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# CHALLENGES FOR ENTERPRISE DEVELOPMENT IN FORESTRY, WOOD PROCESSING AND NON-WOOD PRODUCTS

**GUEST EDITORS**

Dr. Rossitsa Chobanova

***Institute of Economics at BAS, Bulgaria***

Dr. Anssi Niskanen

***University of Joensuu, Finland***

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*Rossitsa Chobanova*[1]
*Anssi Niskanen*[2]

# CHALLENGES FOR ENTERPRISE DEVELOPMENT IN FORESTRY, WOOD PROCESSING AND NON-WOOD PRODUCTS AND SERVICES – SEMINAR OVERVIEW

*This paper summarizes the main results and messages gained from the 35 scientific reports and presentations of an international seminar and workshop "Challenges for enterprise development in forestry, wood processing and non-wood products and services", organized by the Institute of Economics at the Bulgarian Academy of Sciences in cooperation with the COST Action E30 of the European Science Foundation, in Yundola, Bulgaria, October 2004. The objective of the scientific reports and discussions was to gain a better understanding of the problems of economic integration of consumers' demand and forestry production and possible solutions of forest-based entrepreneurship in small-scale forestry, wood processing and non-wood forest products and services.*

*The defined suggestions are directed to further development of the theory and to practical solutions for planning and implementation of rural development activities such as structural funds in many sparsely populated regions in Europe. The results contribute to a better understanding of similarities and differences in challenges for enterprise development in forestry, wood processing and non-wood products and services in EU member states, Associate candidate states and other countries from Central and South-Eastern Europe.*

*JEL: O18, Q12, E20, R10*

## 1. Main Messages from the Scientific Presentations during the International Seminar on the 28th October 2004

The seminar in the 28th October was divided into 3 sessions. The first one, chaired by R.Chobanova, senior research fellow at the Institute of Economics at the Bulgarian Academy of Sciences, was devoted to the specific problems of Bulgarian forestry, wood processing and non-wood products and services development. The second session, chaired by Acad. A. Alexandrov (Forestry Institute – Sofia), as well as the third session, chaired by Prof. A. Danchev (Fatih University – Istanbul) put emphasize to the forest sector challenges in the South-East Europe – Romania, Turkey and Bulgaria.

The first plenary paper was presented by acad. Alexander Alexandrov from the Forest Research Institute at the Bulgarian Academy of Sciences. He assumed that the last 14 years included many structural and economic changes, directed to the introduction of market economy. This meant new priorities also in the forestry

[1] *Rossitsa Chobanova is PhD, Senior research fellow in Institute of Economics, Bulgarian Academy of Science, e-mail: r_chobanova@iki.bas.bg*
[2] *Anssi Niskanen is PhD in Faculty of Forestry, University of Joensuu, FINLAND, Email: anssi.niskanen@joensuu.fi.*

sector development, including: restoration of the economic activities in the state-owned forests; redistribution and exchange of the forests of small forest owners; interruption of experiments in the management of the forestry sector; and attention to the Bulgarian experience and traditions in forestry. Acad. Alexandrov concluded that the forest industry in the transition to market economy after 1989 overcame the state monopolism but went to the opposite extreme. The weak sides of the forest industry in the transition period were summarized as follow: decreasing the production; insufficient availability in quantity and quality of raw material for the existing processing industries; loss of markets in the wood processing industry; and poor credit allowance. The competitive advantages of the Bulgarian forest industry at the moment include the high-qualified specialists and the low labor costs. According to acad. Alexandrov, the strategic aim of the forest industry development is the improvement of effectiveness and competitiveness to achieve 10 % increase in the annual growth of production and export.

Assoc. Prof. Ivan Jovkov, Assoc. Prof. Diana Ivanova, and Assoc. Prof. Nicola Grigorov from the University of Forestry gave the second plenary paper of the seminar on the challenges of forestry management system in Bulgaria. The analysis illustrated deepening crisis in forestry management, operations of nurseries and the forest industry in the years, following 1997. The authors concluded that a change of this situation is of big importance to the Bulgarian forest sector. Otherwise, the resources on the territory of the forest fund will constantly decrease their potential to support economic, social, and ecological objectives of the society, having negative consequences on carbon and water balances, agriculture and forestry, forest industry, tourism and so on.

Assoc. Prof. Simeon Elazarov from the University of Forestry, who also obtained the position of Executive Director of the Sofia Commodity Exchange, presented paper on selling sawn logs at a commodity exchange. He defined the advantages of the commodity exchange for stability of the supply of sawn logs into the markets. Prof. Elazarov also presented a specific example of the arrangement where sawn longs are sold via Sofia commodity exchange Ltd., which is of help for sawn wood traders.

Prof. A. Danchev and M. Kara from Fatih University in Istanbul described the Government policy aimed for stimulating industrial forestry in Turkey in the light of the expected accession to the EU and adjustment of the national economy to the European standards. The authors underline the role of the National Forestry Programme for stimulating industrial forestry. It was indicated that the Command-And-Control instruments are to be complemented by economic instruments as taxation, property rights, etc. The analysis indicated that there is a need of reducing the institutional costs of government policy and increasing the role of private sector especially of the small and medium size enterprises. The conclusion was that the government policy at present is in a stage of dynamic search of modern instruments for increasing the efficiency and competitiveness of forest sector in Turkey.

Dr. Laura Bouriaud, Liviu Nichiforel and Carmen Nastase from the Forestry Faculty, University “Stefan cel Mare” Suceava, Romania, gave an analysis of factors affecting the development of forest enterprises. It was based on empirical data provided by 52 auctions for public timber sales from 1997 to 2002, and on the data concerning the structure of forest enterprises in the Northern part of Romania,

Suceava County. The authors concluded that besides the difficulties of enterprises in the transition to the market economy, e.g. lack of credits and relative cost of investments, costly information, difficulties to reinforce trade contracts, high inflation rate, etc., there are some particularities in the case of forest sector. These particularities are located at the level of timber supply, and originated mainly by the public regulation of timber market (the way of calculating the reserve price; the repartition of annual allowable cut and the public rules of timber sales procedures), but also by natural events (storm damages in 2002). The management of timber sales in general affect the forest enterprise development as well.

Prof. Alexi Danchev, presented a paper 'Land use options of Bulgarian Danube Islands: Industrial poplar forestry versus biodiversity protection'. In his paper, he stated that the case of Bulgarian Danube islands is very indicative as an example of the problems emerging with the growth of industrial forestry when it is not regarded as a complement to the natural forestry. For the study, information about the benefits of preserving natural forests in this area was collected. The results indicated that the conservation of natural forests can be a source of higher benefits than the replacement of natural forests with poplar plantations. The author commented the need of practical implementation of the Strategy for the Protection and Restoration of Floodplain Forests on the Bulgarian Danube Islands, which is to inverse the process of replacement of natural forests with industrial forests. In conclusion, the results of Contingent Valuation study were reproduced indicating unambiguously the multifaceted positive economic effects of conservation of the natural forests in the Bulgarian Danube Islands.

Dr. Said DAĞDAŞ, Şaban ÇETİNER, Central Anatolia Forest Research Institute and Mümtaz TULUKÇU, Forest Engineer (Retired) from Ankara gave a paper dealing with fast-growing plantations in Turkey. The authors defined this problem as very important, because of increasing demand for industrial wood in Turkey, where the imports for industrial wood is rising approximaletly one million cubic meters annually. Because of the mainly semi-arid climatic conditions, the allowable cut from the high forests are very low. Many different programs – national and international, have been introduced to support afforestation activities since 1955. The recent state of the art in Turkey is that in total, the plantation area is about 1,7 million hectares, and additionally about 2 million hectares of land is considered to be used for the establishment of new plantations with fast growing coniferous and broadleaved species. The authors assumed that 700 000 hectares of land located outside of the forestland, can also be allocated for forest plantations to be managed by private sector. In this way, the substitution of wood by forest plantations, they suggest, may help to reduce logging pressure on natural forests in the country.

Assoc. Prof. Nicola Grigorov and Ph.D. student Radulina Tsolova from the University of Forestry in Sofia presented a paper dealt with problems of adaptation of the Bulgarian enterprises from the forest sector to the processes of European integration and sustainable development. In this respect a special attention was paid to the regional and sectional formations – clusters, basic production facilities, incubators for entrepreneurship, and centers for research and development. They were considered by the authors as the key factors for increasing the competitiveness of enterprises of forest industry and furniture production in Bulgaria.

Prof. Petko Tzenov presented the Bulgarian-Swiss forestry programme (BSFP), supported by "Silvika" foundation. The aim of this programme was to gather information on the public participation in the conducted activities of the BSFP for close-to-nature and sustainable forest management. The results of the survey were identical to some of the existing challenges in the development of forest enterprises, forest industry and their main and secondary products. To meet these challenges, the author concluded that international foundations and projects, which main activity is related to forests, forest industry and their products in the Republic of Bulgaria, are needed.

Dr. Kipra Djevizova from the Institute of Control and Systems Research at the Bulgarian academy of Sciences discussed e-strategies for the promotion of end-use efficiency in products and services in the local market in Sofia area. A focal point of her study was the fulfillment of business strategies that could promote markets and end-use of forestry and non-wood products by utilising traditional and Web channels in attracting consumers. The example considered parquet and raspberry productions in Sofia area. The empirical results illustrated slow infiltration of the Web channels in promoting the end-use of forestry products and services on the local market.

## 2. Main Messages from the Workshop on the 29th October 2004[3]

The first session, chaired by Dr. Anssi Niskanen from the Faculty of Forestry of the University of Joensuu, Finland was devoted to the recent impact of industrial evolution to forest sector and value chain of non-wood forest products. The second session, chaired by Dr. Rossitsa Chobanova, senior research fellow from the Institute of Economics at the Bulgarian Academy of Sciences, discussed methodological and country (from Northern and Western Europe) specific problems and approaches to meet the recent challenges to enterprise development in forestry, wood processing and non-wood products and services

Ass. Prof. Eric Hansen gave a presentation on industry evolution and its implications to forest sector. According to industrial organization theory, innovativeness differs along the industry life cycle, being highest at the beginning of the cycle. Hansen had tested the theory with plywood and oriented strand board (OSB) industries in the US. The hypothesis was that the plywood industries would be more innovative due to the demand for changing their product mix after increased competition from OSB industries. The results showed, however, that the OSB mills were more product-innovative, opposite to the theory. The explanation discussed was that the plywood industries found opportunities in the existing markets that tended not to accept OSB product, without need for developing new (product) innovations.

Carsten Smith Olsen's presentation dealt with the value chain of non-wood forest products, using commercial Himalayan medicinal plants as an example. It was discussed that the NWFP provide several opportunities for enterprise development in rural areas of many developing countries, but also in developed countries. The main obstacles for enterprise development include the lack of information on the quantities of different NWFP, lack of legal rights on the products, poor level of

[3] All the presentations are available on the COST E30 web site http://www.joensuu.fi/coste30/yundola_presentations.html

organisation and in some occasions, over-pressure on the resource. The examples and obstacles are more studied in developing countries, though most of the conclusions can be applied also in developed countries.

Prof. Bill Slee described the role of forests in rural development by widened the traditional perspective on the relationship to include intangible services that forests provide for other businesses in rural areas. Forests provide an important 'green infrastructure' for other activities, but how it is exploited will be conditioned by the character of the local economy. There is a need to think beyond forests and timber and beyond a uniform model and understand constellations of economic actors in distinct spatial settings as well as understand the trade-offs in terms of local economic activity between one type of forest exploitation and another. There is also widespread 'parasitism' of forests by other businesses and the extent of parasitism is conditioned partly by property rights and partly by owner attitudes. It is, in some circumstances, possible to internalise the externalities and 'repatriate' the benefits to the forest owner.

Dr. Heimo Karppinen described the changing goals and values of forest owners in Finland and their potential impacts and challenges on the operation of forest wood chain. The aging of forest owners, an increase in absentee and joint ownership, urbanization and especially retirement of the great age classes will have major changes in the behaviour of forest owners. Other changes in the non-industrial private forestry in Finland include: increasing emphasise in non-timber production, increasing need for advisory as well as silvicultural services, diminishing of the self-activity of private forest owners, born of new opportunities for entrepreneurship in silvicultural services and forestry planning, increasing other e.g. legal services in forestry, and increasing role of potential subsidies on multifunctional forestry.

Prof. Anders Lunnan discussed in his presentation the competitiveness and barriers to future development of SMEs in wood processing industries. Several studies have been made in Norway on the topic and they identified e.g. the following problems: the competence of these industries is generally low, isolation is of high degree, very few firms are international and innovation intensity is generally low. A study on 37 firms of the wood processing industry showed that the success was positively correlated with cooperation with the customers (market orientation) and a clear strategy.

In the previous meeting in Vienna it was discussed what is the definition for "urban demand" and how it would be possible to estimate. Johan Barstad made a background study on the topic and his conclusion was that the urban consumers are very much similar consumers as any other or "rural" consumers. It would be therefore important to understand the hyper industrial consumption, which is characteristic for all modern consumption. Mostly the information and the research on the demand will be found in either business schools or inside of the commercial firm. The costs in acquiring the information are high and therefore the studies on demand are produced for strategic reasons and they are not often publicly available. There are however some statistics and market research available on consumers' actions and more qualitative studies on attitudes.

## 3. Main Messages from the Workshop on 30th October 2004[4]

The first topic of the discussions was devoted to the challenges to the forest-based entrepreneurship, putting an accent to the small –scaled practices.
Dr. Laura Bouriaud analysed the meaning of property rights on forests. Addressing the property rights issue within the COST Action E30 means to focus on the question: does the structure of property rights (land, timber, non wood forest products and services) affect the competitiveness of forest product – consumer chain, is the structure of the property rights a barrier to entrepreneurship and what are the main problems and research questions for enterprise development in the forest sector from the viewpoint of the present property rights structure? Separation of the ownership and management rights may be a solution for the fragmentation of the land ownership through associations, forest integrators, co-management with State and management by the State.
Mr. Robert Robek presented some successful examples on the project-based co-operation for sustainable forest management in fragmented ownership in Slovenia. He pointed out that project-based co-operation can substantially improve social capital, entrepreneurship and environment sensitivity at the local level but to reach the objectives of self-management and research and development, project-based co-operation impulses must be guided at least at the regional level.
After the plenary session of the day, the seminar was divided into three parallel sessions according to the COST Action E30 Working Group structure. In Working Group one (WG 1) some examples of prepared country reports were presented from Lithuania (Ms Diana Mizaraite), Ireland (Ms Aine Ni Dubhain) and Norway (Mr Ståle Stordal). From the reports the following needs were emphasised:

- A clear focus on forest owners and their attitudes and actions;
- A focus on where forest owners' actions connect to entrepreneurial activity elsewhere in the economy, whether in timber or non-timber supply chains or through halo effects, especially in locally based activity;
- Recognition of wood and non-wood elements as potential contributions to the entrepreneurial activities;
- Recognition of a regulatory environment which may constrain or enable entrepreneurial actions; and
- Recognition that there is often a structure of forest owners' associations which can help small-scale forest owners to overcome some of the obstacles of small-scale forestry.

The draft country reports showed that the Europe can be divided in six regions, with different perspective on the use of forests, as indicated in the presentation of the COST E30 WG 1 Chair Prof Bill Slee:

- Group 1: Western European low forest cover and large state forest sector countries: UK, Ireland, the Netherlands, Denmark, Iceland.
- Group 2: Northern European family forestry countries: (often with medium scale forest holdings) Norway, Finland.
- Group 3: Southern European functionally with mixed forestry: Italy, Portugal.
- Group 4: Central European family forestry countries: Austria, Germany, Switzerland.

[4] All presentations are available on COST E30 web site
http://www.joensuu.fi/coste30/yundola_presentations.html

- Group 5 Baltic States Countries: hybrid between the Nordic family forestry and the transition economy model with medium sized restituted forest holdings
- Group 6: Central European transition economy countries with small-scale restituted forest holdings: Bulgaria, Romania, Hungary, Poland & Slovenia.

The identified future problems in WG 1 to be analysed were: (i) attitudes and values, (ii) forest owners' associations and (iii) policies and projects.

The second Working Group (WG 2) of the COST Action E30 discussed the challenges of the wood-processing industries.

Prof. Pekka Ollonqvist gave an overview on the Finnish studies and their results on competitive advantage of the woodworking SMEs in wood home construction business networks. He pointed that the future work in the area is connected with a new project, launched in the Finnish Forest Research Institute on the success factors of Finnish woodworking industry SMEs in a changing competitive environment.

Mr. Leonard Padureanu from Romania and Dr. Luca Cesaro from Italy gave a short overview over the main findings in their country reports.

The identified future problems in WG 2 to be analysed were: (i) wooden houses and frames, (ii) forestry contractors and bioenergy, (iii) demand for forest products and (iv) relocalization of wood processing industry.

The third Working Group (WG 3) of the COST Action E30 discussed the challenges to non-wood forest products and services development.

The operational definition for non-woof forest product (NWFP) was based on the presentation of Prof. Udo Mantau. The FAO definition of Non-Wood-Forest-Products – NWFP and its problems were presented as well as criteria for proper scientific definitions, an alternative system of classifying terms for forest products and systems of comparative terms of forest products. He introduced classifying terms for Forest based Goods and Services (FOGS): FOW (Forest based Wood products), FOP (Forest based Plant Products), FORS (Forest based Recreational Services), etc.

Dr. Gerhard Weiss discussed about the role of innovation systems in NWFPS Development. Weaknesses of forestry sector innovation systems (SIS) with regard to NWFPS development are 1) Lack of comprehensive innovation policies in the forest sector, 2) Lack of interactions of the forestry actors with national innovation system actors, and 3) Lack of interactions with actors from sectors where relevant innovations are occurring, - very often being non-timber demands (e.g. tourism). The key question then is on how to strengthen innovations in NWFPS? First of all, information on new market opportunities to forest owners/managers should be provided, including sources for financing innovations. Also cross-sectoral interactions should be stimulated with services sectors that express interest on forest resources, e.g. sports and tourism, nature conservation, etc. which are potential costumers.

The country reports of Italy (Ms. Susanne Klöhn), Romania (Ms. Simona Dragoi) and Finland (Ms. Anne Matilainen) were presented.

The identified future problems in WG 3 to be analysed were: (i) indicators, (ii) "competence for change", (iii) innovation, (iv) marketing and (v) NWFP&S definition.

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*Bill Slee*[1]

# THE HALO EFFECT: A WIDENED PERSPECTIVE ON THE RELATIONSHIP BETWEEN FORESTRY AND THE RURAL ECONOMY

*This article reviews the development of interest in the relationship between forestry and rural development in developed countries and, using evidence from recent research in Europe, suggests a need for a widening of the methods by which economic impacts are investigated. This need for a widening of the approaches to economic appraisal of impacts stems from the profound halo effects evident in the UK case studies, which circumstantial evidence suggests are likely to be replicated in the more developed and densely populated parts of Europe.*
*JEL: O18; Q23*

## Introduction

For most of the last 30 years forestry and its relationship with rural development has been a minor strand in forest research. IUFRO Working group S6.11-02 on Forestry and Rural Development in Industrialized Countries has held a number of meetings, including at Fredericton and Aberdeen, but it would be fair to say that until the late 1990s the interest in forestry and rural development was modest. One of the real difficulties of exploring this subject was that the general trend in forest employment, whether direct or indirect and induced, was downwards. Productivist forestry was being transformed by new technologies and the processing sector was becoming increasingly concentrated in large employment-poor but capital-intensive plants. Forestry might generate substantial output, but its contribution to employment was decreasing and other changes taking place in rural areas were emerging as more important drivers of economic change. Observing forestry's contribution to rural development through the lens of production forestry was not unlike watching an iceberg melting.

However, in recent years, rural development has emerged as a major focus of rural policy, particularly in Western Europe, largely as a result of the crisis in the Common Agricultural Policy (and more widely in production-oriented rural land use). It has become apparent that rural economies, rather than comprising places where primary production is concentrated, have increasingly become places where the forces of consumption drive economic success or failure. Since the upsurge of interest in rural development foresters have also taken a rather stronger interest in the subject and a number of research projects in Europe have been conducted in different parts of Europe. The FORWARD project associated with Pentti Hyttinen,

[1] *Prof. Bill Slee is Director of Countryside and Community Research Unit, Dunholme, Park Campus, Cheltenham, GL50 2QF, Tel: (+44)01242 531010, email: rwslee@glos.ac.uk.*

Andreas Ottitsch and Anssi Niskenen at EFI (2), an earlier COST action energised by Nils Koch (3), the EU project led by Udo Mantau (4) (Mantau *et al.* 2001), the EU MULTIFOR project run by Freerk Wiersum and Birgit Elands (5), and the ongoing Innoforce project run by Ewald Rametsteiner from BOKU illustrate examples of this new genre of research.

These studies take very different perspectives on forestry and its relationship with rural development. The FORWARD project sought to unravel the causal factors in successful regional forestry economies. The COST action was much more multi-stranded, and was more an information sharing opportunity for its participants than a research project. Mantau and his colleagues explored the scope for developing new markets relating to recreational and environmental services. Wiersum and Elands took a much broader view of rural development and sought to establish the concept of value of forests in a socio-cultural rather than a strictly economic sense. Innoforce focuses around innovation in the forest sector and is drawing on a range of ideas about innovation to explore new options in the forest sector.

As a socio-economic researcher interested in the drivers of rural economic change and the consequences of these changes on sustainable rural development, it has become increasingly apparent to me that the quality of natural environment emerges as a powerful force in providing a green infrastructure within which economic activity takes place. This has not been an explicit focus of any of the studies, although the results of the MULTIFOR project indicate the importance of recreation demands. Within those areas of high quality natural environment, trees, woodland and forest are often particularly important features. Further, certain types of trees, woodland and forest have greater values than others. In the UK, native broadleaves and Scots pine clearly number amongst the most highly valued components of the UK's green infrastructure. They tend to be associated with concentrations of tourist activity or of areas of high residential value.

