risk financing difficult to acquire.	Low supply of qualified personnel. Quality gap in management and marketing skills.
Croatia	Strong export of semi products to Italy.	Wood product industry is importat to local employment.	No data in the Country Report.
Finland	Three quarters of enterprises have only domestic market interests.	Cost competitiveness is a major source of CAs.	Strong knowledge management network (Puuoske). National programs supporting innovation development.
Germany	No data in the Country Report.	Sawmill residues effectively utilised.	No data in the Country Report.
Hungary	Parquette and panel industry investments high.	Large excess supply of pulpwood.	No data in the Country Report.
Ireland	SMEs in sawmilling support secondary industry niche production.	Import competition determine profitability margins. National Sawtimber Standards coming near to European ones. Product specific market standards developed.	No data in the Country Report.
Italy	Wood furnishing important (Italy is a global leader).	No data in the Country Report.	Large portion of non-permanent and non-professional workers.
Lithuania	Strong export in furniture industry.	Shortage of risk capital due to low profitability.	No data in the Country Report.
Norway	No data in the Country Report.	No data in the Country Report.	SMEs have little resources to R&D. Management is non-professional.

	Secondary wood product industries tenure & business	Market & business culture features	Human capital & Innovations
Poland	Modern capacity in wood panels & wood furniture industry. Export shares: 7 % furniture, 30% panels.	Active investments (domestic & foreign). Positive business climate. Creation of product/industry associations to support business and product development policies.	Low innovation activities (lack of funds). Policy program “Increasing competitiveness of wood industry enterprises” established to create new business knowledge.
Portugal	Traditional carpentry - non standardized products. Industrial carpentry - standardised products & modern technology. Industrial districts in furniture industries. International firms in wood panels.	Furniture industries domestically oriented in the past, but increasingly oriented towards exports today.	Innovation policy missing. Low technical assistance and R&D capacities for wood industries. Low attention to human resources training in the past, but more today.
Romania	Strong consolidation in furniture industries.	Large foreign investments (Scweighoffer, Bako, Fratti, Kronospan, etc). Lack of managerial and entrepreneurial expertise in SMEs. Business incubators established in the regional centers.	Strong HR & training dept in large companies, little resources assigned to it in SMEs
United Kingdom	No data in the Country Report.	Focus on cost competitiveness. Increasing attention on added value activities. Industry seeking for sustainability advantages in construction. Vibrant wood energy sector.	Low priority up to date but increasing attention today. Government support for innovations in general, not specific to timber. Strong attention in timber frame housing.

Annex 2. Main NWFP&S indicators presented in the Cost Action E30 country reports (Jagér 2005).

	Austria	Bulgaria	Croatia	Denmark	Finland
Old/traditional products or services	Mushrooms, berries, resin, collection of leaves, litter, foliage and branches (animal fodder), grazing, hunting; water management, recreation	Resin, mushrooms, medical herbs, fruits (hip, nuts, blackberries, raspberries, blueberries, <i>Sambucus</i> flowers & fruits)	Fibre materials (Spanish broom, gorse), grazing, medicinal plants	Hunting, fishing, no products	Berries, mushrooms, tann, tree sap, Christmas trees, different kinds of decoration substances (lichen, <i>Salix</i> species, moss)
Changes / tendencies	de-creasing	Resin, collection of leaves, litter, foliage and branches	Fibre materials, grazing	No data in the Country Report	No data in the Country Report
	constant	Hunting	No data in the Country Report	No data in the Country Report	No data in the Country Report
	in-creasing	Recreation, education, nature conservation	Hay, lime flowers	Recreation	Christmas trees, greenery, hunting is increasing in value
Trend products	Forest education, heating energy on a basis of forest biomass, nature conservation	No data in the Country Report	Truffles, basket willow, medicinal plants	Christmas trees, greenery, use of forests for special events	Innovative products, valuable substances (medicinal and cosmetic products), nature tourism
Main product(s)	Hunting	Forest floor resources	Forest fruits, medicinal plants, fibres, honey, mushrooms	Christmas trees etc. are the main NWFP, closely followed by hunting	Berries and mushrooms
Rare and high value products	No data in the Country Report	No data in the Country Report	Truffles (Istrian peninsula)	Protection of ground water is in some areas a high value service	No data in the Country Report
Export	No data in the Country Report	Mushrooms, fruits, herbs	Truffles, hunting, medicinal plants	Christmas trees	Berries and mushrooms
Services	Protection against natural hazards (mountains), water protection, recreation and forest education, nature conservation	Life supporting functions (water preserving, habitat protection), grazing, bee-breeding, hunting, recreation	Recreation, hunting, water protection, erosion control, carbon sequestration	Facilities for nature kindergartens, scouting and other youth activities, horseback riding, fishing licenses, hunting rentals, guided tours	Nature based tourism (traditional Nordic cross-country skiing, snowmobile trekking, utilisation of reindeer and game populations, conservation of forest environment, recreational use of forest nature
Access	Open; everyone can collect forest products for personal use, if the forest owner does not explicitly prohibit	Open under specific regulations; very few of private forests – closed	Free	Free in state-owned forests and with some restrictions in private forestry	Everyman's rights: hiking, biking, skiing, picking flowers, most important berries and mushrooms not allowed to disturb animals, damage trees, collect many herbs and special products
Main current problems	Maintenance of protective forests, conflicts between timber production and hunting	Poaching, illegal grazing	Low level of controlling, growing pressure	The dramatic decline in roundwood prices, how to capitalise on the huge interest in recreation benefits	-