## Some Background Issues in Economic Evaluation

Taking any standard economics textbook on the forest sector such as Johnson, Grayson and Bradley (6) we find a standard neo-classical treatment of the forest sector. The laws of supply and demand, the treatment of time in economics, and the recognition of non-market components of forestry are the core concerns. However, the relationship between these conventional neoclassical economic approaches to forest economics and rural development is far from clear. Market diagrams might yield general indications of price trends (with potentially profound effects for forest owners) or of the 'floating' contribution of non-market values to society welfare, but rural development refers much more explicitly to the wellbeing of rural households and the receipt of benefits from trees in particular geographical contexts.

Derided as the people who know the price of everything but the value of nothing, economists have made major strides in the last few years in putting a value on what are termed 'externalities'. Externalities have been defined as unpriced economic effects from one agent on another agent. They may be positive or negative. They have been the subject of almost unremitting attention from forest economists, who have used non-market values as a means of rationalising forestry (see Stewart Roper and Park 1999 (7) for a compendium on this), with only occasional dissenting voices (8). Positive examples include landscape and wildlife,

and pollution is the most widely cited negative example. Measurement of these external effects is now widely used as an input into policy making and a recent study values the positive effects for the UK forest at c £1,000 million per annum (9), a figure significantly greater than timber sales over the same period.

Moving beyond the conventional neo-classical approach, Mantau *et al*. (10) explored the scope for new enterprise development in forestry, through a mixed methods approach, based first on diagnosing the nature of forest products and services within a private good – public good matrix and then using tools of institutional analysis to explore the scope for market development. They found, unsurprisingly, that forest users who have historically been able to obtain forest service benefits for nothing are rather reluctant to pay for most services. The opportunities for such product/service developments are conditioned by market demand, which is likely to be highly variable from place to place and shaped by institutional structures and the cross elasticities of demand for private and public provision of forest and woodland services.

Over and above the traditional economic approaches, there is a parallel (if modest) interest in what we might term rural development impacts, which in the UK and Ireland at least, have been scrutinised principally through regional Input-Output analysis (11). Here the focus is on forestry and its regional economic linkages and its employment intensity. This first step out of the forest and into the wider rural regional economy inevitably raises questions about forestry and its relationship with its input suppliers and its processors. Where are they located? What value do they add? And in so doing, what regional employment and output is created? However, such appraisals must be set against a background of a rapidly declining workforce (12).

In some parts of Europe there has been a resurgence of interest in the wider impact of forest and woodland on livelihoods. This interest has grown from research and extension approaches applied normally in developing countries but is seen as having relevance by some to the developed country context (13). Further, this perspective may be of particular interest when exploring the wellbeing of households in remote and often poor areas of economies in transition, where woodfuel and building materials may be crucial contributors to local livelihoods. The contribution of forest and woodland to livelihoods varies enormously from place to place. It can come from wood fuel or berries and mushrooms or the provision of dog-walking or other recreational space. Some of these livelihood elements have a measurable opportunity benefit/return, which should be the market cost of the alternative (fuel or food); others such as dog walking are essentially non-market benefits. It may be less the marketed benefits of some of these non-timber forest products that are of significance, and more their symbolic role in community life or their ability to provide benefits for poor, elderly or immobile people.

Although community benefits are often seen as a rather separate issue from economic benefits, in practice the boundaries between the two are often very fuzzy (as both the evidence from social capital/innovative milieu studies and the livelihood approach, alluded to above suggest). Much attention has been paid to the importance of social capital in development. Social capital building can be seen as something that is good of itself or it can be seen as a way of building networks and trust which will eventually impact on economic development. The growing

thrust towards community land ownership and the powerful engagement of some communities with woodland projects is a testament to the social capital building role of woodlands, which may produce spillover benefits into the economic arena. The potential contribution of forest and woodland to social capital building, evidenced in activity in many parts of Scotland, from Laggan to Abriachan to north Sutherland, also provides a further justification of the livelihoods approach with its identification of the potential role of social capital in development. These non-timber forest products are firmly on the new forestry agenda, but if we think of the impacts of these in a regional economic sense there are still some more pieces to the jigsaw puzzle to be fitted.

If economists are to contribute significantly to the rural development agenda, they need to think beyond their dualistic economic conception of market goods and non-market goods (14) (see Mantau *et al*. 2001, for a starting point on this topic) and address two particular concerns. First, they need to better understand the complex array of institutional and policy variables that shape differences in economic activity, in particular the scope for private sector market development, between places. Second, they need to think about what has been termed the shadow value or halo effects of the value of green infrastructure on rural development. In different ways the Mantau and Hyttinen studies both focus on different aspects of the institutional and policy setting.

Mantau's work exposes how forest-related market opportunities are shaped by the configuration of property rights. One of the principal conclusions of the Hyttinen study was that an explanatory framework of the differences in performance of forestry in regional economies is based on 'local-specific, sectoral and policy related factors and the role of human agency' p. 109 (15). Such a conclusion resonates with findings from other parts of Europe that suggests that local factors (such as the knowledge and skill base and social capital), sometimes referred to as an innovative milieu, underpin the performance of certain successful regions.

In relation to the value of the green infrastructure, the CJC Consulting Report to DEFRA and the Treasury (16) gives surprisingly little information on the value of this to rural development and rather downplays its significance. In contrast the OECD (17) emphasise the importance of 'cultivating rural amenities' as a means of underpinning economic development. In practice, a non-market benefit may be captured by the forest owner, by another local economic actor or by noone and effectively float off into the ether. Normal accounting procedures are highly developed in relation to normal business accounting, quite good at measuring the non-market benefits in what are often described as environmentally adjusted accounts, but actually very bad at measuring the halo or shadow effects of an external benefit. It is this last type of benefit that is the principal but not exclusive focus of this paper.

Through its impact on landscape and biodiversity, forestry affects tourism and recreation and residential choice. These human choices of where to holiday, where to take a day trip to or where to live can have profound economic consequences on rural development, which all too often have been ignored by academic economists or even the consultancy community when forestry has been the focus of interest.

The distribution of forest and woodland is important in understanding its economic impact. Forestry in some regions may have primarily a production value and little else, whereas in other areas, the other values of forestry may be much more

important. For example in the UK there are some extensive areas of spruce production in Southern and Western Scotland, Northern England and Wales. Their values are likely to be largely conditioned by production values. However, the case of native pinewoods may be different. There are three major areas of pinewoods in Scotland in Deeside, in Strathspey and in the Affric/Strathfarrar area. In addition, there is a substantial area of planted Scots pine, often adjacent or relatively close to these native pinewoods. In two of these tree-rich areas, Strathspey and Deeside, there has been a substantial injection of wealth, which can be attributed at least in part to the presence of trees. In the third, greater remoteness and important biodiversity designations have militated against significant development. Nonetheless, in all of them forestry contributes to rural development for reasons other than timber production. Elsewhere in the UK, the native woodlands of the Lake District or of South East England are intimately connected with the areas tourist and residential values.

**Rural Development**

Most conventional approaches to economic analysis pay modest attention to the regional context in which forestry takes place, which is the arena of concern to those interested in rural development. Other types of economic analysis, particularly regional economic impact studies, have been developed to examine the impacts of particular projects or particular type of economic activity on regional economies. A number of regional impact studies have been undertaken. Often they are driven by the desire of a sponsoring body to justify a particular type of activity, and, without wishing to impugn the reputation of those who undertook the work, the assertion of high multipliers in sporting shooting (18) or game fishing should not of itself be taken as making the case for more of that activity (or even its retention) in the absence of comparable economic evidence of where else that resource could be used within the regional economy and with what effects. What these studies reveal is that if the concern is with the wider rural economy then different types of economic analysis must be conducted. For example wild geese have been a source of considerable damage to farmland in some parts of Scotland (19). If the unit of analysis is the individual farm or the aggregated farm population in a geese wintering area, the economic cost is considerable. If however, the wider economic impacts are explored and the benefits to the local economy of visiting bird watchers or hunters are factored in the cost is very much less.

In the UK, it has become increasingly apparent that the traditional primary rural economy and its connected industries will be unable to sustain the rural population. The reduction in the size of the primary workforce has been substantial and can be seen as both a response to industrial restructuring – the replacement of men with machines (see Johnson and Price, 1996, for an indication of the scale of this in forestry in Wales (20)) and the poor financial performance of the sector and the low wage rates that tend to go with this.

Because of regional economic disparities, policies have been designed at national and European levels to address the problems of slow or negative growth in some regions. There is a long(-ish) history of state intervention in regional policy, which includes offering a range of interventions to support the more disadvantaged rural areas. Since the emergence of regional policy in the 1930s, economists have advanced the cause of economic redistribution at the same time as trying to

address efficiency issues through the reduction of inflationary pressures (e.g. on wage rates and house prices) in expanding regions. In the last decade, the interventions have often come under the umbrella of EU schemes, where certain areas have been designated as less developed and comprehensive plans been devised to remedy their disadvantage. Forestry has figured in a number of these, though at times the public sector forest has been ineligible for the core funding and has had to seek alternative discretionary funds, such as under the EU LIFE Initiative.

However, most contemporary rural economies in the UK are not in general in a state of decline, although the decline of population in some rural areas is indisputable. Indeed the opposite is often the case, at least in terms of numbers of people. Whereas Scotland as a whole, the number of people is declining, many rural areas are increasing in population. Both in Deeside and in Strathspey, two of the core Scots pine districts in Scotland, there is substantial evidence of population growth over the last thirty years. Indeed, over the period between 1991 and 2006 these two former local councils were two of the projected five double-digit growth districts in rural Scotland (21). This has been in part a planned process, with substantial public investment in Aviemore from the mid-1960s as a growth centre and tourist hub, and in part market-driven, a result of the sum of many consumers' preferences for tree-rich rather than tree-poor areas as places to live.

Tourism is a major part of the Scottish rural economy. It accounts for over a third of the workforce in Badenoch and Strathspey. A recent Forestry Commission-sponsored study (22) estimated that 2.5% (£163 million) of all Scottish tourism expenditure was on day visits to forests and in selected forest-rich areas in the UK, between 10 and 17% of all tourism expenditure could be considered 'forest associated'.

Historically, people have tended to follow work in their residential choices. The recent Stepping Stones to Healthier Rural Futures (23) report of the Countryside Agency flags the importance of incomers in creating new employment in rural areas. However, recent work from Scandinavia (24) suggests that the majority of incomers who have moved into rural areas in Sweden have done so not because of new employment but because of residential preference. These new residents may create certain tensions, but they also create economic flows. Whether they are working outwith rural areas but making their home base in the countryside or retiring into rural areas, they are creating economic impacts by their spending behaviour. These economic flows are increasingly the lifeblood of rural communities.

## A New Approach to Measurement

### *Introduction*

The methods described below were developed for a Forestry Commission project and in slightly modified form are being applied to a Scottish context in ongoing work. At the time the Forestry Commission was keen to establish the full impact of forestry on rural development. The methods were designed as a means of scoping the task. What emerged were findings that raised some very important questions about the regional/rural development impacts of forestry in an English setting that may well have resonance in a Scottish context.

The team that developed these techniques comprised a cultural geographer, Rhys Evans, a regional economist, Deb Roberts and myself from a rural socio-economics background (25). The challenge that we set about was to ask ourselves a simple question: What would be the loss of economic activity in the study area if the trees, woodland and forest were not there?

The first group of economic impacts comprises the conventional purchases and outputs generated by the forest owner and the subsequent downstream effects, which have been widely studied (26). These comprise expenditures on planting and maintenance which may or may not benefit local businesses, either directly or indirectly, and payments received for forest outputs such as timber, game, sale of fishing rights to lochs or rivers within the forest or the use of the forest for car rallies, orienteering or other sporting activity. The extent, to which the forest products are processed within the local economy, will frame the overall economic impact in rural areas.

We termed the second group of economic impacts 'shadow' effects. This is potentially a source of ambiguity because of the use of the specific and different use of the term shadow pricing in Cost Benefit Analysis. However, in this study we felt that the metaphor of a shadow was an appropriate way of examining these wider impacts. Trees cast a shadow over surrounding economic activity, which may be beneficial or negative in its effects. The term halo effect has been subsequently suggested. We felt that two types of economic entity might benefit (or conceivably suffer) from living and operating in the shadow of the forest. The first of these types of entity is non-forestry businesses; indeed businesses that are not owned by the forest owner but which can be seen to parasitise some attributes of the forest, such as its view, access opportunities, screening effects etc. When we conducted our fieldwork we decided to approach a range of local businesses, but reduced this down to a set of tourism and recreational–related businesses, including accommodation providers, cycle hire firms, etc.

Our interest was in establishing the proportion of the business' turnover and employment attributable to the presence of trees, woodland and forest. What simpler way could there be of finding out about the contribution of trees and woodland than asking those business owners to attribute a proportion of their turnover to the presence of tress and woodland?

The second type of economic entity examined was households. Where it could be proved conclusively that the household's decision to live within a particular area was in part determined by the presence of nearby trees, woodland and forest, the resultant economic flows associated with the purchasing of local goods and services can be seen, in part at least, as forest-dependent. Again, on the assumption that households as economic agents are capable of attributing value to the different drivers of their locational choices, it should be possible to factor out the tree/woodland related component.

The third type of economic impact comprises non-market effects, which can be analysed using conventional non-market benefit estimation procedures (27). The main types of non-market benefits comprise landscape, informal recreation, biodiversity, carbon storage and soil and water protection. These benefits are not actually receipts by local economic actors because they are by definition non-market benefits.

The final type of value to be considered is the social and cultural values. These can be considered as values in their own right or as actual potential contributors to economic value.

Table 1

The Methods Used in the UFIRD Study

| Type of Value | Methods | | Outcome |
|---|---|---|---|
| | Stage 1 | Stage 2 | |
| **Task 1. Forest values**<br>• Planting and maintenance<br>• Harvesting<br>• Amenity forest management | Surveys with forest managers and other forestry-related local businesses | Keynesian local income and employment multipliers | Understanding forestry's contribution to rural development |
| **Task 2a. Shadow values from forest-related tourism and recreation**<br>• Day visits<br>• Overnight visits | Surveys with tourism specialists<br><br>Estimation of level and pattern of forest-related tourism expenditures | As above | |
| **Task 2b. Shadow values attributed to households influence of forests on location decisions**<br>• Households | Analysis of findings from focus groups and follow-up interviews<br><br>Estimation of proportion of household and business expenditures attributable to the presence of forest and woodland in the locality | As above | |
| **Task 3. Non-Market Values**<br>• Carbon sequestration<br>• Biodiversity<br>• Air Quality<br>• Recreation | Collect information on characteristics of woodland(s) (e.g. locational characteristics, species types, age etc) | Benefit Transfer methods | |
| **Task 4. Social Values**<br>• Historic<br>• Cultural<br>• Symbolic | Collect information though focus group and follow-up interviews with local households | Interpretive methods | |

*Methods*

The methods used for the first three elements of the overall economic impact assessment are essentially identical. What must be assessed is the injection of money into the regional economy arising from 'forestry'. This comprises the income generated by forest owners, some of which is recycled locally, through sales and purchases, the income derived by parasitic firms as a result of their proximity to forests and the income generated by the local economy as a result of purchases by

households whose presence in the region is at least partly determined by the presence of forests.
We are thus concerned with two challenges: first an apportioning exercise (How much of the income injection into the regional economy is attributable to forests?) and a local economic modelling exercise (How does the injection flow around the local economy and impact on other economic activity?).
The first question requires information on forests as economic entities, firms which parasitise the forest (and the proportion of their turnover attributable to the presence of forestry) and households whose presence in the area is at least partially influenced by the presence of forestry (and the proportion of their turnover attributable to the presence of forestry). The second question requires a multiplier model, which exposes the linkages and connections within local economies.

*Results*

The results presented here are for two areas in eastern and south-eastern England, which are very different setting to the areas of Scotland dominated by Scots pine. Three main conclusions can be drawn from the findings. First, the overwhelming impact on these rural economies derives from the shadow values or halo effects. Second, there are major differences in the residential and business shadow effects between the two areas, which on reflection can be attributed to their location. Third, there are quite big variations of the ratio of market to non-market benefits between the two areas, which are attributable in part to the intrinsic differences in woodland type but are also strongly shaped by local geographies.

Table 2a

Income and Non-Market Values Mid-Bedfordshire

| Mid-Bedfordshire | £ million income and non-market values |
|---|---|
| Total income effect from forestry | 0.636 |
| Total income effect from forest dependent tourism | 3.043 |
| Total income effect from residential shadow | 8.330 – 24.990 |
| Non market values – Informal recreation | 1.400 – 2.600 |
| – Carbon sink | 0.035 – 0.114 |

Source: UFIRD 2003.

Table 2b

Income and Non-Market Values Breckland

| Breckland | £ million income and non-market values |
|---|---|
| Total income effect from forestry | 3.315 |
| Total income effect from forest dependent tourism | 20.45 |
| Total income effect from residential shadow | 6.100 – 18.300 |
| Non market values – Informal recreation | 1.040 – 1.870 |
| – Carbon sink | 0.537 – 1.608 |

Source: UFIRD 2003.

**Other Studies**

There is now widespread recognition of the regenerative value of a forest and woodland environment in economic development in rural areas. Many woodland projects are taking place around the UK to nurture rural development outcomes

from forestry. Some of these explicitly ignore the mainstream forest sector. For example the Heartwoods project in the West Midlands targeted SMEs (particularly micro-businesses) and ignored the mainstream forestry processing sector, even where they were located within the project area. The mid-term evaluation (28) questioned the logic of this, in spite of the project team's use of the rhetoric of embeddedness to justify their actions. Other projects in the UK include the South West Forest project in central-north Devon and Cumbria Woodlands in north–west England. In most of these projects the creation or enhancement of a green infrastructure of woodland is seen as a foundation around which forestry and non-forestry SMEs can accrete.

Perhaps the most widely cited example of forestry investment contributing to rural development is the mountain biking trails at Coed-y-Brenin in Wales. Coed-y-Brenin is located in a remote part of north-west Wales on the southern edge of the Snowdonia National Park. It is part of the Forestry Commission's estate. A few years ago, largely due to the drive of one of its employees, a mountain bike trail was established. A significant development was initiated costing about £200,000 (300,000 Euros). Initial results concerning the impact of this project have suggested an astonishing effect on visitor spend in the area with an estimated injection of over £4 million annually in tourist campsites, restaurants, bike shops etc. Given estimates of c 50,000 per full time job equivalent in tourism this investment has generated c 80 full time jobs. Even at half of this figure it would be regarded by any regional development agency as a resounding success.

**The Implications for Analysis of Regional Development Arising from Forests and Woodland**

Past studies of the economics of forestry have been largely limited to a study of the economics of timber production and a study of the non-market benefits. However, as the RSPB realised some years ago, it is the impact of a particular land use on the local economy, rather than any abstract non-market value, that will be instrumental in local support for that activity (29). The earlier approaches to forestry ignore these wider regional impacts. The regional impact models, which are based solely on wood supply chains, do the same, because they ignore the firms which are not part of the forest ownership structure but are at least partially forest-dependent. The challenge is to assess the degree of forest dependence. Further, there is widespread evidence of residential in-migration to these tree-rich areas, both for commuting and retirement and for the creation of new lifestyle businesses. The challenge here is to establish the degree to which the forestry influences this decision.

However, we should be cautious about assigning too much value to these halo or shadow effects without understanding fully the importance of regional geographies. The Greensand ridge in Mid-Bedfordshire attracts in rich commuters who work in Bedford, Milton Keynes or even London, all of which outside the boundary of our study area. Their sheer numbers have a profound impact on regional economies. In Breckland, the forests (and heathland) provide an island of access opportunity in a sea of intensive agriculture. It is unsurprising that there should be such a significant tourist sector, which includes the large Center Parcs complex at Brandon. In the areas of native pinewoods in Scotland there are other competing attractants and it may be difficult to separate out the effect of the forests from the

lochs and the mountains and to assess the marginal benefit of native pine over birch or spruce.

Intuitively however, we would anticipate significant impacts arising from these shadow effects, elsewhere in the UK and Europe. In Scotland, such values are likely to be highest in somewhere like the Deeside corridor in the hinterland of an expanding city such as Aberdeen, or where tourism exercises an important impact on the local economy as in Strathspey. In the high environmental quality natural forests of Glen Affric/Strathfarrar area, these halo effects are likely to be much less. Elsewhere in Europe, there will be big differences between the values of forest and woodland in peri-urban and tourist regions and in the lightly populated areas where production values may continue to predominate. We must understand better the meso- and micro-geography of demand from tourists and those wanting to live in an area.

These results raise questions about how woodlands might be managed to better deliver these green infrastructure environmental services and also about how such services might be paid for. Given the parlous economics of commercial silviculture, it may be possible to internalise the externalities as has been achieved by Rothiemurchus estate with its array of visitor enterprises, but such opportunities are not universally available (30). For other woodland owners, financial incentives are one possibility but, in addition, there is a need to think about how a fair distribution of value can be achieved. In new housing developments there must be scope for the use of planning gain (31). There may even be scope for a hypothecated component of council tax, or the use of local tourist taxes to enhance the environment, with native woodland as a potential beneficiary.

The mountain bike example in Wales raises important questions about the role of forestry and specifically about the role of the state in the provision of infrastructure which other firms are then free to parasitise as they think fit. In many cash-strapped private forests there would clearly be an attempt to recoup the capital costs and in practice the state forest is in the ideal position to do this. It could initiate a franchise operation or even engage directly itself in such a business.