Annex 2. (continued)

	Germany	Hungary	Iceland	Ireland	Italy	Lithuania	
Old/ traditional products or services	Christmas trees, hunting	In the past: charcoal, resin, bark, foliage at present: charcoal, Christmas trees, foliage, honey, mushrooms	There has been traditionally very little use of Icelandic forests for NWFP purposes (except for animal fodder and recreational use)	There is no tradition in Ireland of using non-wood forest products	Bark, medicinal herbs, manna, leaves and herbs for fodder	Resin, mushrooms, herbs, fruits	
Changes / tendencies	de- creasing	No data in the Country Report	Ivy, pine-cone, black alder, chestnuts, reed	No data in the Country Report	Chestnuts, mushrooms, bark, medicinal herbs, leaves and herbs for fodder	Medicinal herbs	Grazing
	constant	No data in the Country Report	Ornamental foliage, cones, moss, snails, reed	No data in the Country Report	Pine seeds	Fruits, hunting	Berries
	in- creasing	No data in the Country Report	Honey, medicinal plants, forest mushrooms, Christmas trees	Christmas trees, forest and wild foliage	Truffles, cork	Mushrooms, tourism	Recreation
Trend products	No data in the Country Report	Mushrooms, medicinal herbs, Christmas trees	No data in the Country Report	No data in the Country Report	Mushrooms, truffles	Mushrooms, berries, countryside tourism	
Main product(s)	Services, organised gathering of mushrooms	Honey, mushrooms, charcoal, Christmas trees, ornamental foliage	Berries, mushrooms (collected for personal recreational use, survey from 2004)	Forest recreation, Christmas trees, forest foliage (e.g. noble fir, <i>Pinus</i> spp., <i>Tsuga</i>)	Chestnuts, hazelnuts, pine nuts, mushrooms (with truffles)	Mushrooms	
Rare and high value products	No data in the Country Report	Medicinal plants	Christmas trees (usually more than ten metres high)	Forest foliage and a range of other gift arrangements	Truffles	No data in the Country Report	
Export	No data in the Country Report	Honey, mushrooms, medicinal plants, snails	None	Christmas trees, foliage and gift arrangements	Truffles	Mushrooms	
Services	Riding, cycling, driving by car, camping, cara- van camping, organised sport events, meetings	Tourism, hunting, fishing	Recreation, education ('forest classrooms')	Forest recreation	Environment protection, carbon sequestration, recreation	Life supporting functions, recreation	
Access	See Country Report	In state-owned forests: NWFPs free to collect (for commercial use a permission needed), in private forests: rights to use belong to the forest owner, (visitors need a permission)	Free access to all forests, commercial harvesting and camping on a private property: permission needed, state owned land: harvesting allowed (with possible restrictions of the Ministry of Environment)	Free access to state forests, one cannot enter into anyone else's property without a consent. License available from state forest to harvest foliage species	Under regional regulations or by regulations of the local authorities	Free, except for nature reservations and special objects	
Main current problems	Lack of statistics, the market is still developing	No information available for some products, weak marketing	Harvesting of NWFPs – for the most part done on an individual basis	Foliage harvest: accessibility, quality issues in cases where trees unmanaged		Intensive use of NWFPs, weak co- operation of SMEs, lack of knowledge	