Taking the perspective of the COST E30 project, we need to rethink the breadth of the remit of the action. Are we interested just in forestry businesses, whose overall impact on rural development may be significant in some rather special cases, or are we interested in the green infrastructure/halo effect of forestry and the constellation of entrepreneurial activities that parasitise forestry investment? It is likely that over large areas of Europe the latter is far greater in its economic significance than the former.

## Conclusions

It is certain that the contribution of forest, woods and trees to rural development goes far beyond their value as a commercial timber crop. There is a danger that when the price of timber is so low we look at woodlands as uneconomic resources, when in fact they deliver a range of environmental services that have profound economic impacts on the communities and regions in which they are located. These wider effects create a seedbed for entrepreneurship. Even though the new firms are not necessarily part of a forest or woodland holding, their at least partial dependence on the forest means that their economic footprint is in part at least forest-dependent.

However, it is vital that new economic tools are assessed in order to estimate the wider benefits of forestry to rural society and economy. The halo effects, which we assert are so important, are seen as legitimate benefits by the Treasury in their Green Book (32), but there are to date no agreed estimating procedures beyond those used in the UFIRD study. The critical question that the economist must ask himself is: How much worse off would the regional economy of forested areas be in the absence of trees? Our modest journey on that voyage of discovery suggests that past attempts to measure this loss are likely to seriously underestimate the true value and create a distorted impression of the forest economy that fails to expose the full value of multifunctional forests to society as a whole. They are likely to underestimate the impact on rural development, on entrepreneurship and on aggregate economic activity. It is essential to move beyond a mindset of forestry activity as production driven encapsulated only by the entrepreneurial activities of forest owners and traditional (or even new) forestry-based or forest product-based activities. Udo Mantau has exposed the importance of forest-based services. This study suggests that even though the forest owner cannot always capture these, they should be a primary focus of interest if we wish to understand the full impact of forests on rural development and entrepreneurial activity.

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*Gerhard Weiss*[1]
*Ewald Rametsteiner*[2]

# THE ROLE OF INNOVATION SYSTEMS IN NON-TIMBER FOREST PRODUCTS AND SERVICES DEVELOPMENT IN CENTRAL EUROPE

*Non-timber forest products and services receive growing attention as they are expected to contribute to income in rural areas and to the solution of conflicts over forest use. This article studies the role of the forestry sector innovation systems of Central European countries in the development and diffusion of non-timber forest products and services on the basis of extensive research done in course of the project centre Innoforce of the European Forest Institute. For this purpose the sector innovation systems are characterised by survey data and case studies. The situation in non-timber forest products and services is presented for the Central European region in general and for the cases of environmental and recreational services in particular. It is concluded that the forestry sector innovation systems in Central Europe are typically made up of "traditional coalitions" of forestry actors. The development of non-timber forest products and services is hardly supported by the innovation systems. For strenthening innovations in non-timber forest products and services, forestry agencies would have to provide more information on new market opportunities and would have to promote cross-sectoral relations to service sectors.*
*JEL: O32; O33; Q23*

## Introduction

So-called non-wood or non-timber forest products and services increasingly receive attention in developing countries just like in industrial countries. The somewhat complicated term reflects the very problem: the attention lies on the many goods and services that the forests provide for society, not just timber. The many values that forests have for humankind have also been named "multi-functionality", however, with calling them products and services shall emphasize the possible marketability of these values. In many cases, possible benefits of the forests have not been utilised. In other cases they have been referred to as "public goods" in the past but might be transferred to marketable "private goods". In developing countries there are hopes that the use of non-wood or non-timber products and services either contributes to the income and livelihood of rural people or by their use a sustainable management of the forest shall be attained, or both. In industrial countries it is expected that the offer of these goods and services

[1] *Gerhard Weiss is from EFI PC INNOFORCE c/o Institute of Forest, Environment and Resource Policy, Department of Economic and Social Sciences, University of Natural Resources and Life Sciences, Tel: (+43) 1 47654 4405; E-mail: gerhard.weiss@boku.ac.at.*
[2] *Ewald Rametsteiner is from EFI PC INNOFORCE c/o Institute of Forest, Environment and Resource Policy, Department of Economic and Social Sciences, University of Natural Resources and Life Sciences, Tel: (+43) 1 47654 4405.*

helps in meeting new society's demands on the forest and in resolving use conflicts of the forests. It is therefore worthwhile to study the marketing possibilities of new goods and services of the forest, institutionial systems that support their development and the processes that lead to innovations in these fields.
The EFI PC Innoforce is a project centre of the European Forest Institute, with its head office in Vienna and with 23 partner institutions in 18 European countries. It deals with research in the fields of innovation and entrepreneurship in the forest sector. Since 2001 it has put in its work a particular emphasis on non-timber forest products and services innovations. In its first three years the membership of partners was restricted to Central European (CE) countries for which reason the focus of research was also on this region. These countries comprised such both with economies in transition and with a longer market economy tradition. Results of Innoforce work on innovation systems in non-timber forest products and services in Central Europe is presented in this article.
The research question of this article is the specific role of the forestry sector innovation systems of CE countries in the development and diffusion of non-timber forest products and services.

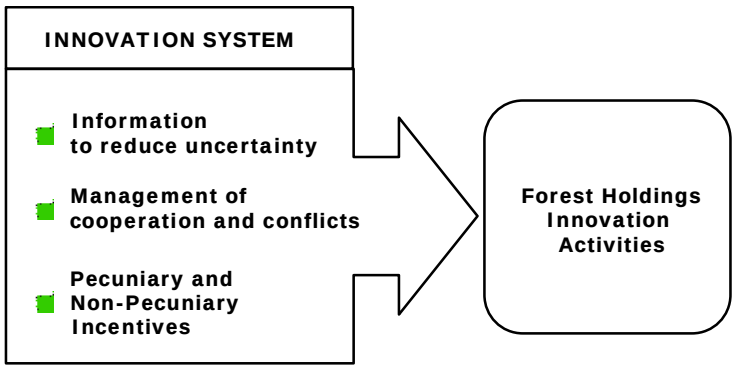
## Systems of Innovation

With Schumpeter (1935) **innovation** may be broadly defined as a discontinuously occurring implementation of new combinations of the means of production. Innovation research deals with the question how such innovation occurs and how innovation processes can be fostered. Early conceptions of the innovation process (Rogers 1962/1995) have gradually been replaced by more complex models. There is a growing consensus in the innovation system literature that innovation is an institutional process (Lundvall et al. 2002, Edquist 2001, Moulaert and Sekia 2000) and that it is not only the entrepreneur that is responsible for the innovativeness of the firm. They have to be embedded in a system of institutions that can support them.
The main components of a **system of innovation** are actors and institutions. Actors are considered to be organisations, which are seen as formal structures with an explicit purpose and which are consciously created (Edquist and Johnson 1997). Institutions are understood as a set of habits, routines, rules, laws or regulations that regulate the relations and interactions between individuals, groups and organisations (Edquist and Johnson 1997). Interaction between actors and institutional settings are important for innovation activities.
Systems of innovations can be analysed to find out their role or **functions** in the context of the innovation behaviour of firms and for intentional planning of innovation policy (Johnson 2001). The overall function of a system of innovation is to produce innovations new to the market, diffuse these innovations and use them (Edquist 2001). Edquist and Johnson (1997) summarize the functions of institutions in the process of innovation in three categories: reduction of uncertainties by providing information, management of conflicts and cooperation, and the provision of pecuniary and non-pecuniary incentives (see Figure 1). The institutional system shall provide knowledge for the enterprise to reduce uncertainties in the economic activities of the enterprise. Institutions (e.g. patent laws, norms for repayment periods etc.) may reduce uncertainty either by providing information about the behaviour of other people or by reducing the amount of information needed. The

institutional system shall manage the competition and cooperation between individuals and groups necessary for an innovation friendly environment, e.g. by supporting networks and clusters. The institutional system shall also provide a system of non-pecuniary incentives to engage in learning and to participate in innovation processes that can make innovation profitable in the long run. Finally, pecuniary incentives such as tax rules, government subsidies and the allocation of resources to universities shall channel resources to innovation activities and help to re-channel resources from those activities that are unprofitable.

Figure 1

Functions to be Provided by an Innovation System to Support Innovation Activities




There are many different approaches to analysing innovation systems. One debate deals with the nature of National Innovation Systems (NIS), and especially the way institutional dynamics are interpreted (Edquist and Johnson 1997; Lundvall 1992). The innovation system is defined by national boundaries, within which the interplay of actors on the national level are analysed. Besides on innovation systems of national economies, authors have focused on sector innovation systems (deliniated along sector boundaries, e.g. Malerba 2004), regional innovation systems (employing a territorial concept, e.g. Carlson and Jacobson 1997), and innovation systems pursuing a certain goal, for instance, sustainable development (sustainable systems of innovation, Segura-Bonilla 2003).

The **sector innovation system approach** provides an analytical framework to identify the performance of systems in terms of how well they support innovations in a specific sector. Breschi and Malerba (1997) define sector innovation systems (SIS) as “systems of firms active in developing and making a sector’s products and in generating and utilizing a sector’s technologies”. A SIS is therefore a system that is mainly comprised of actors of one specific sector and interactions between them. Furthermore, the majority of functions of the IS are fulfilled by actors of the sector. The SIS approach looks at the firm level, inter-firm level aspects as well as the institutional level aspects both of market and non-market relations and focuses on the differences between different types of sector innovation systems. The key features of this approach are the differences in and the importance of the knowledge base and the learning process, the role of non-firm organisations and institutions and the co-evolutionary process changing the sector (Malerba 2004). Breschi and Malerba (1997) studied five major types of SIS, including IS of

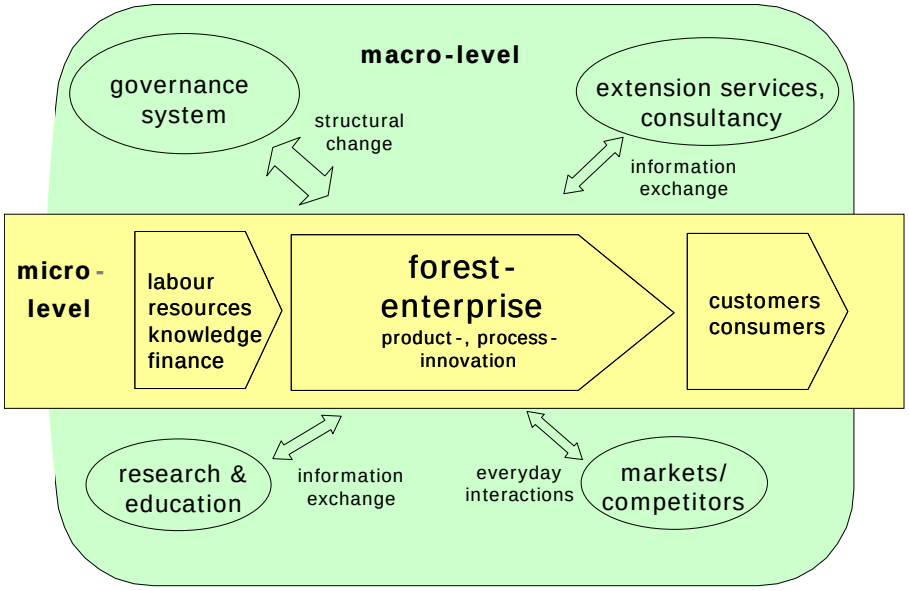
traditional sectors. SIS in traditional, “mature” sectors such as the forest sector often typically support more process innovations than product innovations. Especially, opportunities are pursued to introduce innovations related to reducing production cost. So, according to the theory, non-timber forest products and services are not expected to be supported much by the forestry SIS.

**Characteristics of the Forestry Sector Innovation System**

In studying the forest sector, it must be noted that path dependence and the institutional system are paramount in the formation of sector systems of innovation. The different natural resources and production conditions of a region may influence the path of development of firms and the whole sectors. Firms therefore operate within this particular structure and establish routines and norms, which generally are stable for long periods of time (Segura-Bonilla 1999).
The institutional design of organisations in the forestry sector that are important for innovations in the sector is quite different in the Central European region. However, the basic structure of organisations is similar (Figure 2). In all CE countries several institutions are key organisations in forest policy. These are different administrative sections of the ministries that are responsible for forestry and the environment, lobby groups of forest owners and forest workers as well as others, such as environmental interest groups. In each of the Central European countries the national knowledge management systems for forestry are also quite similar. In each country at least one university covers forestry, there are federal forest research institutes and further education organisations. Furthermore, private consultancy organisations exist, amongst other actors.

Figure 2

Actors in Sectoral Innovation Systems of Forestry




Source: Rametsteiner et al., forthcoming.

**Example: The Sectoral Innovation System of Forestry in Austria**

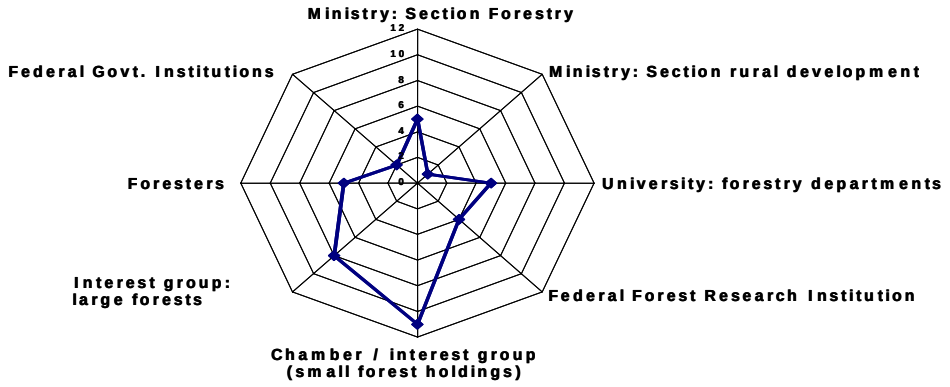
In course of the EFI RPC Innoforce research, the Austrian SIS of forestry has been studied in particular detail, including representative surveys of the forest holdings and the institutional system on national, provincial and regional level as well as case studies. Representatives of the institutional system rated innovation as highly important. However, policy actors could not present a policy or strategy document on the topic. Most actors were nevertheless able, without much hesitation, to name their contributions to supporting innovation. Innovation is thus rated as a highly important policy topic without much of an explicit policy but with considerable activity.

When looking at the integration of forest policies into national innovation policies, it shows that existing national innovation policies are not adapted to sector-specific needs. Little efforts seem to be undertaken to systematically integrate national innovation policies into sector policies or programmes, and none are undertaken in forest policy. Forest related institutions are not in contact with governmental or non-governmental bodies or agencies dealing with innovation policies.

Interaction between institutions constituting the main actors on innovation related aspects is often restricted to or characterized by what could be called “traditional coalitions” (see Figure 3). If main actors on national level forest policies are asked which actors they consider relevant for innovation in forestry, interest groups dominate the picture. What is interesting in the Austrian case is the seemingly low awareness, and possibly low level of integration in innovation initiatives, of institutions constituting the core of the knowledge management infrastructure: research and education institutions. Similarly, governmental actors are not frequently mentioned as amongst the most relevant institutions for forest related innovation. The loosely self-organizing system of innovation evolves around non-state institutions.

Figure 3

Actor Network on Innovation Policies on National Level in Austria: Actors Considered Relevant

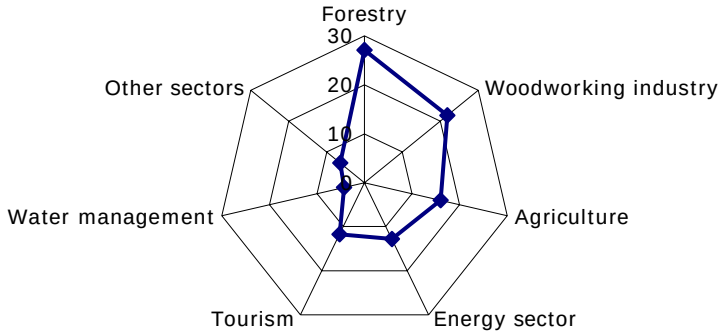



Source: Rametsteiner and Kubeczko, 2003.

What the strong concentration of the IS on traditional forestry organisations implies is the lack of interaction with actors not only from the national IS but also from other sectors.
What seems to distinguish the national level interaction patterns from provincial and district level interaction is that the latter have to interact quite a lot with institutions outside the forest sector, with administrations from other sectors and also interest groups. Only about one quarter of all collaborations are stated to be with institutions from forestry, i.e. forest administration or forest interest groups. About as much collaboration, about one fifth, actually is undertaken with institutions from the woodworking sector, followed by institutions from agriculture, the energy sector and tourism (Figure 4). That indicates that cross-sector collaboration is indeed daily business of institutions on district and provincial level.

Figure 4

Cross-Sectoral Collaboration on Province and District Level in Relation to Innovation and Entrepreneurship Support Actions




Source: Rametsteiner and Kubeczko 2003

Cross-sector collaboration and interaction is happening in innovation policy implementation, however, driven by ad-hoc necessity on “the ground” on district or provincial level. It is neither systematically nor strategically planned or managed by institutional level actors on higher level and seems neglected on national level. Cross-sector interaction is assumed to be of particular importance for the development of non-timber forest products and services because these mostly do not belong to traditonal forestry activities but have affinities rather to other sectors or societal groups.

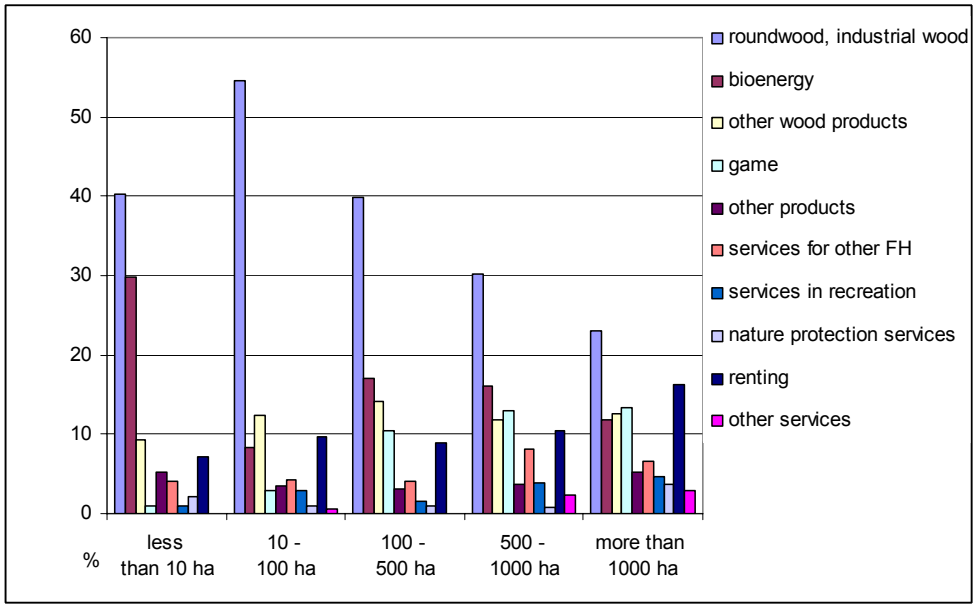
**Innovations in Non-Timber Forest Products and Services in Central Europe**

In course of the Innoforce work the total range of products and services offered by CE forest holdings was surveyed through questionnaires. The product mix offered by forest companies clearly increases over the size of the holding (see **Error! Reference source not found.**). Small forest holdings rarely offer any other product except industrial wood or wood for bio-energy (if they offer any product at all on the market). Large forest holdings offer a range of wood products, but often also game and services, especially renting (in some countries often hunting rights). Renting

out rights, or offering a service, is the second most often offered “product” by forest holdings.

Figure 5

Product Mix Offered by Forest Owners/Managers in Different Size Classes – Relative Frequency of Responses to Different Products within Each Forest Holding Size Class




Source: Rametsteiner et al., forthcoming.

Within non-timber forest products and services, except for services for other forest holdings, traditional products and services are found (game, gravel, renting, etc.) as well as non-traditional, the most frequent of which are recreation and nature conservation services. In terms of income, however, both recreation and nature conservation services do not play a major role, as shown in the following.

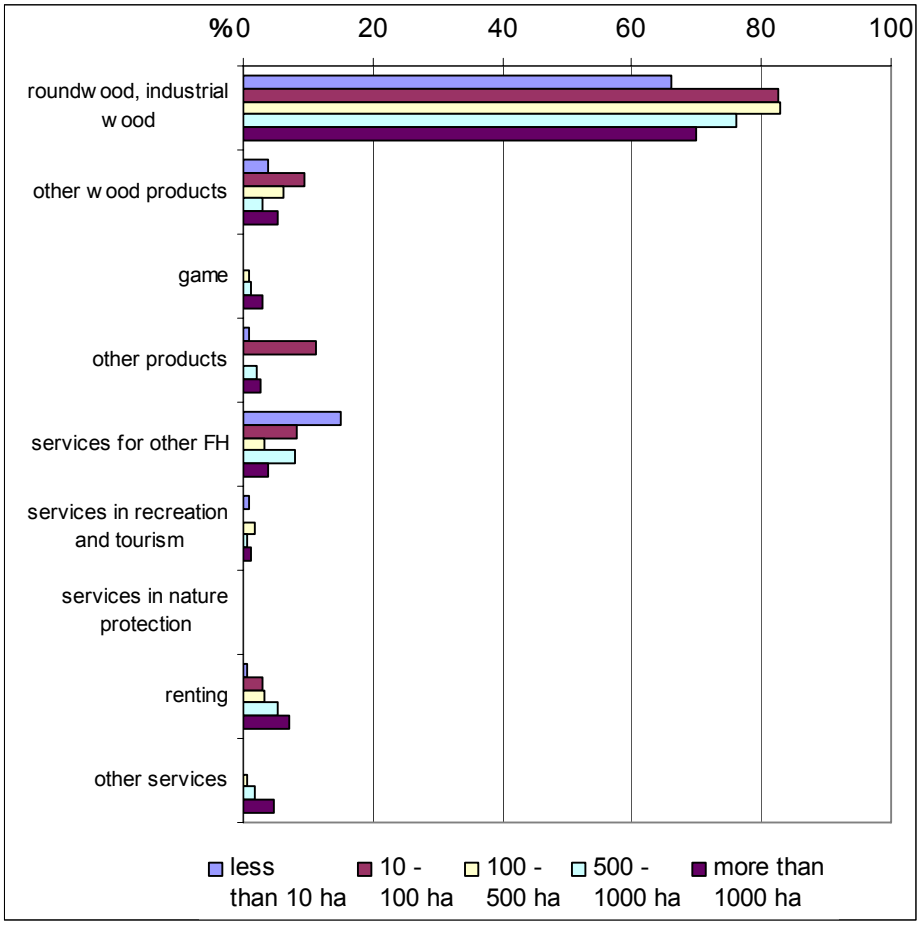
The following graph shows the contribution of different products to the income of forest owners (see **Error! Reference source not found.**). The figure clearly demonstrates the strong role of wood and, overall, the negligible shares of other income sources in practically all forest holding size classes. In Austria wood for bio-energy plays an important role especially for smaller forest ownership sizes, with about 30% of income recorded to have come from this source for forest holdings <10 ha.

Services contribute, according to the data from this survey, very little to the turnover of forest holdings. The most important further income source from services for small forest holdings is gained by way of services for other forest holdings. According to these results game contributes a very small share of income even for larger forest holdings, on average across Central Europe. Renting includes the lease of hunting rights in the countries surveyed, where these can be leased on a private contracting basis, such as in the Czech Republic, Hungary or Austria. Here, the small average property sizes usually result in low additional

income, on average. In Slovenia the state held all of the hunting rights at the time of the survey. No rents were therefore accrued by private forest holdings. It is notable that services for nature conservation practically have no source of income for the time being.

Figure 6

Share of Different Products to Turnover in Central European Countries




Note: Round wood and industrial wood includes fuelwood; German data is included from 100-500 ha category onwards – German data includes forest holdings >200 ha
Source: Rametsteiner et al., forthcoming.

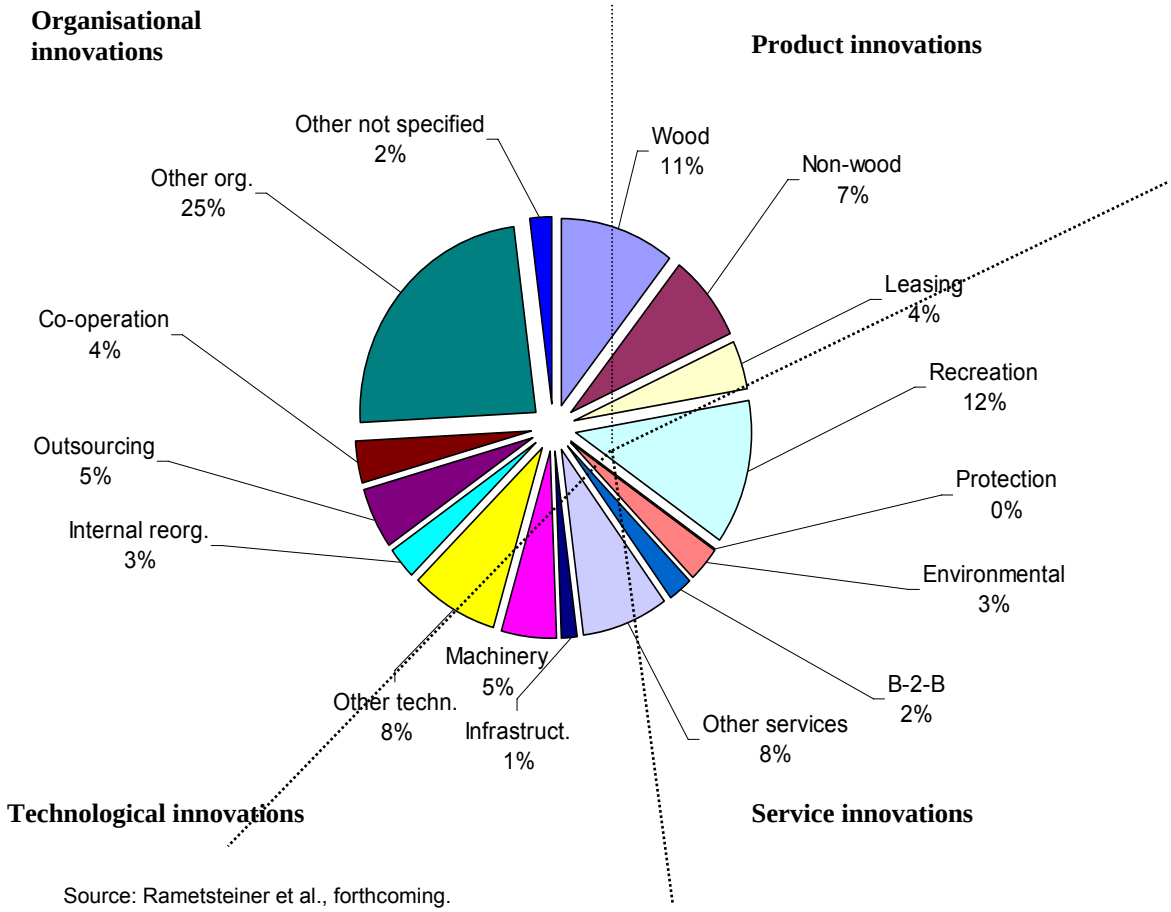
Looking at where innovations actually take place, might give a feeling of future developments: recreation services might therefore grow considerably in importance in future.

An overall picture of the most successful innovations in CE countries recorded by the forest owners/managers shows the dominant focus on organizational and service innovation in forest management (see **Error! Reference source not found.**). The figure shows that the range of newly introduced aspects is quite large.

Recreation leads the field in non-process oriented innovations, followed by the introduction of new wood products (new to the firm).

Figure 7

Overview on Recent Successful Innovations in Central Europe
(Austria, Czech Republic, Germany, Hungary, Italy, Slovakia)




Source: Rametsteiner et al., forthcoming.

### Case Studies on Non-Timber Forest Products and Services Innovations

In course of the work of the EFI PC Innoforce 32 case studies on innovation projects have been investigated in the CE countries Austria, Czech Republic, Germany, Slovakia, Slovenia, and Switzerland.[3] The cases covered the fields of wood products (8 cases), non-wood products (2 cases), recreation (5 cases) and environmental services (3 cases) as well as technological (3 cases) and organisational innovations (11 cases). Bio-energy innovations were allocated to the

[3] Source: Rametsteiner et al., forthcoming.

category of wood products, although one important innovation in this field is the production and marketing of heating. Particularly in Austria, forest owners run biomass based district heating plants, mostly in rural areas. This special case could also be considered a service (energy supply).
In the field of non-wood products no other examples besides traditional products such as gravel or venison were found. Although a range of new products could be visualised, (e.g. water, chemicals from wood or needles, etc.) no such cases could be discovered.
In the field of **services** the main driving force is the strong demand from the public that calls for recreation and environmental services from the forest. After a first phase of strong reservedness from the landowners, they have started certain offers now, particularly mountain bike routes, nature conservation contracts, etc. Both environmental and recreational services strongly depend on public money. Only very few cases are found where the services are offered to private customers. Forest experts also see a high latent potential in forest services. The very rare cases where forest services are marketed private-to-private show that the potential exists but currently is almost not utilised at all.
On the basis of the analysed cases in environmental and recreation services innovations, these two fields are describe in more detail in the following.

**Environmental Services**

Forest owners offer nature conservation services for local, provincial or national governments. Money is usually given by nature conservation authorities for conservation contracts. Only in a few cases private actors do pay for these services. There is a trend that nature conservation by decree more and more is replaced by nature conservation by contract. However, this obviously strongly depends on national and provincial policies.
The investigations in Austria and Germany reveal that state and provincial policies within the two countries can be quite different in how much money is dedicated to nature conservation in forests and in how far legal restrictions are preferred. For Austria some provinces rather limit their nature conservation contracts to agricultural land, others include forestry. The German partner of this study reports that the forestry ministry has started nature conservation contracts with forest holdings in seven federal countries but has stopped these activities because of a shortage of money.
In Slovenia no money is dedicated for nature conservation of forestland; the forest administration rather relies on regulatory instruments. In the Czech Republic forest owners obtain financial support from the State Fund for the environment if nature protection measures are prescribed. The amount of financial means available for these purposes, however, is rather small. In Slovakia subsidies for nature conservation were provided only in a few cases to the forest owners. In comparison, in Austria even the federal forest enterprise was compensated well for the loss of income in nature reserves and national parks.
For Switzerland a few examples are reported for so-called eco-sponsoring, where public or private organisations support certain nature conservation projects in forests (case 13). For companies from other sectors, sponsoring of ecological projects shall improve their public image and shall have advertising effects. The disadvantage of eco-sponsoring for forest enterprises is the orientation at rather

short projects and the dependence on the actual public image of forests and nature and on the general economic situation.
Forest agencies support innovations in nature conservation only in exemptions. They are used to negotiate conflicts over the utilization or conservation of forest land in political form but not on the market. Innovations are driven by companies' initiatives. For the example of Austria, two examples are documented in case studies: the forest owners' initiative BIOSA and the nature conservation activities of the Austrian Federal Forests Inc. BIOSA (Biosphere Austria) is an association of large private forest holdings that pools forest areas and offers these to potential financiers, e.g. provincial governments. The organisation is supported by the Austrian land owners' association (Hauptverband der Land- und Forstwirtschaftlichen Betriebe Österreichs).
The Austrian Federal Forests Inc. manages a range of contractual nature conservation projects that are usually paid by (national or provincial) governments. The goal of the company – just like BIOSA – is not so much to make profit from nature conservation but to keep the land under their management, possibly with compensation, and to improve their public image. In history demands for nature conservation were defended, but today the company presents itself with a "green image". It wants to be a "competent partner" in the field of nature conservation and proves that in a number of joint programmes with various nature conservation groups and the government. The strategy of the company today is to offer nature conservation areas for compensation. This strategy was successfully employed in the case of two national park projects, where the company is compensated for the areas and receives a yearly budget for the (nature conservation oriented) management of their areas. In two "national park" management units a staff of 35 is employed.
It can be said that public forestry agencies are hardly involved in the development of nature conservation services, they rather defend the sector against demands of conservationists. Projects are rather born by cooperation of forest holdings with nature conservation groups.

**Recreational Services**

Recreation services in rural areas are often connected with 'farm tourism', which is quite important in some Austrian, German, Italian, Slovenian and Swiss regions. The contribution of forest owners or forest resources, however, is usually rather low. Accommodation in the forest or in forest buildings is successfully offered by a few forest holdings. The collected cases prove that cooperation with professional travel agencies is a prerequisite for the success of the business. A further development potential is particularly seen in combined offers of accommodation with outdoor activities (hiking routes, sport activities, adventure tours, forest pedagogics offers, hunting, etc.).
The so-called "forest pedagogics" (German: Waldpädagogik) is one of the very rare examples for successful innovation in the service sector in forestry. Forest pedagogics means environmental education activities where foresters share their knowledge with children or other interested persons of the public (Voitleithner 2001). Many Central European countries experienced a boom in such services during the recent 5 or 10 years. Very quickly persons and institutions active in forest pedagogics organised themselves into associations, schools and training

centres set up training courses, and policy makers dedicated financial incentives. Many forest holdings are active in this field today. To some extent, the activities are supported by public funds (e.g. school excursions or similar activities are subsidised by the Austrian forestry ministry through the EU programme for rural development); to another part they offer actual profit (family programmes or manager seminars and other offers for adults). For the recreation market a high potential is assessed in both Western and Eastern CE countries of our study. A limiting factor is seen in the income situation of the countries; this is – in the medium term – also expected for the countries in transition. Successful examples are documented in this study for Western and Eastern countries.
A competitive situation is often found between public bodies and private initiatives. As many public forest holdings or forest services offer recreational and educational services for free or for a very low price it is difficult for private owners to engage without subsidies, except for very specific offers such as manager seminars or mere accommodation. In Slovenia the supply of recreation service or forest pedagogics is a task of public institutions (e.g. educational forest path, forest pedagogics) and is very important for their public image. There is no incentive for the public forest service to promote private initiatives in this field. Similarly, in Slovakia forest pedagogics services are traditionally provided by public institutions such as the Institute for Complementary Education in Forestry and Water Management and the Forest Research Institute, Forestry Faculty or the Faculty of Environmental Sciences. A few initiatives, however, are known for new market oriented developments, e.g. by a regional forest enterprise or by the Center for Scientific Tourism which is operated by the workers of the Institute of Forest Ecology and the Forestry Faculty in Zvolen.
Forestry institutions are hardly active in developing recreational services except for the described forest pedagogical activities. Both public administration and forest owners' interest groups promote and support forest owners' initiatives in forest pedagogics. Their main motivation, however, is not so much the development of these activities as a business field but they see it as a means of the sector's public relations work. Public policy instruments do not primarily focus on the development but rather on the diffusion of the services (offer of courses or financial incentives). For the support of other forest-related recreation services practically no public policy exists.

### The Role of Innovation Systems in Non-Timber Forest Products and Services Innovation

The data collection in course of the EFI PC Innoforce proves the assumption of the IS approach that innovation is an institutional process, depending on various actors and institutions and their interaction. The case studies show that innovations often are developed and implemented in a network of different actors who depending on the nature of the innovation belong to different sectors and administrational units. Innovations are often not the result of established IS – neither national, sectoral nor regional. It might be talked of ad-hoc IS or one-project IS. Particularly innovations that are new to the sector are born "between" sectors, and thus between sectoral innovation systems. Such examples are particularly non-timber forest products and services, for instance, the offer of nature conservation services, tourist accomodation or bio-energy services.

The **forestry SIS** is made of “traditional coalitions” of forestry actors and is mainly active in the traditional product areas of forestry. Non-timber forest products and services do not belong to this and the SIS only in exceptions supports the development of such products and services. An exception is the case of forest pedagogics, as for instance, in Germany, Switzerland and Austria, a market field that has developed from PR activities of forestry. It can be observed that while new products and services are often developed in a regional, cross-sectoral setting, the SIS becomes active in the diffusion of the new idea. An example of this is the offer of biomass-based district heating plants in Austria, that have been developed in a network of agricultural, forest industry, energy technology and regional development actors as well as representatives from different governmental levels. The diffusion, however, is strongly driven by the SIS.[4]

**Summary and Conclusions**

The forestry sector innovation system is active in the fields of technological and organisational process innovations, and in supporting the adoption/diffusion of certain pre-selected innovations. Typical areas of activity are mechanisation of forest work and recently the forming of forest owners’ cooperations. Except for some selected topics – such as bio-energy or forest pedagogics – product and service innovations are rather disregarded. Specific support aiming at the development of new product and service innovations are practically missing.

A range of **weaknesses** is found with regard to the forestry innovation system and related policies that have strong hampering effects on the development of non-timber forest products and services.

First, no comprehensive innovation policies are formulated for the forestry sector. Innovation aspects are handled in diverse operational policies for specific issues, but are not dealt with in a coherent form. The development of explicit innovation policies could include new impulses, also in other product and services fields than the traditional ones.

Second, there are virtually no interactions between forestry actors and actors dealing with existing national innovation policies. Forestry actors hardly know about the programmes and opportunities that these might provide, including financial means for the development of innovations.

Third, there is a lack of interaction with actors in sectors where a considerable part of innovations are currently occurring (and are expected to occur in the future), namely forest services, including tourism. Forestry institutional systems have strong sectoral boundaries, even to the wood and agricultural sectors, and even more to other sectors such as energy, tourism, nature conservation, etc. Forest policy institutions and forest knowledge institutions have difficulties in establishing systematic and stable relationships with other sectors that in fact are closely related to existing or potential markets for forest products and services. Such interactions, however, are the precondition for the evolvement of new ideas and their concrete implementation by forest companies.

For **strenthening** innovations in non-timber forest products and services, forestry agencies would have to provide much more information on new market opportunities, market research and marketing knowledge and means as well as

[4] Weiss, forthcoming; Kubeczko et al., forthcoming.

information on specific sources for further information. A further important area is information on available financial support opportunities. Another area concerns information on juridical issues, including trade and social security related aspects that are particularly relevant in many new market fields like tourism, sports etc.
Cross-sector relations to services sectors have received increasing attention by forest policy makers in the recent past. It seems recommendable to make steps to enhance policy interaction with policy actors in areas that are most important for forestry, e. g. tourism, nature conservation, etc. Workshops, common excursions, and other forms of opportunities for interaction can start the establishment of closer cooperation.

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*Pekka Ollonqvist*[1]
*Thomas Rimmler*[2]

# PERSPECTIVES AND SUCCESS FACTORS FOR SMALL FIRMS OF THE FINNISH BUILDERS' CARPENTRY INDUSTRY

*The article presents the state of the art and perspectives of the Finnish builders' carpentry Industry and the role of the small firms. It is identified that firms producing prefabricated components to BtoC markets do not supply their products to BtoB markets and vice versa. Domestic markets of single dwelling house construction have been growing during the recent years. There is a large demand potential opening up by the replacment of concrete by wood in the frame construction for multi storey dwelling buildings. The competitive structure of the industry as one determinant of business performance is evaluated with respect to suppliers (supply chain), entrants (entry barriers), buyers, rivals and substitutes. Despite of high cost, differentiation is used by firms in the industry as the major competitive strategy. Lack of knowledge and skills in strategic management, low innovativeness and low marketing competencies are common. Exports do not show any positive impact on business performance. Human capital rather than technology is a strategic but scarce resource. Subcontracting is common but partnerships in production and procurement are rare. There is large variation in the degree of process integration. Differentiation strategy, i.e. broadening competitive scope, implies flexible manufacturing systems with sufficient manufacturing capacity and a sufficient number of product variants. Small firms encounter restrictions with respect to the endowment of human and financial capital. At the end the article presents some factors of success for small firms in the Finnish builders' carpentry industry. Differentiation strategy hardly does provide a competitive advantage for small firms without extended networking. Business networking can allow small firms to compensate scale disadvantages when focusing into narrow demand segments. The preconditions for small firms to enter a BtoB partnership with a construction company are process automation and exploitation of IT-technologies, integrated information management and the implementation of an open construction system.*
*JEL: Q12, Q23, O33*

## 1. Performance and Sustained Competitive Advantage of a Firm

The construct of sustainable competitive advantage (SCA) in an important issue in strategic management research (Barney 2001, Sande 2003). Rational entrepreneurs or firms are looking for structures that could contribute their business performance. The competitive structure of an industry indicates the intensity of competition firms are facing there and relative performance of individual firms. The opportunity set on the choices determining the performance of a firm is restricted by factors originating in the external environment not internally within a firm. The

[1] *Pekka Ollonqvist is from Finnish Forest Research Institute, E-mail: pekka.ollonqvist@metla.fi*
[2] *Thomas Rimmler is from Finnish Forest Research Institute.Email: thomas.rimmler@metla.fi.*

characteristics of an industry as the firm's business environment has five dimensions: (i) factor conditions (power of suppliers), (ii) demand conditions (power of buyers), (iii) threats of substitutes, (iv) threat of potential entrants and (v) rivalry among existing firms (Porter 1980). These five dimension formulation is an extension to the Structure – Conduct – Performance (S-C-P) specification of competitive structures. Firms meet exogenous industry structure and the intensity of competition inside the industry indicating the limited degree of choices towards supernormal profits. Industry-level profitability is determined (predicted) in the S-C-A approach through the attractiveness of an industry as a business environment. An industry's competitiveness is always conditional to the state of technological knowledge and macroeconomic policy of the country where it is located.

Entry for new entrepreneurs may be (and often is) difficult in industries, where potential profits are high. The barriers to entry may be erected by incumbent firms operating in the industry or are an outcome of the specific features of the industry (e.g. large positive scale economics). The competitive structure among the firms of an industry is normally reciprocally related to potential profits firms operating in the industry can achieve.

A firm adopts a business strategy out of a set of strategies to meet the opportunities and threats posed to the firm by its business environment. Consequently the conduct and strategy of a firm is formulated under these conditions. Firms as members of the same industry are not normally equal what concerns the competition with one another. There are however special structures of competition among firms, where equal competitive forces are accompanied by quasi competition (e.g. structures of oligopolistic competition). Firms with equal competitive resources compete with quasi differentiated products in this context.

Firms in a manufacturing industry usually produce a multitude of products and there is a competitive structure in the product markets of the industry with a various degree of mutual substitutability between products. This product differentiation implies segmented markets and can be based on cost differentials or quasi factors without cost differentials. Firms implementing high-performing strategies try to prevent other firms from implementing the same strategies by erecting mobility barriers (Caves and Porter 1977). Firms allocate their production/supply to different market segments and modify their competitive strategy to reduce competitive pressure from other firms. The business strategy view pays attention to performance variation across firms that do not exogenously originate from industry structure. There are differences between firms in their ability to devise competitive strategies and to command adequate resources. Industry effects, however, are always there.