Annex 2. (continued)

	Norway	Poland	Portugal	Romania	Switzerland	United Kingdom
Old/ traditional products or services	Grazing, collecting grass and leaves, berries, hunting and fishing, cutting peat, moss, lichen	Christmas trees, resin, charcoal, tree bark and needles, plants, mushrooms, beekeeping, hunting	Cork, chestnuts, pine seeds, grazing, resin	Berries, edible mushrooms, plants, Christmas trees, forest seed, fishing, hunting, resin, honey	Chestnuts, resin, mushrooms, berries, nuts, fir cones, hunting, grazing, collection of leaf litter, foliage and branches	Managed game, edible and medicinal plants and mushrooms, berries, foliage, seeds, bark, and craft materials
Changes / tendencies	de-creasing	Hazelnuts, bark (birch)	Resin	Wicker, osier, pheasant (bird flue)	Resin, collecting forest litter, seeds	Low value products, e.g. thatching materials and even wild food
	constant	Moss, lichen	Hunting	Grazing	Mushrooms, plants, forest fruits, forest seeds, game	Hunting, honey, mushrooms
	in-creasing	Berries, hunting and fishing	Mushrooms, fruits	Cork, mushrooms, recreation	Forest fruits and berries, hunting, Christmas trees, racing horses	Services in common, e.g. recreation, education
Trend product(s)	Hunting and fishing	Medicinal plants, mushrooms, decorative plants	Cork, pine seeds	Recreation, potted Christmas trees	Alternative funerals, adventure/ education trails, sports	Niche or 'lifestyle' products, but at a very small scale, recreation (MTB)
Main product(s)	Cloudberry (in some regions), hunting, fishing	Mushrooms, berries	Cork	Mushrooms, medicinal and aromatic plants, forest fruits, forest seeds, hunting and fishing	Game animals (hunting), honey, mushrooms, Christmas trees, bark chips	No data in the Country Report
Rare and high value products	Herbs for special purposes	Medicinal plants	Cork – of high value, but not a rarity	No data in the Country Report	No data in the Country Report	None
Export	No data in the Country Report	Mushrooms, berries, herbs, decorative plants	Cork, pine nuts	Berries, mushrooms, venison, pheasant	No data in the Country Report	Foliage (inc. moss), wild foods (inc. mushrooms and venison)
Services	Erosion control, biodiversity conservation, outdoor activities	Recreation, hunting, education, biodiversity conservation, life supporting functions	Carbon sequestration, soil-, water-, landscape-protection	CO2 sequestration, tourism and outdoor activities	Environmental education, adventure trails, theme trails, sports, alternative funerals, ecological services, water protection	Tourism, park- and campsites, outdoor activities

	Norway	Poland	Portugal	Romania	Switzerland	United Kingdom
Access	Open (except for protected areas and some species)	Open, collecting for personal use, free, commercial harvest – contract with forest administration	Open	Public access to all national forests, collecting NWFPs has to be authorised, collectors cannot gather NWFPs from private lands without the owners' acceptance	General right of access to the forests (except for protected areas) and also a general right of gathering NWFP (cantonal laws have distinct regulations)	All state-owned forests are open for pedestrians, a system of permits for motor vehicles, horse riding, events, and commercial harvesting
Main current problems	Grass and fodder (conflicts of interests), small ownership, difficulties in marketing	Gaps in statistics, illegal harvesting	No information available	The restitution process of private-owned forest land has strongly impacted the distribution of income in case of forest fruits and berries	High labour costs, general right of free access (free use of forest infrastructure), free collecting of NWFP for the public conflicts with commercial use	Conflict between state and private provision of recreation, rural labour supply for picking, mismatch between scale of resource and market demand

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