A dominant approach to explain sustained competitive advantage (SCA) has been the resource-based view of the firm during the last decade (Sande 2003). Resources causing cost differentials should be separated from those relevant in quasi competition. The competitive advantages in the industry with oligopoly structure are on the industry level instead of individual firms. The internal strengths and weaknesses of the firm are here applied as the determinants of business performance as opposed to industry structure. Successful strategies of firms providing sustainable competitive advantage must be endowed with the ability to control resources that allow them to do so (Penrose 1959, Foss 1997). Differences in performance across firms of an industry are caused by differences in resource

endowment instead of the business environment they operate in. Resources, not equally available to all firms, constitute the precondition for a firm to yield a sustained superior rent as compared to rivals.
Resources forming the source of SCA can include:

- Physical input factors that are of homogenous quality across competing firms
- Qualitative properties of input factors
- Non-material inputs (R&D, codified knowledge base, non-codified knowledge, learning capacity)
- Joint business activities and networking

A resource providing a long-term sustained competitive advantage differs from the resources of other firms (heterogeneity) and there is limited access to the resource concerned, so called ex-ante and ex-post limits and imperfect tradability (Peteraf 1993).
The value of a resource providing SCA is based on the purposive creation, through investments in resources, or on the use of isolating mechanisms (Rumelt, 1984). These constitute the analogue of entry barriers at the industry level and mobility barriers at the industry group level. Intangible competencies and the dynamic capability of firms to create them are the most important resources in the competence-based management theory. However, a precise general definition of competitive advantage is missing as well as a common specification of necessary and sufficient conditions for SCA.
A resource providing SCA constitute the basis for the ability to do something superior with respect to the competitors. The identification on a resource behind SCA can also be done at the organisational level. The capability to create, transform and use knowledge into a new competence is often a prerequisite to SCA (Praest 1998, Kogut and Zander 1992).
Competencies are assumed as most important sources of SCA. Technological competence is the ability to transform technological knowledge into a new competence. A competence evolves out of the successful application of the underlying ability to use knowledge. Human skills includes all kind of formal training, whereas learning by doing and other tacit types of learning are elements in the competence building capacity of the firm. Learning capacity is an element of competence building. It is the ability to create and adopt new knowledge and the ability to start and continue the process of creating a new competence. Intangible asset as opposed to tangible assets are most potential rent-yielding resources in that they usually are difficult to imitate and trade. Competence evolves out of the successful application of the underlying ability to use knowledge. The process of competence accumulation requires basic competencies categorized as learning capacity, capabilities and organisational routines (Praest 1998).
The sources of SCA can extend beyond the firm itself. The identification of the value chain relevant to a firm often provide a basis to explain also the SCA of the firm (Hoffman, 2000). There are value chains related to primary and supporting activities respectively. Activities are distinct from each other with respect to technology and economics. The configuration of linkages and coordination of activities are crucial for competitive advantage. A firm can have internal value chains (complementarities) as well as linkages towards upstream (suppliers) and downstream (marketing channels) agents. Primary activities comprise the physical creation of the product, its sale and transfer to the buyer, and after sales service.

The scope of a firm has an impact on the competitive advantage of the firm. Broad scope allows a firm to exploit interrelationships between the value chains that serve a number of different product or buyer segments, while narrow scope can allow the tailoring of its chain to serve a particular target segment resulting in lower costs compared to competitors (Porter 1985).
The purpose of this study is to analyse the sources of SCA and the corresponding potentials for small firms in the manufacture of prefabricated wooden buildings in Finland. The relevant products are introduced in Chapter 3. The markets and business activities of firms are analysed in Chapter 4. The analysis is the first of its kind for home construction in Finland. The competitive structure and performance of the industry in the relevant demand segments are discussed in Chapter 5. The discussion in Chapter 6 about the factors behind SCA is based on the summary findings from interviews among firm managers. Perspectives and success factor are summarized in Chapter 7.

## 2. Products

According to the SIC classification scheme the builder's carpentry industry is a branch within the woodworking industry. It includes the fabrication of structural wood components, prefabricated wood buildings and other builder's carpentry and joinery. The woodworking industry comprise also sawmilling, planing and impregnation of wood, the manufacture of plywood, laminated board particle board and fibre board, the manufacture of furniture and other products of wood.
The production of prefabricated wooden buildings (SIC 20301) includes the fabrication of structural wood components and prefabricated wood buildings ready for assembling on-site. Assembly on-site is included, if accomplished by the manufacturer of the building. It is excluded, if accomplished by a separate building contractor (TOL 45211). House building activities are the major market also for the manufacture of builders' carpentry and joinery (SIC 20309) that includes the fabrication of wooden products as doors, windows and their casings, staircases, hand rails, round or square logs for log homes, beams, roof constructions and other carpentry and joinery for building structures.
The domain of wood frame construction covers detached and semi-detached single-family dwelling houses, secondary residential houses (chalets), gazebos, saunas and other yard and garden buildings. Wood frame is used to a significant extent also in row and linked dwelling houses and in industrial, in some extent in business office and public buildings. Large-sized wall panel systems are used besides in detached single-family houses in row houses and linked houses. The dominant framing systems used for wooden buildings with off-site prefabricated construction elements are (i) small- and large-sized load-bearing wall panel systems, (ii) balloon and platform framing from precut (mill-cut) constructional timber or logs and (iii) modular construction systems. A typical prefab home package comprises the outer and inner shell include roofing, siding, flooring as well as windows and doors. Structural components are made from massive timber, Glulam or LVL. Precut timbe is mainly used by professional builders. The manufacture of sawmilling products is excluded from this paper. Sawn products comprise standard and special sawn timber, engineered wood products, preforms and wood components for the carpentry, joinery and construction industry.

## 3. Markets

### *3.1. Market Volume*

In 2002 the gross added value of the Finnish building construction markets was 13,3 billion euro and the value of constructing new buildings was 7,5 billion euro. The value of wood products used was 1,9 billion euros (14 % of gross value added) including 0,8 billion euro of other wood products in than prefab elements, windows, doors and parquette (1,1 billion Euro). In 2002 there was about 30 000 construction start-ups of new dwelling houses in the domestic markets. Half of the new buildings have wood frame (timber or logs) structures. Wood framing is most dominant in single (detached and semi-detached) houses and timber framing is also used for row and linked houses. Multiple storey residential buildings have almost exclusively been built by using concrete element techniques. Wood frame has been used only in reference context. The frame of 6 000 secondary residential – so called chalets – and about 6 000 sauna buildings are almost exclusively built with wood or alternatively with log frame.

The building renovation market is an important market segment especially to SME's in house construction (Table 1). Building renovation has been promoted in public re-employment programs as an opportunity for the reintegration of displaced persons in rural areas as well as a new demand segment for vertical forest – wood product chains of farm enterprises and small sawmills. Integration of production and marketing, product development for export markets to Baltic countries is provided as a second new market segment to wood construction chains of SME's in Finland.

Table 1

House Construction and Production of Wood Products Used in Building Construction and Renovation in Finland in 2002

| | Gross output* (million euro) |
|---|---|
| New building construction | 7 500 (56%) |
| Building renovation | 5 800 (44%) |
| Constructional wood products | 1 900 (14%) |

*Figures include only building materials, when including building installation and completion the total value rises to 15,6 million euro.

In 2002 dwelling building construction had 30% market share when measured in space volume but 40% when measured in value share (Table 2). At the same time wooden frame dwelling buildings had a share of 52% of all completed new buildings. Their share of all buildings with a wooden frame was 40% measured in space volume and 54% of the total value.

Table 2

Wood Frame Building Construction Segments in Finland in 2003

| Buildings completed in 2002 | Total | | Wooden frame | | | | |
|---|---|---|---|---|---|---|---|
| | million $m^3$ | million € | %* | million $m^3$ | % | million €** | % |
| Dwelling buildings | 10,6 | 3 068 | 52 | 5,5 | 40 | 1 595 | 54 |
| Business and office buildings | 3,9 | 1 150 | 20 | 0,8 | 6 | 230 | 8 |
| Public buildings | 2,8 | 929 | 25 | 0,7 | 5 | 232 | 8 |
| Industrial buildings | 11,6 | 1 442 | 17 | 2,0 | 14 | 245 | 8 |
| Other*** | 7,0 | 959 | 66 | 4,6 | 34 | 633 | 22 |
| Total | 35,8 | 7 548 | 39 | 13,6 | 100 | 2 936 | 100 |

* estimate

** value of building not of wood frame

*** include agricultural and secondary residential buildings (chalets)

Single houses constitute the largest market share in the dwelling construction in Finland. The share of multi storey houses (39%) is among the highest inside EU. Wood frame is used in the construction of single houses whereas there are only reference solutions concerning the use of wood frame in multi storey construction (Table 3).

Table 3

Distribution of Dwelling Construction by House Types in Finland in 2003 and the Use of Wood Frame in These Construction Activities

| Type of building | Start-ups in 2002 [1] units [2] | Wood frame buildings | | |
|---|---|---|---|---|
| | | % | units [3] | % |
| Multi storey* | 11 500 | 39 | 230 | 2 |
| Row and linked** | 5 000 | 17 | 3 100 | 21 |
| Single houses*** | 13 000 | 44 | 11 440 | 77 |
| Residential total | 29 500 | 100 | 14 770 | 100 |

* Multiple storey dwelling houses are more than two-storey houses with at least three dwelling units.
** Row and linked houses are one- or two-storey houses with at least three dwelling units.
*** Single houses are detached or semi-detached small houses with one- or two storey and one or two dwelling units.

Wood frame has widely been applied in the construction of dwelling houses, agricultural construction and in secondary residential buildings. Wood frame has not become common in the construction of business and public buildings. The share in the construction of industrial buildings has also remained low. Wood frame construction has been dominant in single dwelling house construction and the market share has been near a quarter in row and linked house construction.

### *4.2. BtoC – BtoB Market Dichotomy*

There is firm logic behind the division of markets in house construction into business-to-business" (BtoB) and "business-to-customer" (BtoC) market segments.[3] This dichotomy between the segments of the markets in house construction can be stated concerning the customer relationship of firms operating in the structural wood component and wood building industry. On the basis of their main customer group two groups of firms can be separated here: those whose customers are private home builders and those whose customers are construction companies. These customer groups differ with respect to the nature of the customer relationship: in BtoC it is typically an arm's length transaction whereas contract manufacturing and strategic partnerships are dominating in BtoB transactions. We separate firms into two groups depending on whether they dominantly have BtoB or BtoC transactions. The importance of this market segmentation comes from the sharp division in dwelling house construction. The end consumers execute vast majority of single house construction and only construction companies produce a tiny annual volume. Construction companies have produced practically all multi storey houses as well as row and linked houses in Finland. The separation of market segments makes single house construction to

[3] It has become common in marketing research to separate "business-to-business" (BtoB) transactions from the more traditional "business-to-customer" (BtoC) commerce because of the differences in the rules of business applied (see eg. Kotler 1984).

be BtoB markets and multi storey and row and linked house construction to be BtoB markets.

*Single House Construction (BtoC Demand)*

This market segment in house construction can be characterised by the following specifications. Typical agent behind market demand is a single own home builder and the major products of demand consist of: a) home packages and shells including structural wall, floor panels and roof structures, b) turn-key packages including on-site assembling. Market supply comes mainly from domestic a) large firms operating nationwide, b) small firms in regional or local markets. Firms of a) type apply product differentiation with wide product range, branding, proprietary building systems (wood frame systems of pre cut timber or logs and structural panels). The most common supply chain architecture among firms are on a make-to-order or assemble-to-order basis production system. There are also piece production (modules and large-size structural panels) or continuous-flow (small-size structural panels), forward integration into markets for planning and contracting services.
Market demand for single houses is for the major volumes of the product made-to-order type. The private constructor in the market demand acts either as a self-building DIY-builder or as a self-managing builder. In the latter case the builder purchases construction materials and construction and management services. Professional construction made by construction companies has been about 10% of the total physical volume in single dwelling house construction.

*Construction for Dwelling House Markets, Professional Investors and Institutional Agents (BtoB Demand)*

This market segment in house construction can be characterised with the following specifications. Market demand is partly a) demand of intermediate products; prefabricated large-size structural wall, floor and roof elements for industrial, business office and public buildings, structural timber elements for multi storey dwelling houses, row and linked dwelling houses by professional construction firms (assemblers), and party b) demand of subcontracting, contract manufacturing; make-to-order or assemble-to-order by professional investors and institutional firms demanding houses for their (renting) business. Market supply of segment a) comes mainly from domestic markets, medium-sized firms operating nationwide. Market demand is related to the construction of multi storey and row houses for 1) commercial markets of apartments, 2) investors increasing their stock in rented apartment markets, and 3) institutional agents (typically cities) providing rented apartment to subsidized users.
The final demand of type 1) in the market of row and linked houses and multiple story dwelling houses is not identified a priori. The latter means BtoB construction of type 1) is provided to competitive markets where end customers differ with respect to their preferences and motives. Consequently the preferences and willingness to pay among the average end consumers are evaluated by specific preference profiles. Builders prioritize low risk and a predictable return for their investment to tailor-made solutions. In small domestic markets low risk involves low-cost standardized solutions.

The final demand of types 2) and 3) constitute private investors, governmental agencies, municipalities or public funds. They are typically cost minimizers having professionals available in their trade. The BtoB demand segments imply high overall cost efficiency in construction and the choice of frame material as well as other wood based semi products need cost competitiveness.

### *4.3. Demand Segments in the Market of Single Family Homes*

The markets of residential house construction can be divided into demand segments by alternative criteria. The basic divisions in this chapter try to identify the market shares of wood frame houses in the market demand segments concerned.

First, the division of the construction of detached and semi-detached dwelling houses between BtoC and BtoB demand segments indicates the popularity of the former (Table 4).

Table 4

BtoC and BtoB Construction, Detached and Semi-Detached Dwelling Houses

| Share in 2002 | % |
|---|---|
| Private home builders (BtoC) | 87 |
| Professional home builders (BtoB) | 13 |

Second, the types of house frames applied in detached and semi-detached dwelling house construction (Table 5).

Table 5

Type of Frame Delivery in Small-Size Residential and Non-Residential House Construction

| | Detached & semi-detached | Wood frame | Non-residential* | Wood frame total |
|---|---|---|---|---|
| Total in 2002 | 13 000 | 88 % | 12 200 | 23 601 |
| Prefab off-site** | 62 % | 55 % | 50 % | 56 % |
| Fabricated on-site*** | 38 % | 33 % | 50 % | 44 % |

* secondary residential (chalets) and saunas, see KTM, Pientalobarometri no. 2/02,

** 62% includes wood and non-wood frames, the former comprising panel systems, balloon and platform frames from precut constructional timber and modular systems

*** includes balloon frames, log frames and non-wood frames).

Third, small-size residential and non-residential house construction can be divided according to the use of external entrepreneurs in construction (Table 6).

Table 6

Type of Small-Size Residential and Non-Residential House Construction Ordered according to the Use of External Entrepreneurs

| Home builders and home building business in 2002 | Number of homes | Share % of number of homes | Share % of home packages | |
|---|---|---|---|---|
| A. Private home builders | | | | |
| A1. self-building (DIY) | 5 000 | 46 | 55 | 42 |
| A2. self-managing, self-contracting | 3 400 | 31 | 75 | 39 |
| A3. turn-key | 1 000 | 9 | 75 | 11 |
| B. Professional home builders | 1 400 | 13 | 35 | 7 |
| Total | 10 800 | 100 | 61 | 100 |

The constructors in subgroup A1 are private builders who do most of the construction by themselves using standard-sized constructional timber bought from DIY-vendors or use own timber milled by sawmilling contractors. The independent purchase of roof, sides and floors (precut or prefabricated elements) as well as the assembling services are frequently subsidizing self-construction. The constructors in subgroup A2 apply external construction contractors. The owner manages the project by himself or delegates it to his agent, who calls for tenders, coordinates and controls the building process.
If prefabricated elements are used the assembling of the exterior shell is committed by the vendor. The builder either does the other construction work himself (case 1), or uses contractors to do the work on his behalf (case 2). The package vendor makes subcontracting arrangements with assembly contractors (long-term or spot contracts). But unless there is turn-key delivery agreed with the package vendor – usually it is the builder, not the package vendor – who signs the contracts with the other construction contractors (typically electricity, heating, water HVAC installation) and coordinates their work. Therefore case 3 is redundant.
The constructors in subgroup A3 demand on-site assembling from the supplier of the prefabricated house frame as well as all other on-site construction work and deliveries (except for the foundations and outdoor landscaping) as the main contractor of the private builder. This kind of turn-key contracts counted for about 5% of all home package deliveries in 1998.
Fourth, the use of frame systems is divided into: a) wood and non-wood frames respectively, and b) between different wood frame types respectively. Wood frame houses constitute the majority (88%) in this division (Table 7).

Table 7

Division of Small-Size Residential and Non-Residential House Construction according to the Frame Type

| Home builders' frame system preferences | % |
|---|---|
| timber frame fabricated on-site | 33 |
| timber frame prefab panels & modules | 35 |
| timber frame precut | 12 |
| log frame | 8 |
| total wood frame systems | 88 |
| total non-wood frame systems | 10 |

Prospects to increase the use of wood frame in small-size residential and non-residential house construction trough the transfer from BtoC to BtoB are fair. The latter is due to the current market share of wood frame in single house construction. There are market forecasts evaluating growth in the demand of single houses in Finland. A new type of construction for small-sized wood-frame two-storey apartment houses has been developed to open up BtoB markets for construction firms to compete with private builders in BtoC markets. The creation of a new submarket through supply side innovations can acquire part of the forecasted BtoC demand increase. There is no guess about how the share compared to DIY/self-contracting owner-builders will develop.

## 4. Competitive Structure and Performance

There are two grand sub segments in the dwelling construction markets in Finland. Our interest is focused on the demand of wood frame houses. The BtoC demand dominate single house construction and BtoB demand other dwelling house types. Market supply of wood frame solutions do not overlap in these submarkets. Firms supplying wood frame houses in BtoC markets do not participate in BtoB markets. On the other hand producers of wood frame elements in BtoB markets do not supply to BtoC markets. There is, however, one important exception, producers of precut frame components. These firms provide these components both in the BtoC and BtoB submarket. The domestic statistics covering the industry of prefabricated wooden buildings (SIC 20301) and builders' carpentry and joinery (SIC 20309) do not separate firms into BtoC and BtoB markets. The total number of production units (and also firms) is high in all these industries (Table 8).

Table 8

Number and Size of Firms (Measured by Employment) in Prefabricated Production of Wood Houses, Builder's Carpentry and Joinery in Finland in 2001

| | Prefabricated wooden buildings* SIC 20301 | Other builders' carpentry and joinery SIC 20309 | Production units TOTAL |
|---|---|---|---|
| Number of production | 260 | 750 | 1 010 |
| Number of employees | 5 500 | 7 000 | 12 500 |

* manufacturers of prefab home packages (panel, modular and precut timber frames, excl. log frame)

The competitive structure among the firms supplying in BtoC and BtoB submarkets differ. The competitive structure is discussed with respect to: a) barriers to entry, b) vertical integration within firms, c) potential non-timber substitutes, and d) competition from import. Discussion is based on qualitative evaluation because of the lack of relevant empirical data.

House construction has been a growing industry in Finland almost a decade. In Finnish builders' carpentry industry 40% of firms operate in growing markets, 60% in saturated markets. Operating in mature product markets as such does not explain profitability of the branch: there is inter-firm profitability differentials although firms operate under equal market conditions with respect to the maturity stage of their markets. Nevertheless low growth markets intensifies rivalry according to theory (Mäntymäki1998).

High entry barriers imply low new entrance irrespective the potential profits available to the firms operating in the industry. The BtoC submarkets (prefabricated wood houses) are dominated by a few large companies (Table 9) . Barriers to enter this market are high for small firms. It is easier for small firms to settle themselves into small local niche markets. Small producers of timber frame houses focus on the manufacture of customized products, where the labour-intensive on-site handcraft production system can compete with the continuous-flow capital-intensive industrial production systems of large home package manufacturers. The proximity of customers help to save cost.

Table 9
Supply Concentration of Wood Products in Finland Measured by Share of Sales in 2001, Vallin 2003

| | *at least 80 % of total sales of the branch* | | |
|---|---|---|---|
| Product group | Wooden buildings* | Windows | Doors** |
| Number of firms | 9 | 8 | 3 |

* manufacturers of prefab home packages (panel, modular and precut timber frames, excl. log frame)
** over 90%

Producers of wooden buildings to BtoB markets are SME's implying low mobility barriers to entry. However, high competition comes from concrete element production. This production mode has competitive advantages in BtoB markets based on well developed ude of positive scale economics. The latter is an efficient barrier to entry to the producers of wood frame house components in BtoB markets. The dominance of large producers in windows and doors cause high barriers to entry among new SME's both in BtoC and BtoB markets.
The competitive advantages based on backward vertical integration are available to large companies, because modern sawmill technology implies expensive investments and large production volumes. Cost advantage through economies of scale requires capital-intensive high-capacity further processing technology, timber drying kilns, planing lines, finger jointing lines, strength grading systems, etc. There is few attempts of entry by sawmills through forward (downstream) integration into their buyers' industry. There is one case in the BtoC-market for timber frame single-family houses (Koskisen Oy). Entry barriers are construction technology, competencies (project management), size and market share with respect to financial assets, economies of scale and customer relationships. There is few evidence of sawmills increasing customer value by making prefabricated building elements. Notwithstanding the excess capacity in the markets for sawn timber, family-owned mills, however, have shown a high threshold to exit the industry.
The low price elasticity related to private builders in BtoC markets do not explain price differences between the major suppliers in BtoC markets because the comparability of offers and accessibility to market information are low. There are brands but weak brand identity of buyers. Price competition is high in the BtoB market segment mainly because of the cost efficiency of elements produced from concrete. Wood products compete with non-wood substitutes mainly because of the large substitution elasticity between wood and concrete elements. A call for tenders is the usual way to place an order. Decisions on subcontracting in the construction companies are based on price and quality. The profitability of the construction industry as the main customer is low. There is no distinct product differentiation. Price, quality and JOT delivery are the main arguments.
Bargaining leverage of buyers in BtoB markets can be expected high. Three most important construction companies dominate in BtoB market implying low switching cost between suppliers. Fairly strong seasonal fluctuation in the utilization of production capacities typical in firms supplying in BtoB market. The in-house production costs of the construction companies are as the reference price for subcontracting in BtoB markets. On-site building construction costs including

transaction cost are used as the benchmark for prefabricated home packages in BtoC markets .
The threat of substitute materials is high in BtoB markets because non-wood substitutes are cost efficient and costs are used in the evaluation whereas substitution possibility is low in BtoC market due to inferior preferences to non wood solutions among buyers. Timber frame constructions are the low-cost solution for family dwelling houses.
Current and potential competition from import is an important challenge to domestic supply in the dwelling construction markets. International competition has traditionally been low in construction and related industries because of the country specific norms, regulations and business cultures. Current share of import supply is 10% in product subgroups except in windows where import share is lower (Table 10). The potentials to competing import is currently increasing especially from Sweden and the Baltic countries.

Table 10

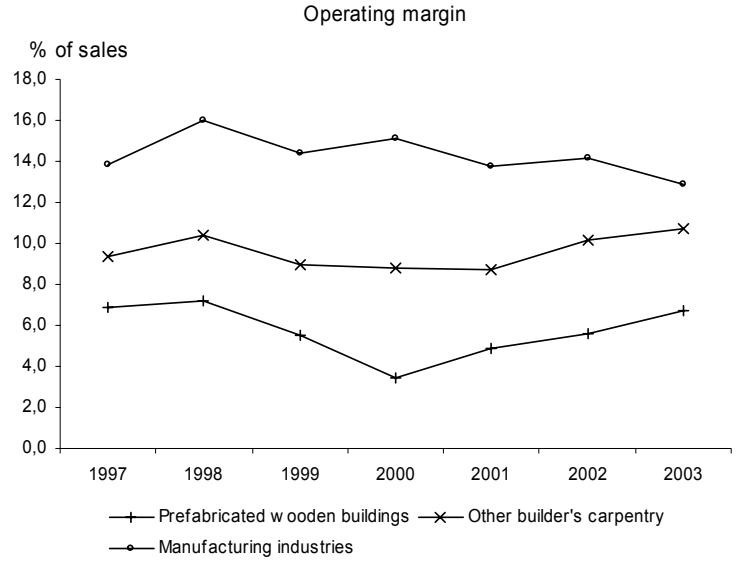
Market Size and Import Competition in Wood Related Building Products, Mäntymäki, 1998

| milj. € e2003 | Domestic consumption, mill. € | Total sales of domestic firms, mill. € | Exports, mill. € | Imports, mill. € | Imports % of consumption | Domestic sales % of total sales |
|---|---|---|---|---|---|---|
| Total | 1 106 | 1 425 | 386 | 67 | 6 | 78 |
| Prefab elements* | 307 | 437 | 160 | 30 | 10 | 70 |
| Windows | 339 | 340 | 8 | 7 | 2 | 100 |
| Doors | 104 | 151 | 57 | 10 | 10 | 69 |
| Parquette | 111 | 180 | 80 | 11 | 10 | 61 |

*Include wall panel and modular timber and log frame systems.

Handicraft production applied by SME's prefabricated wood house production constitute the competritive advantage against to industrial manufacturing processes of the 20 biggest companies. There is a widely varying degree of process integration (in-house sawmilling, planing, fabrication and assembling versus outsourcing and subcontracting).
The business performance in the builder's carpentry industry has been weaker than in the Finnish manufacturing industries on average (Figure 1). The performance of the prefabricated wood frame house industry has been improving during the last years and has nearly reached the 1998 level. The business performance of other builder's carpentry manufactures (windows, doors, parquet, roof structures) have been superior and less volatile compared to the performance of building manufacturers during the last years.
Petäjistö et al. (2001) investigated especially the business performance of small firms in the industry with less than 100 employees. The performance of these firms has showed a positive trend for the last years, but in the longer term the situation has been characterised by poor profitability and shortage of equity capital. During the years 1981-1999 the median for net profits was negative (Vallin 2004).

Figure 1
Business Performance in the Prefabricated Wooden Buildings (Excluding Log Frame Buildings) and Other Builder's Carpentry Compared to the Manufacturing Industries' Average




## 5. Resources, Capabilities and Strategies of Small Firms

About 40% of firms apply market segmentation by focusing on a small group of primary customers, and most firms differentiate marketing by target groups (Mäntymäki 1998). In addition, the outperformers have been able to charge a price premium in their customer value. Firms determined their own prices on the basis of cost, demand and competitors' pricing. Cooperation in export sales had not been important and in the same survey 60% of firms have had direct exports. Only few firms have used own local distributors and the majority have used external export agents as their distribution channel. Business performance among collaborating firms was observed better than that without collaborative activities. One fifth of the companies did not practice any marketing for their products and one third of the companies rely on their steady customer base Petäjistö et al. (2001).
The 19 enterprises included it the survey by Mäntymäki (1998) spent 1% of turn-over on research & development. Firms also mainly looked for application of a known technology to new markets. Customer contacts were the most important source of innovation. There was some collaboration between firms (about 60% of firms), but in-house activities were of major importance. Market information deficiencies were common among the firms: only 5% had sufficient customer and market related information. Resources were primarily allocated into machinery and equipment in the firms of the survey and marketing was not considered a strategic asset. Small firms typically suffer from insufficient competencies in business

accounting (Enroth 1995). The lack of strategic plans was a threat for business and succession management in many small companies. Sawmills have faced information insufficiencies due to increasingly passive selling behaviour and geographically scatteredness of private forest owners. The structural change in NIPF-ownership has added transaction cost to SME sawmills' timber procurement. Sawmills applying focusing strategies operate in roundwood market segments, which are small but information-intensive in terms of tree species, log dimensions, quality and volumes requested Petäjistö et al. ( 2001).

Only 30% of firms had good command of knowledge and skills in strategic management and they did not commonly apply strategic planning routines: only 25% prepared literary business plans. The use of strategic management techniques was not very common (frequency in SWOT analysis 65% and in benchmarking or ABC-analysis less than 20%) but on the other hand no correlation with business performance was identified in the study. Human capital commonly restricted business development and every third firm suffered from scarce financial resources (Mäntymäki 1998). Small firms did not dispose of marketing competencies to be implemented into differentiation or focusing strategies and had insufficient competencies in marketing leadership and business accounting (Enroth 1995). 80% of the owners of small companies had received vocational training, most frequently on a professional or college-level in wood engineering in the fields of carpentry or joinery. Companies assessed themselves active in training their manpower and computer assisted arrangements were more frequently used in these companies (Petäjistö et al. 2001). Holm et al. (2002) views on-the-job training of their staff as a challenge to small and medium-sized companies in general.

60% of firms were satisfied with the current level of flexibility in their production technology and 20% considered good abilities to radical change production set-up (Mäntymäki 1998). There was no remarkable scale economics in the production of builders' carpentry and non-automatized labour-intensive production technology had turned out to be competitive in the manufacture of structural wall panels. Production process automation was considered justified only in the precut and log frame production irrespective the size of volumes (Vallin 2003). Scale economics could not be identified as source of superior performance, particularly in the case of differentiation strategy (Mäntymäki 1998). Firms implementing an differentiation strategy outperformed those striving for price competitiveness through low cost strategies. Differences in product quality were due to differences in human capital rather than technology. A spearhead company provided opportunities for joint activities with small firms only in rare cases. Sawmills looking for downstream cooperation with wood processing partners faced frequently troubles in finding qualified candidates with knowledge in building and operating business networks (Vanhanen 1995). Mäntymäki (1998) found that although there is variation in the vertical depth of production, the rate of outsourcing: 30% of firms restricted their production to main components, 15% did subcontracting and 15% did only assembling of components. About 60% of firms in the survey did run joint production in some degree. Joint input procurement activities were found in 50% of firms. The degree of cooperation was generally low, but no clear correlation with performance was found. Also Vallin (2003) states that there was wide variation in the degree of process integration. There were companies whose activities cover

sawing, planing and fabrication of components. Some companies did focus on assembling components and buy the product components from subcontractors. Saarikivi et al. (2003) state that the dominating operating model consisted of one business unit organised as a single company and did localise in a single production site. Petäjistö et al. (2001) found few who are members in a corporate or marketing network among small companies with less than 100 employed. About one half of these companies operate as subcontractors or use subcontractors itself.
In Mäntymäki (1998) survey the quality of services was among the most important means to improve competitiveness for 60 percent of firms. Human capital and managerial capabilities were considered key factors. The major competitive strategy of firms was to reduce price sensibility by differentiation primarily through service but also through product quality. Here only a low differentiation potential was noticed. Firms generally prefer multi-product strategy. Motives for product diversification have traditionally become from risk management and the exploitation of economies of scale and scope. According to Mäntymäki (1998) the number of product groups correlated positively with business success. Risk dispersion was assumed to compensate for efficiency losses. The large majority of the firms (90%) in the survey had 30% share of their total sales to export markets. However, export activities did not show up positive impacts in business performance. In looking for business opportunities firms mainly focus on domestic markets.

## 6. Summary: Perspectives and Success Factors for Small Firms in the Finnish Builders' Carpentry Industry

Domestic markets have been slowly but constantly growing during the recent years. Timber frame buildings already occupy a dominant share of the market for single-family houses. There has been a perceivable shift from multiple dwelling houses to single-family houses. The domestic market will stay the most important in the years to come but the export market has preserved their importance for the Finnish log home industry. The share of prefabricated homes will continue to increase at the expense of on-site construction. There are new markets emerging for timber frame systems in up to four storey multiple dwelling houses, but it is too early to predict how fast these markets will develop. Up to now these houses, which cover half of the annual production of multiple storey dwelling buildings, have almost exclusively been built with concrete frames. Wood frame construction has preserved competitiveness in small residential building construction. At the same time the overall trend has been declining in wood frame constructions of other building types (industrial, office and public buildings). Timber frame construction technology has been dominant in the BtoC market for single-family dwelling houses. There exist only fair practices for the supply chain management and business concepts for joint ventures between SME contractors and construction companies as their client industry making the emergence to BtoB market for multiple storey dwelling houses slow. Business experience has been limited only to reference projects up to now. In addition firms engaged in the BtoC market supply have not made initials to enter the BtoB market for multiple storey dwelling houses.
Cost efficiency, necessary for firms to operate in BtoB markets, requires extensive use of prefabricated construction components but until now fair market supply (small production capacity as well as underdeveloped supply chain management

know-how there behind) have been a restrictive issue. Extensive public subsidy programs to proceed wood frame construction technologies and corresponding production have focused on fostering technological competencies but disregarding supportive actions to proceed supply and demand conditions in BtoB markets. Progressive public policy cover supporting actions to: a) wood-based urban housing construction activities, b) more intensive cooperation between construction companies and SME-vendors of wooden constructions, and c) promotion to new network-based business models. Growing market demand shall become a natural pushing factor for the cooperation between small producers of prefabricated wooden elements and construction companies. There are some small industrial concentrations among SME's involved in BtoB transactions in wood frame house construction but the connections to the rural labour demand are unclear. More information is needed on demand preferences over urban housing, residential milieus and modern wood architecture to evaluate the demand factors behind BtoB wood frame house demand

Needs for parallel production technologies and resources needed for the capacity are major bottleneck factors to SME's in wood frame house component production to follow a differentiation strategy. Customers are attracted if a firm is known to be flexible. This calls for sufficient manufacturing capacity and a sufficient number of product variants, i.e. depth and width in their product porfolio. Flexible manufacturing equipment allows a high responsiveness to customers' demand but broad scope of differentiated products implies flexible manufacturing technology. The lack of skilled labour in design and production planning is a bottleneck in flexible manufacturing systems. Labour endowment and costs inhibit firms to enlarge their product range. Competitive advantages in the production of the components for prefabricated timber frame houses for BtoB market imply effective use of the positive economies of scale and the endowment of unskilled labour in rural areas. Flexible manufacturing systems and minimum profitable scale on production imply large capital investments that in turn imply existing demand in BtoB market. Capital cost might be reduced by jointly producing several products or components that are used in each product. Flexible production systems do not imply integrated firm structure, but are applicable also inside short-term contracts between independent suppliers.

SMEs can compensate scale disadvantages by focusing into narrow demand segments. Continuous automation and exploitation of IT-technologies are needed to maintain competitive advantages based on low cost and high quality. Small firms, however, typically face a shortage in human and financial capital. Expanded value networking through value chain adjustment are key success factors for SME's in the woodworking industry. Small firms can find core competencies by focusing to narrow demand segments downstream or producing some components in a value chain. There are success examples in the Finnish furniture industry in BtoB market of firms focusing on product quality, low cost and efficient logistics and successfully using the merchant's marketing channels and brand name. Construction companies have adopted integrated information management systems into the development and implementation of construction projects. They cover also architecture and construction planning processes. System compatibility with these planning systems will be among the preconditions for partnerships in BtoB construction in the future. The latter imply the intake of computer-aided

product development and manufacturing systems (CAD/CAM) also in SME's to be able to join into the vertical and horizontal integration business chains with other partners in addition with the large integrated companies.
Factor conditions with respect to timber procurement can be argued to be a most important supportive activity within the wood processing value chain and a vital part of business strategy. Although small buyers can usually utilize only specific wood input assortments, roundwood is usually offered by forest stand comprising a multitude of log and pulpwood dimensions. New solutions for the forest industries to develop their wood input procurement activities are emerging, which hopefully will favour also small-size wood processing activities. Forest industry corporations and sawmilling industry are looking for models how to outsource their wood procurement activities to small-sized service providers. The availability of their services might improve the economies of small-scale wood-processing activities (Mäkinen et al. 1997).
Flexible production planning is expected to favour short-term contracting with independent suppliers. Open vis à vis proprietary standards for wooden-based construction systems would further support new opportunities to widen contracting base with independent suppliers. The concrete building industry has a competitive advantage by using an open concrete element building construction system already introduced in the 1970's (Hämäläinen, 2004). Cost competitiveness of wood-frame construction in BtoB market can be improved by the use of a platform building system in multiple storey building construction and by the learning effects and quality improvements from standardized technical solutions and routines in manufacturing and logistics (Viljakainen & Määttänen, 1998).

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Икономически изследвания
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*Laura Bouriaud*[1]
*Liviu Nichiforel*[2]
*Carmen Nastase*[3]
*Raluca Bulinschi*[4]

# FACTORS OF DEVELOPMENT OF THE HARVESTING FIRMS IN SUCEAVA, ROMANIA

*The paper proposes an empirical analysis of the demand and supply as they appear trough the auctions for standing timber organised by the Forest Directorate Suceava, a regional branch of the National Forest Administration located in the Northern part of Romania.*
*The results confirm that there is a trend of territorial concentration of large firms, which are able to influence the decisions of the small-size agents. On the other hand, the capacities for harvesting activities are over-sized compared with the annual resource available at the level of the Forest Directorates. Second, the evolution of demand and supply before, during and after the storm event which occurred in 2002 shows how the entrepreneurs reacted to different supply context. It appears that after the storm period the demand is much more fragmented and small-sized, and the competition is very strong. Compared with the situation before the storm, the number of firms is 25% higher, while the supply is reduced by 50%. We advance some hypotheses to explain whey the number of firms did not decrease with the decreasing of the timber supply and why the sector is facing apparently irrational economic choice, e.g. harvesting economic inefficient tracks.*
*Finally, the paper helps to identify some key fields for the further development of the research.*
*JEL: Q3, Q21, Q28*

## Introduction

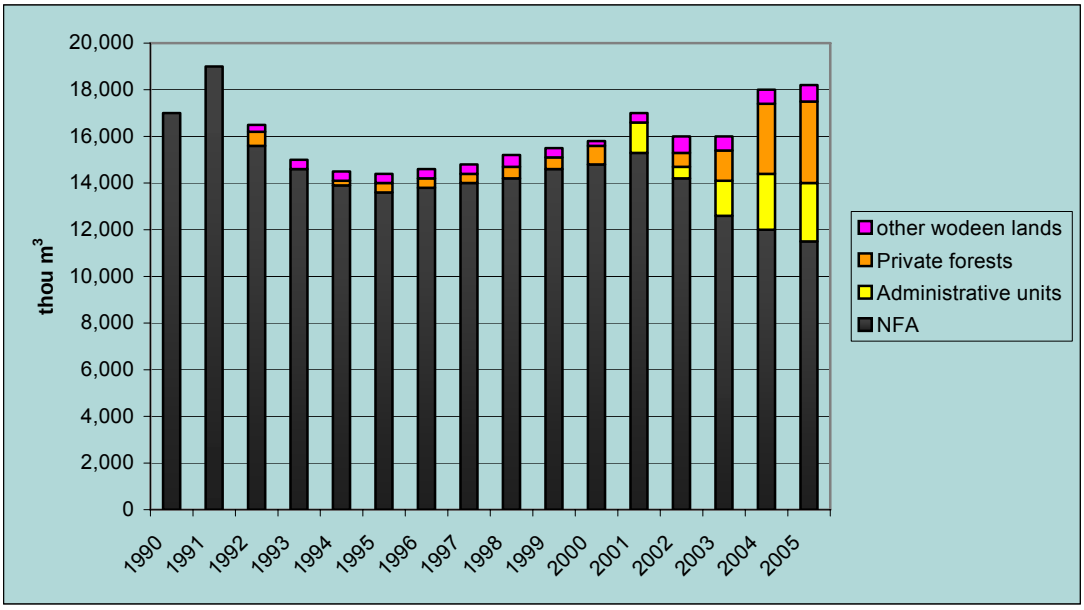
The changes that the forest sector faced in Romania since 1990 completely modified the trade relationship and the timber market system. New forms of ownership appeared on forestland, and private firms started to operate in whole wood processing chain. Nevertheless, along the last decade the timber market was characterised by the position of the National Forest Administration (NFA) as main supplier of timber for industrial purposes.
The State intervention on timber market aimed to regulate this quasi-monopole; to enhance sustainable forest management; to enhance profitability and economic efficiency of the management of the public forests; to allocate resource (the timber

[1] *Laura Bouriaud is from Forestry Faculty, University Stefan cel Mare Suceava, Romania, E-mail: bouriaud@yahoo.com.*
[2] *Liviu Nichiforel works in Forestry Faculty, University "Stefan cel Mare" Suceava, 9, str. Universitatii, 720225, Suceava, Romania, nichiforel@usv.ro.*
[3] *Carmen Nastase is from Stefan cel Mare" University, Romania, E-mail: ncarmen@eed.usv.ro.*
[4] *Raluca Bulinschi is from National Forest Administration, Suceava Division, Romania, E-mail: raluca_dssuceava@yahoo.com.*

quantities) towards different categories of utilisation, e.g. industrial purposes, rural population needs, or housing for people in social assistance. A mixture of public policies and instruments are regulating now the allocation of timber resource.

Figure 1

Decreasing Volume of Timber Submitted to Auction




Source: Governmental regulations dealing with the annual allowable cut, 1990-2005.

The timber auction is compulsory when selling timber from public forests managed by the NFA (70% of Romanian forests) and from forests belonging to the municipalities (communes, towns, or 13%). It appears thus that a critical point on the raw material procurement for the whole wood processing chain is represented by the timber selling stage. The timber sales quantities, modalities and the consequent wood contracting procedures influence in a high extent the entrepreneurship, the physical development of production capacities, and the time investment horizon of the firms (Nichiforel and Bouriaud, 2004). The employment in rural area is affected directly, as far as forest harvesting operations are extensive labour users in rural area, and the harvesting is done mainly by small sized local enterprise.

**Facts about the Romanian Forest Sector**

**Forest Ownership**. The forest ownership structure was one third public, one third communal forests and one third private before the World War II and 100% public during the communist period. The restitution process started in 1990 and the forest ownership was 95% public to 5% private from 1993 to 2000. The second restitution law led to ownership structure with 70% state, 13% communes, 8% forest communities, 1% different institutions (churches, schools) and 8% private individuals. The maximum size of private forests is 10 hectares. Only half of the

forests hold by individuals are more than one hectare, the average being 1,56 ha. Most of the timber, produced in private forests, is for self-consumption.
The main timber suppliers in this ownership context remain the National Forest Administration, which manages 4443700 ha public forests, and the communal forests, which represent around 740000ha, from which 440000 ha are managed through contract by the NFA.
**Forest Economy.** The forest contribution to the GDP (sylviculture, logging and primary wood processing industries) accounted constantly the latest ten years for 2.4%. Timber industries, including furniture, represented during the latest ten years around 5.6% of the manufacturing industry in term of production, and 12% in term of employees. The total number of employees in forest sector in 2001 represented 5% of national labour force, furniture included.
The wood processing industry in Romania is developed in a classical wood-chain concept (logging – primary timber processing – furniture), oriented rather towards external trade than towards internal consumption. The index of intermediate consumption shows that the intensity of relationship between wood processing industry and furniture is three times higher than the intensity of relationship between the wood processing industry and the construction branch, or trade. There is a need to remark the lack of concentration of forest industry and, in the same time, the low density of trade relationship, with few purchasers, few intermediaries and one or few suppliers for raw material.

Table 1

Number of Companies from Forest Sector, in 1990 and 2002

| | 1990 | 2002 | From which | | |
|---|---|---|---|---|---|
| | | | Large | Medium | Small |
| Wood processing industry | 107 | 5235 | 65 | 245 | 4925 |
| Furniture | 114 | 2965 | 180 | 1225 | 1560 |
| Pulp and paper | 23 | 434 | 26 | 119 | 289 |
| Total | 244 | 8634 | 271 | 1589 | 6774 |

Source: National Institute for Statistics, 2003.

The engine of the forest sector is the furniture industry, which was the first branch to recover in 1998 the 1990' production level. The furniture industry is strongly export-oriented. Between the years 1992 and 2002, the furniture industry annual export accounted for 70 to 86% of the value of production, and represented between 5 and 10% of the total Romanian exports. In 2003 only the furniture industry and the wood housing industry accounted for 4.8% of the total Romanian exports (Bouriaud et al., 2004).
The export regulation presents importance to understand the evolution of forest sector. Before 1989 all exports were planned and executed by a state enterprise specialized in this activity. From 1990 to 1997 it was not possible to export any rough material (logs for pulp or roundwood). Only the export of processed forest products (e.g. lumber) was allowed, on the basis of a quota system. Difficult to implement and to control, this system was replaced in 1998 by a license system, the license being required "only for statistical purposes". This opened the external market for all forest enterprises. The value of exports of wood processing industry almost doubled in only three years: from 127 million euro in 1998 to 249 million

euro in 2001. The same evolution was for the turnover, from 288 million euro in 1998 to 485 million euro in 2001 (an increase of 70%).

**Forest Resource**. Romania has valuable and diverse forest resources (coniferous, broadleaves, poplar) which may satisfy the forest industry needs (Table 2). After 1990 the annual allowable quota, which is established by the Government, was between 14.4 and 19.0 million $m^3$. With two exceptions (1996 and 2002) the annual harvests did not reach the allowed level.

Table 2

Harvested Wood Volume (Thousand $m^3$ – Gross Volume)

| | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|
| Harvested wood volume | 14803 | 14509 | 12642 | 13718 | 14285 | 13410 | 13039 |
| Coniferous | 5751 | 5836 | 5195 | 5564 | 5346 | 4915 | 4983 |
| Beech | 4266 | 4263 | 3635 | 4115 | 4509 | 4260 | 3786 |
| Oak | 1658 | 1489 | 1276 | 1358 | 1333 | 1288 | 1295 |
| Various hard wood species | 1876 | 1757 | 1491 | 1588 | 1731 | 1673 | 1582 |
| Various soft wood species | 1252 | 1164 | 1045 | 1093 | 1366 | 1274 | 1390 |

Source: National Forest Administration, www.rosilva.ro, National Statistical Accounts.

The main technical restriction on harvesting comes from the accessibility of forest stands. The density of forest roads is 6.1 m/ha, which situates Romania among the latest ranked European countries. Thus, only 65% of Romanian forests are economically and technically accessible. There are 2.2 million ha of forests where the harvesting is not possible because of lack of forest roads. The forest road issue is addressed within the externally financed Forestry Development Project, launched in March 2003.

### Characteristics of the Forest Resource in the Forest Directorates Suceava

Forests cover in Suceava county 444612 ha, representing half of the county total area and 7% of the total national forest area. The forest area per inhabitant is in Suceava county 0.61 ha, while the national amount is 0.28 ha per inhabitant. The structure of the ownership is dominated by state and communal ownership. Thus:

- 367441 ha (83% of Suceava forests) are public ownership managed by the NFA;
- 44.483 ha (10%) are in the communal ownership, mostly managed also by the NF;
- 27.286 ha ( 6%) are private forests of individuals;
- 5.402 ha (1%) are private forests of other entities (churches, forest communities).

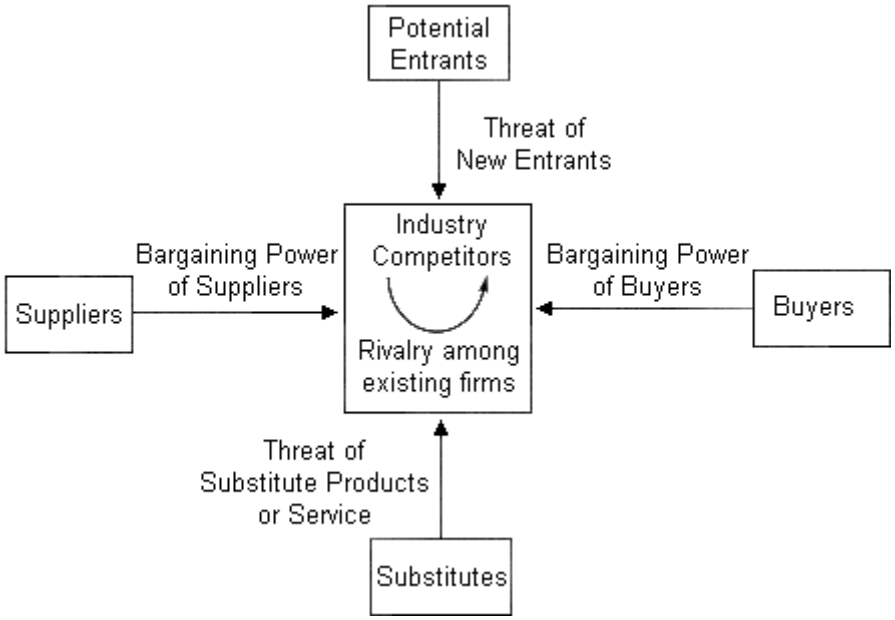
Consequent to this ownership structure, the timber supply is strongly regulated and subject at 93% to the auction procedures. The annual possibility, according to the forest management plans, is 1273400 $m^3$, from which 777700 $m^3$ represent final cuttings, 354400 $m^3$ thinning, and 141300 $m^3$ sanitation cuttings. According to the governmental regulation (Ministry Order 624/6.09.2004), the annual allowed cut for 2004 was 1360000 $m^3$. The governmental regulation stipulates that the timber would be sold to the economic agents (936000 $m^3$), delivered to the local population (304000 $m^3$) and given as counterpart for the construction of forest roads (120000 $m^3$). The final cuttings products are normally dominant on the timber supply structure, while the accidental cuttings and thinning account for 10 to 20%

of the volume sold. They were offered often as packages, to make the firms more interested in them.
Natural hazards affect also the timber supply structure. In the night of 6th to 7th March 2002 a storm produced windfalls accounting for 5.4 million $m^3$. The Forest Directorate Suceava had to cancel the auction which had taken place a day before (on 5th March) and to organise a new one. This time the accidental cuttings represent the majority of supply (table 2). The volume of 5.6 million windfalls was harvested at 2.3 million $m^3$ in 2002, 2.5 million $m^3$ in 2003, and 0.6 million $m^3$ in 2004. Thus during the years 2002 and 2003 the quantities of timber auctioned were at least doubled compared with the normal situation. To balance the extra supply in Suceava County the NFA decided to stop or reduce cuttings in all other forest directorates, which affected all the small and medium-sized enterprises (SMEs) with harvesting activities from around the country.

**Method and Techniques**

The method of the study is based on the hypothesis that the raw material procurement is the most important production factor. Harvesting operations are labour-extensive and seasonal; usually, establishing a harvesting firm does not require heavy investments in the Romanian context. Therefore, subsequent hypotheses are that at the present technological stage the harvesting activities do not require high qualified employees, and they are supplied with sufficient low costs labour in rural area; and that the harvesting operations resulted in no difficulties to sell products. This is supported by the fact that large companies with foreign capital which are processing timber did not involve themselves in the harvesting operations, preferring to buy it from the contractors. The exception is the Schweighofer company which won long-term contracts for harvesting 200000 $m^3$ in 2003 and others 50 000 $m^3$ in 2004 (Tobescu, 2003).
In the five forces model of Porter, the forest enterprise with harvesting operation has a stronger pressure from timber suppliers than from any other side. The pressure comes from the fact that the timber supply is hold by a quasi-monopoly, but also because the timber supply is strongly regulated by the State.
Rivalry among existing firms is important too, but in a different degree for SMEs than for large companies. Empirical evidence says that in each forest directorates (territorial units of the NFA) there are few large companies (usually one to four) which are operating each within a precise area. Theoretically, the situation of “geographically” dependant timber procurement seems to not match with the way of selling timber by auction. However, there are many explanations for why that happens: harvesting a tract is a more successful operation if there are enough roads in the area, if they are repaired, if the local forest officers are also cooperating persons, if there are trustfully local contractors to assure the timber guarding against theft, if the sawmill is easy to reach and so on. When compete for a tract, the firm would better consider a tract from the area where it is usually operating than a tract situated at hundred km, where the firm has any local connections. Thus, the most efficient rule of game for the large firms is to “share” the territory from which the timber is coming instead competing each other. Of course, there are exceptions from the rule; it might happen on the “borders” of the area where the firm locates the activities.

Figure 2
Five Forces Model of Porter: Harvesting Firms are Subject of Pressures by Supply




Source: http://www.valuebasedmanagement.net/methods_porter_five_forces.html.

Regarding the SMEs, their situation is completely different. In a sample of around 2000 companies with limited liability and others doing harvesting operations, 40% of them are doing only harvesting and trade of timber cut, the others are going into processing as well (National Institute of Statistics, 2003). They are dependent on the larger companies for selling harvested timber, but they supply also timber for the local population. They have even fewer possibilities to change the area where they are located the greater the competition between them is. Some forestry experts agreed that it is really difficult for SMEs to survive on the market, and that it happens so for part of them through different strategies: avoid tax payment; operate on the black and grey labour market; free-ride the opportunities offered by harvesting in a tract located next to a tract harvested by a large company, which is able to ensure the protection against timber thefts. Empirical research is needed to prove such anecdotic reporting.

**Results of the Analyse on Timber Demand and Supply**

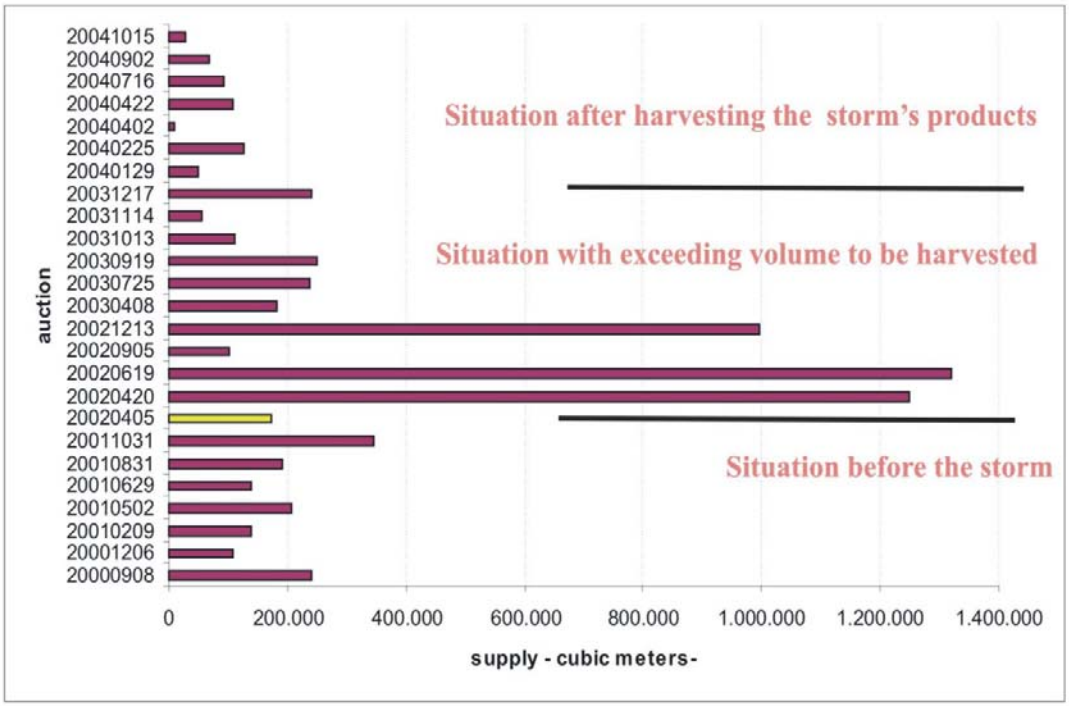
The Suceava timber market was already subject of research in 1994-1996, when the Harvard Institute for International Development studied the Suceava auction system (Milescu and Marocico, 1995). In 2003 the IRIS Center of the University of Maryland commissioned a new study for the World Bank on the same area. A Working Paper is dedicated to the detection of collusion in the timber auctions in Suceava and in Neamt County (Saphores et al., 2004).
The present study proceeds to a structural analysis of the demand and supply at the level of the Forest Directorate Suceava. We analyzed data from a number of 25

auctions organized by the local branch of the NFA between September 2000 and October 2004. First we compared the demand and supply in terms of volumes of timber available, then we analysed the number of firms participating on each auction, the quantities auctioned, and, finally, the volumes remained unsold after the auction (the exceeding supply). We analyzed only structural factors of demand and supply, namely quantities, number of firms and their capacities of harvesting. We did not emphasize the price aspect, or the aspect of profitability of the timber sales for the producer, which were the object of previous studies (Nichiforel and Horodnic, 2002).

The Figure 3 presents the situation of supply, putting in evidence the situation before the storm, during the exceeding volume of windfalls, and after the harvesting of this volume. The yellow bar (auction 20020405) represents the auction which took place a day before the storm and which was cancelled before the contracts were signed. The supply is lower after the storm than before that.

Figure 3

The Supply for Analysed Auctions



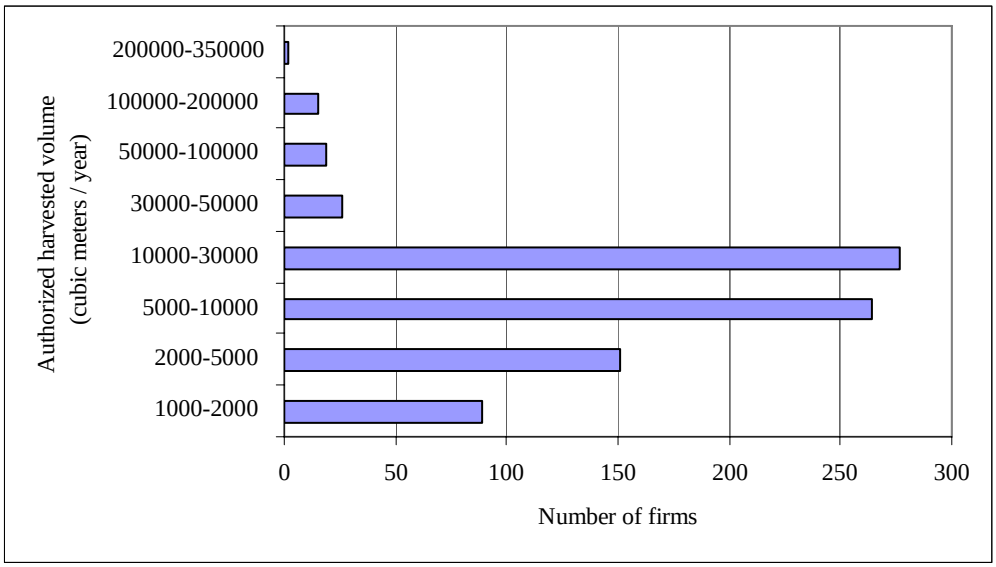

Source: Forest Directorate Suceava

The demand is expressed as the total volume for which the firms are authorised. The authorised volume represents the physical and legal capacity of activity. Physical, because the firm is authorised to a certain volume after proving that he has the technical and human resources for annually harvest a certain volume. The volume authorised is then related with the physical production capacity of the firm. Legal, because in any case, the firm can not auction more than the volume for

which it was authorised. The volume authorised is one of the legal limit of the firm participation to the auction.
Figure 4 presents the structure of demand as number of firms authorised to harvest a certain volume per year. In 2003 there are 15 firms which have the possibility to harvest annually between 100000 and 200000 $m^3$. Two firms can harvest even 350000 $m^3$ annually. However, 60% of the firms (or around 500 firms) recorded by the Forest Directorate Suceava can harvest annually less than 30000 $m^3$. The interesting point here is that the total authorised volume for the firms recorded by the Forest Directorate Suceava is 10,8 million $m^3$, which is the equivalent of the volume of wood available for industrial purposes at the national level! This statement leads to the conclusion that the demand for industrial timber is important, as far as the harvesting capacities are exceeding by far the supply. The factor varies from four (the high supply caused by the windfalls) to ten.

Figure 4

Number of Firms Authorized for a Certain Volume per Year

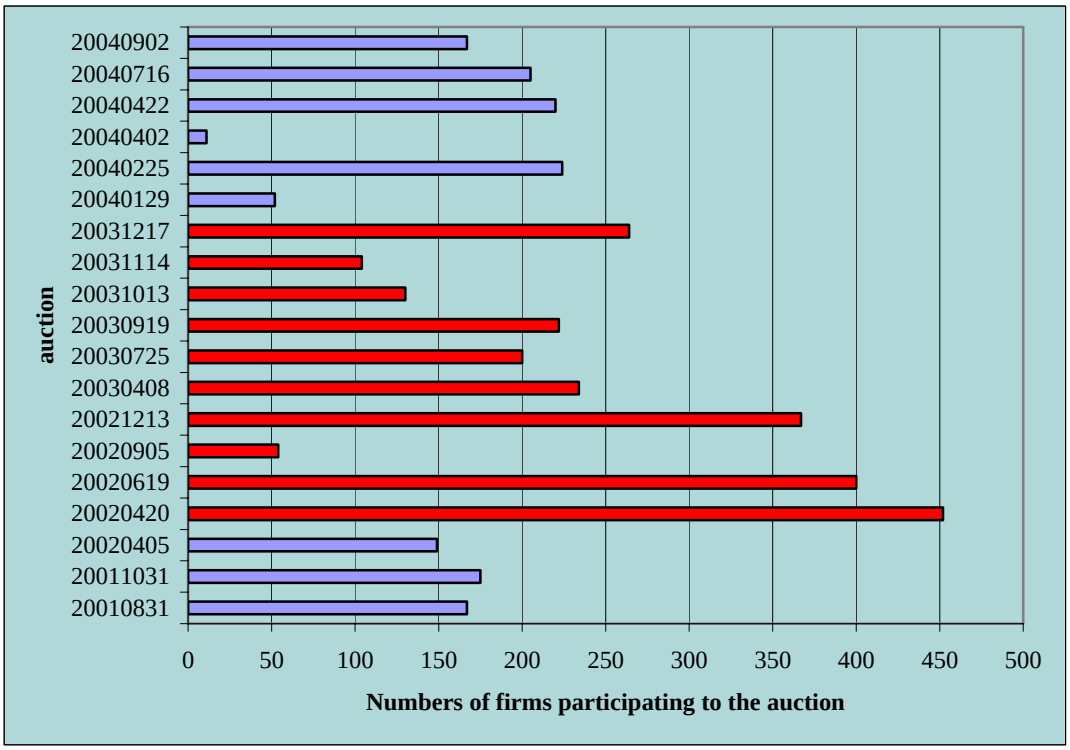



Source: Forest Directorate Suceava.

The relationship between demand and supply was analysed as number of firms attempting the auction procedures (Figure 5). The participation means only that the firm attempted the auction procedure, not that the firm auctioned or gained a forest tract. While before the storm the number of firms participating in the auction was comprised between 130 and 160, on the storm products their number sharply increased (from the 128 to the auction which was cancelled to 450 for the first auction on storm products). Their number remains higher than before for the latest three auctions hold this year (2004), knowing that the supply was only half of that before the storm. The increasing number of firms is due partly to the creation of new firms for harvesting, and partly to the arrival of the firms from others counties.

Figure 5

Number of Firms Attempting the Auctions




Source: Forest Directorate Suceava

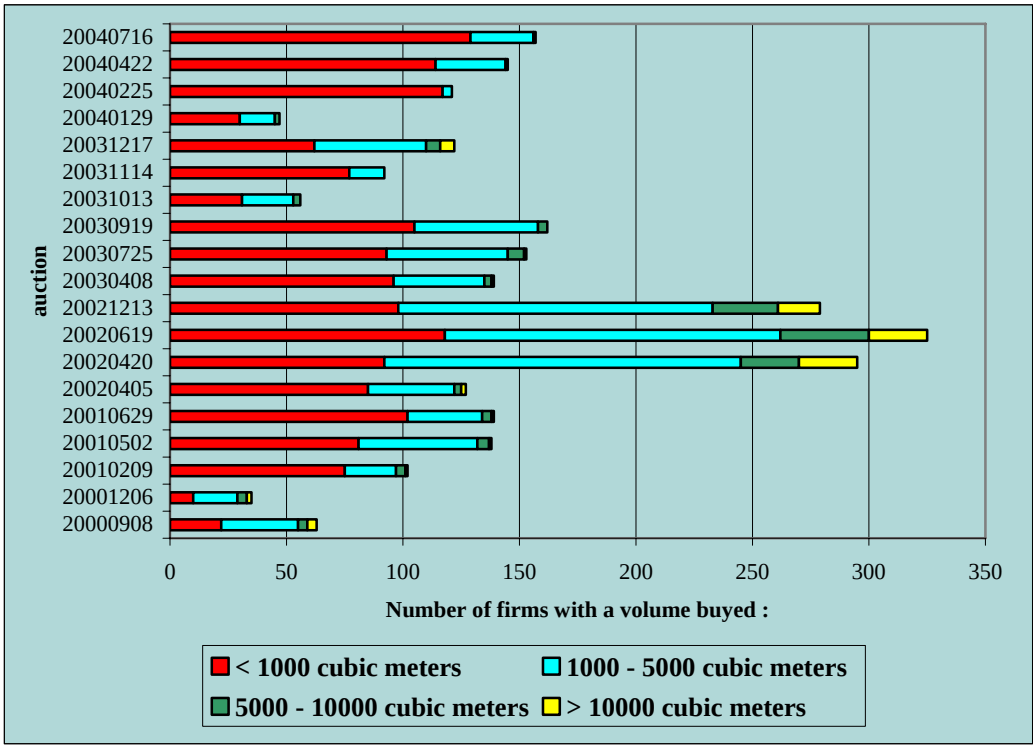
In entering the auction process, the firms can win one or several tracts, accumulating thus a certain amount of timber. The timber is bought on stand, and enters in the firm ownership once the firm pays the price. Figure 6 shows how many firms auctioned a certain quantity of timber, which is the total volume of tracts that the firm won in the auction procedures. Only 30 firms bought between 1000 and 5000 $m^3$ in the auctions organised during the latest year. In the period with storm products, their number was much higher, between 50 and 150. Figure 6 shows that the majority of the firms auctioned after the storm period less than 1000 $m^3$. Their number was 130 at the latest auction analysed (July 2004), or twice compared with the period before the storm. The high number of transactions per firm inferior to 1000 $m^3$ indicates that: 1) these firms are very small size, 2) the firms, irrespective to their size, are still working on the volumes bought in the previous years. However, when putting together figure 5 and 6, it appears as much plausible the idea that the small quantities of transactions per firms are due to the small size of firms, not to their over-occupation with timber harvesting from the previous years. Therefore, the structure of demand after the storm period seems to be much more fragmented and small-sized than before.

A second conclusion of these figures supports the idea already formulated that the extra supply provided by the storm product attracted firms from outside the

Suceava County, and these firms coming in were usually of medium and large size (over 1000 $m^3$ capacity per year). We expect that these firms would leave the area of Forest Directorates Suceava when they will finish to harvest the tracts bought in the latest two years.

Figure 6

The Number of Firms Buying Certain Amount of Timber




Source: Forest Directorate Suceava

The situation of auctions show also the fact that in some cases, e.g. auction from 06.12.2000, the number of firm participating to the auction and of firms buying timber is very small, which confirms opinions presented in the literature (Dragoi, 2000) that there is a territorial concentration of large firms, which are able to influence the decisions of the small-size agents (tendency to "oligopsony" situation).

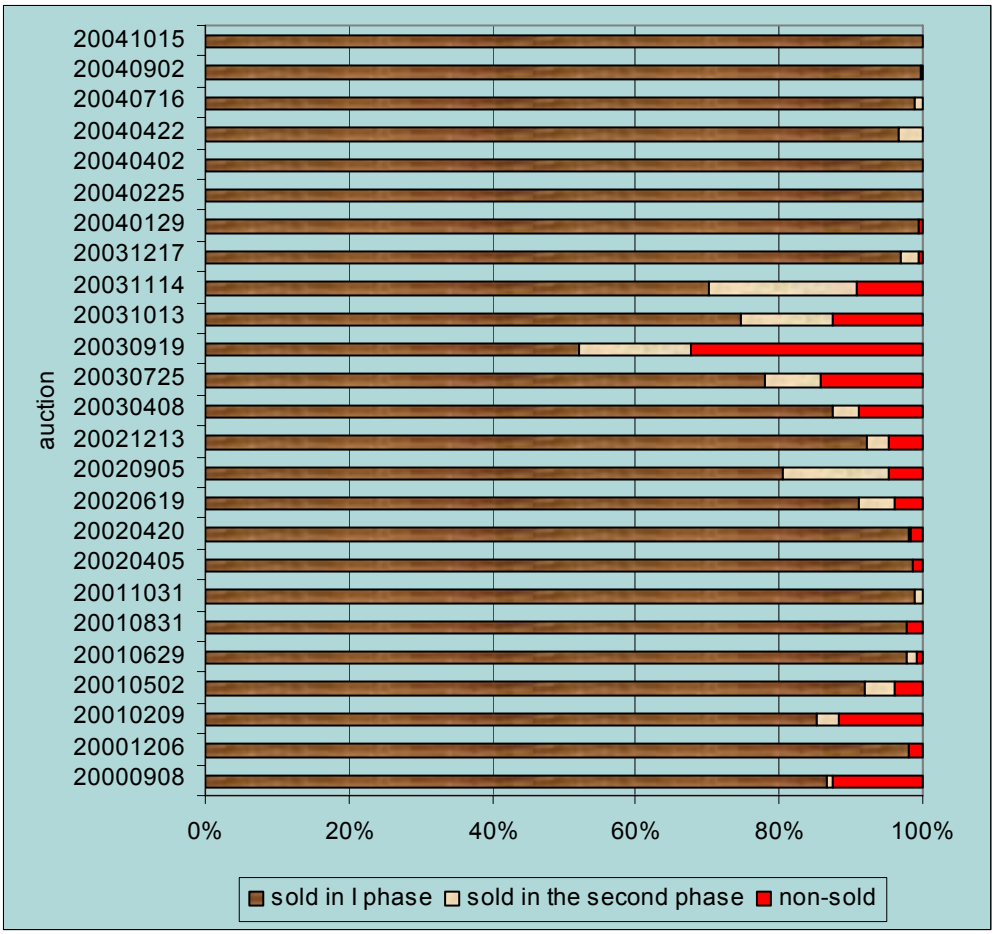
Finally, the relationship between the demand and supply is analyzed in term of residual supply (what remains unsold after the auction procedures). The system of auctions involves that the volumes remained unsold in the first phase must be auctioned again in the auction in a second phase, organised only few days after the first phase. The two phases are considered to be part of the same auction. Only after the two phases the timber remained is considered "unsold".

Figure 7 shows a trend which is the logical consequence of the disequilibrium between the demand and supply at the level of the Suceava County. Before the storm a quantity of timber representing between 3 and 15% of the total volume

remained usually unsold. In 2003 the unsold quantities were higher, because the firms were concentrating on harvesting what they bought already in 2002. Nevertheless, once the exceeding volume was evacuated from the forests, the unsold volume disappeared. In all auctions organised in 2004, the whole volume was sold, and often (four cases on seven) all the timber was sold from the first phase of the auction.

Figure 7

The Evolution of Timber Remained Unsold at the Auctions




Source: Forest Directorate Suceava

Why this fact must be a concern for the firm development? Because in a normal timber market the unsold volume represents the part of supply which is not profitable for the agent to harvest, because of too high costs of harvesting (located in a remote area; on the slope; no forest roads; technical difficulties, etc.), or because of too low quality of timber (too thin; too damaged by the windfall; subject to diseases and pest; not interesting on the market, etc.). In a normal situation this unsold timber was cut with financial loses by the timber supplier (the NFA).

Logically, these financial loses would be now on the private agents side. This factor, which cooperates with the decreased supply and increased competition, may suggests that a strong fight for survival was launched amongst the firms with harvesting activities located in the area managed by the Forest Directorate Suceava. The fact that all the timber is sold proves that:

- there is a great competition amongst firms, because their number increased by 25% compared to the situation existing two years before, while the supply decreased by 50%;
- this competition leads to a strategy which has nothing in common with that of obtaining profit. The firms behaviour now is to keep their access on the raw material procurement, and to keep their people and machineries on work, and do not stop their harvesting activities because the track they accessed are not economically profitable.

## Conclusions

The results of the analysis of the demand and supply at the level of the Forest Directorate Suceava confirm that there is a trend of territorial concentration of large firms, which are able to influence the decisions of the small-size agents. More research is needed to clarify the relationship between the first chain of wood processing industry, which is the harvesting, and the wood processors; and to clarify the networking amongst the firms from the wood processing industry. Does the net separation between the harvesting activities (forest contractors) and the primary wood processors represent an economic efficient situation? Is this situation reflecting an economic utilisation of resources to reduce the transaction costs? These are generally acknowledged amongst large firm that the harvesting activities involves high transaction costs, particularly when is about aggregating supply from small tracts.

Second, the evolution of demand and supply before, during and after the storm event was an opportunity to study the reaction of entrepreneurs to different supply context. It appears that after the storm period the demand is much more fragmented and small-sized. The extra supply provided by the storm product attracted firms from outside the Suceava County, and these firms coming in were usually of medium and large size (over 1000 $m^3$ capacity per year). The present study launches the hypothesis of territorial dependency of firms with harvesting activities, but this requires further investigation, which can be done through enquires on a representative sample.

Third, some conclusions come out from the high competition which leads to apparently irrational choice of harvesting economic inefficient tracts instead renounce of harvesting activities. Several hypotheses may be formulated to explain behaviour in contradiction with the basic principles of economics that the agent's utility function is to obtain profit. One of the hypotheses relays on the lack of information: the entrepreneurs did not have the possibility to anticipate and to realise that the raw material available may have so large fluctuations on short run. Then, they participated in the auctions and they bought tracts because they did not have information on what would be the raw material flow in the next years (lack of strategic perspective). A second hypothesis considers that the activity in the forest sector is part of the rural entrepreneurs' risk portfolio. In the rural area those

starting business in the last decade did not specialised themselves in one area, but usually had at the same time a small mill, a shop, a restaurant or hotel, some farming activities, processing milk products, etc. In a “risk aversion attitude”, the harvesting activities are kept as an “open option”, despite the fact that this potentially lowers the general profit and enhances difficulties to control the money flow and the directions of the internal compensation. Finally, the hypothesis of false zero profit should be acknowledged too. The anecdotic evidence or statements exists on the small firms’ possibilities to improve their profit in eluding tax, using the black labour, practicing the illegal cutting or illegal timber processing, payments of bribes, etc. Again, research is needed to clarify these hypotheses. It might be possible that in the next two years the number of firms would decrease, as well as the level of competition. Nevertheless, it is still interesting to clarify which were the managers’ motivations when deciding to continue or not an activity, for which the raw material was drastically diminishing.

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Година XIV, 2005, 1

*Thomas Rimmler*[1]

# EXPERTISE AND RESEARCH ACTIVITIES AT THE METLA

*This paper provides some basic information about expertise and research projects at the Finnish Forest Research Institute (Metla), collected, firstly, with the help of information published at the institute's website by participating researchers, and, secondly, using research reports, summaries and research plans compiled or collected by the author.*
*The studies concern the Finnish innovative system and innovation performance of the Finnish woodworking industry, co-operation activities of Finnish SME's in the sawmilling and wood construction industries, process and wood product innovations, horizontal cooperation in forestry and organizational innovations in timber procurement and forestry services, innovative techniques that support horizontal cooperation of NIPF-owners in forest management planning. The paper provides some suggestions for developing future research projects.*
*JEL: O32, L23, Q23*

## 1. RESEARCH ON THE INNOVATION SYSTEM AND INNOVATION PERFORMANCE[2]

The expertise on the innovation system and innovation performance at the Finnish Forest Research Institute (Metla) concerns innovation activities in the Finnish woodworking industry and the characteristics of the sector innovation system. The main topics are as follow:

### *1. Innovation Performance and Sector Patterns of Innovation*

Here the paper investigates the question of why firms succeed in a varying degree to create new competencies and identifies the structural feartures explaining the sector patterns of innovation. The theoretical framework to be adopted is located within the context of the resource-based theory of business strategy.
The suggested study describes the innovation activities of the industry in terms of innovation inputs and outputs and the characteristics of the innovation system in terms of:

- number of innovations commercialized;
- degree of novelty of new products (new to the firm, new to the market);
- degree of complexity and knowledge intensity of new producs;
- sector usage of new products;
- new process technologies;

[1] *Thomas Rimmler is from Finnish Forest Research Institute.Email: thomas.rimmler@metla.fi.*
[2] *Further informationon the topic: Mr. Thomas Finnish Rimmler. Finnish Forest Research Institute, Email: thomas.rimmler@metla.fi*
*Website:Forest Research Institute. Research projects. Metla Research project 3398 "Success factors of wooden house and other woodworking firms in a changing competitive environment" – http://www.metla.fi/tutkimus/index-en.htm*

- nature of innovations (incremental, radical, modular, architectural innovations);
- R&D intensity;
- customer-orientedness of innovation activity;
- organisational patterns of innovation activity;
- firms' incentive for innovations;
- sources of innovations (exploration, exploitation).

2. *Structural Characteristics of Organisations and Their Relationship to Organisational Innovativeness*

Here, the research makes an effort to reveal structural characteristics associated to the organisational innovativeness of firms. Initially an appropriate and measurable concept of innovativeness for SME's in the woodworking sector is designed.
The suggested study deals with organisational and managerial structures and their relationship to innovative activity of the industry.

3. *(New) Industry Characteristics and Their Relationship to Innovative Activity as a Basis for Policy Suggestions*

Here, the aim is to analyze the present situation of the industry with respect to innovative activity and its determinants. The research will provide information necessary for the working-out of policy suggestions to improve innovativeness in the woodworking industry. Opportunities for innovation can be created and the implementation of innovative solutions of an industry (innovativeness) can be improved by policies which attend to:

- improve the creation of technological opportunities by supporting basic research and by creating demand for new products and processes;
- improve the investor's return on investment in innovation by improving appropriability conditions;
- lower the risk of investment in innovation;
- improve the absorptive capacity of firms;
- improve economies of scale in knowledge-creation;
- improve the scale of operations by managing innovations (networking);
- support the diffusion of knowledge;
- improve availability of financial and physical resources.

3.1. The Sources of Technological Opportunities

The government contributes to new technological opportunities by reducing cost of innovation by conducting and subsidizing research activities and disseminating technological knowledge. The contribution of government activities to technological opportunities differs across industries and within the same industry also across countries. The government may contribute to the technological opportunities of firms in a varying degree depending on characteristics of the firms, such as size or technology. Other important sources of technological opportunities external to the firm are upstream suppliers of materials and equipment, downstream users of the firm's output, universities and private service providers. Closeness to sources of technical knowledge external to the industry were found to explain substantially the innovative activity of an industry.
The studies suggested:

1. Survey study of the sources of technical knowledge which determine the technological opportunities of the industry.
   - interview, questionnaire
2. Regression study of technological opportunities as a determinant of innovative activity of the industry.
   - regressing innovative activity on variables measuring technological opportunities;
   - measures inter-firm, inter-industry and intra-industry differences in the role of technological opportunities as a determinant of innovative activity, in case of the latter between groups determined by size or technology;
   - uses cross-sectional data.

3.2. Appropriability Conditions of Innovative Activity and Performance of Industry

By their influence on spillovers, appropriability conditions indirectly affect the efficiency of the firm's innovative activity. Appropriability conditions are a key factor for the amount of innovation in an industry. The more of the return to her investment in innovative activities the innovator can appropriate, the more he invests in innovation. Firms typically protect the profits due to invention with a range of mechanisms, including patents, secrecy, lead time advantages and the use of complementary marketing and manufacturing capabilities. Spillovers from intraindustry or extraindustry sources such as government agencies or universities may improve the efficiency of the firm's innovative activity by improving the technological opportunities of a recipient firm.

Spillovers as the result of imperfect appropriability conditions affect also the incentive of the firm to engage in innovative activity. Intraindustry spillovers may reduce the firm's own innovative efforts in terms of R&D expenditure. Consequentially, they may also reduce the willingness to participate in innovative activities executed in cooperation with government agencies. The recipient firm of spillovers may reduce its innovative efforts to achieve a given level of innovative performance or it may increase its innovative efforts to invest in its absorptive capacity. Slackening appropriability conditions, i.e. increasing the ease of imitation, may raise the imitative R&D expenditures of the industry but reduce the innovative R&D expenditures of the industry. The net effect of the appropriability conditions on the incentive to engage in innovative activities is therefore a priori indeterminable and may be specific to an industry.

Studies suggested:

1. Survey of the mechanisms used by the industry to protect inventions.
2. The effect of appropriability conditions on the innovative activity of the industry.
3. How to develop appropriability conditions to improve innovative activities of the industry.
4. Appropriability conditions and the incentives or disincentives of firms to cooperate with government agencies in their R&D activities.

*3.2. Innovative Activity and Complementary Assets*

Mostly responsible for low appropriability conditions and subsequent low level of own innovative activities in the case of SMEs are absorptive capacity deficiencies and insufficiency of complementary assets. In many cases, effective legal protection of a new technology is dificult to obtain, and other firms who have better

manufacturing or distribution assets can imitate the innovation. When a technology itself is difficult to protect, the firm must develop alternative barriers to imitation such as specialized manufacturing, a distribution system, or after-sales support. In the case of SMEs' especially difficulties to access funding, a poor understanding of the patent system and the low degree of assistance are suspected to be the reasons for many good ideas not being developed.
Studies suggested:

1. The role of complementary assets as a determinant of the innovative activity of the industry.
2. The role of absorptive capacity as a determinant of the innovative activity of the industry
3. Improving absorptive capacity as a condition to stimulate the innovative activity of the industry.
4. Access to funding as a condition to stimulate the innovative activity of the industry.

## 2. RESEARCH ON COOPERATION ACTIVITIES OF FINNISH SME'S IN THE SAWMILL AND WOOD CONSTRUCTION INDUSTRIES[3]

The research in this topic in the frame of the work undertaken in the Metla concerns business networks, resource usage, strategy choices and their influence on financial success in SME's in the finnish sawmilling and wood construction industries
Material procurement is an important part of business activities in all wood processing industries, and because of that, the companies of the industry do not have only reciprocal connections but also strong connections to forestry. Knowledge of the needs of the customers using wood in their production would help in finding novel possibilities to create new value in forestry, and support the sustainability of the forest sector.
In Metla two reseach projects with strong links to the issues of vertical cooperation havw started in 2004. In the first one the focus is on Finnish non-integrated sawmills, while in the second one the aim is on Finnish small and medium scaled enterprises (SMEs) operating in the wood construction branch. An important part of the research concerning cooperation in the sawmilling and wood construction businesses is to define the financially successful horizontal and vertical cooperation models, and to have a chance to receive ideas of new, innovative ways of cooperation in the sector.
For sawmills wood is the most critical resource among other tangible and intangible factors of production. Receiving new knowledge of the resource acquirement and

[3] *Further information: Ms. Katja Packalen. Finnish Forest Research Institute*
*Email: katja.pakalen@metla.fi*
*Website: Forest Research Institute. Research projects. Metla Research project 3398 "Success factors of wooden house and other woodworking firms in a changing competitive environment" – http://www.metla.fi/tutkimus/index-en.htm*
*Dr. Anne Toppinen. Finnish Forest Research Institute*
*Email: anne.toppinen@metla.fi*
Website: Forest Research Institute. Research projects. Metla Research project 3381 "Effects of internationalisation on roundwood markets and business strategies of sawmilling industry in Finland" – http://www.metla.fi/tutkimus/index-en.htm

the role of horizontal and vertical cooperation in different business strategies in Finnish non-integrated sawmills are two of the focus areas of the first research project. The main objective is to study with which strategies Finnish non-integrated sawmills would be able to compete in the rapidly changing environment. This is done by finding out what have been the strategically important resources for Finnish non-integrated sawmills with different strategy options, what strategic choices concerning resource usage and their acquiring have led to better financial results than the others, and what has been the role of horizontal and vertical cooperation in different strategies. In addition, the project provides information of the operations of forest owners and their representatives from their customers' perspective (the wood processing industry). By interviewing the sawmill owners and managers knowledge of the cooperative models between sawmill industry and forestry can be received.

Resource usage and strategy issues in sawmills are mapped using interviews (qualitative data), while financial success is measured by using financial statements that are assessed with the methods of financial analysis (quantitative data) for getting estimates of the profitability, solvency, liquidity, and growth of the interviewed companies. Interconnections between qualitative and quantitative data are analysed statistically, e.g. with cluster analysis.

The second research project concentrates on horizontal and vertical cooperation modes both within the forest-wood-chain and between the forest-wood-chain and other industry branches from the view of SMEs operating in the wood contruction industry. The main objective of the study is to define practical models of business networking, by which the operations of Finnish wood construction SMEs could be developed and their competitiveness and financial performance enhanced. This is done by mapping in what kind of operations these companies cooperate, what is the role of networking in firm-level business strategies, in what kinds of operations firms operate, what kinds of objectives do different cooperative groups have, how the decision-making at firm and network-level is carried out, and how different types of business networking are reflected in firms' financial performance.

Different types of networks are defined by using "The multilateral SME cooperation model" developed by Varamäki and Vesalainen (2003). Issues concerning cooperation and firm-level decision-making are clarified by interviews made to the owners and managers of the companies, while financial information is received from financial statements of the interviewed companies. Financial statements are analysed in order to receive measures of profitability, solvency, liquidity, and growth. The interconnections between qualitative (interviews) and quantitative (financial statements) data are analysed with regression techniques.

## 3. RESEARCH ON PROCESS AND PRODUCT INNOVATIONS IN FOREST-WOOD CHAIN

### Technical Quality, Sorting and Organising the Procurement of Wood Raw Material for the Manufacturing of Special Wood Products[4]

This former project (terminated in 2001) addressed the question of how to organise wood procurement in the forest-wood chain with respect to the requirements of specialised users of wood raw material in the woodworking industries, especially of SME's. The project addressed questions of the technical properties of different wood raw materials and the feasibility of their utilisation in primary, intermediate and further processing of sawn goods and wood products.
Business opportunities offered by the utilisation of selected sources of wood raw material were examined along the forest wood chain including forest producers and forest service providers (roundwood market services, logistical services in roundwood harvesting and transport).
The main tasks were:

1. to provide information about idle domestic sources of wood raw material, their technical characteristics and alternative utilisation potential considered from the view of the technical specification defined for specific consumer wood products;
2. to investigate development needs in roundwood procurement of SME's in the wood-processing industry;
3. to further develop principles and methods in measuring quantity and quality of wood raw material to be used in special wood products.

The wood raw materials and special wood products under investigation were:

- birch (*Betula pendula*) in veneer production;
- birch (*Betula pendula*, B. *pubescens*), alder (*Alnus incana) in special sawn products*;
- peatland Scots pine, Norway spruce and birch (*Betula pendula*) in special sawn products and plywood;
- Southern Finland proveniences of Norway spruce in sawmilling;
- Scots pine and Norway spruce from thinnings in various sawn products and unhewn wood products.

### Properties and Utilisation of Domestic Wood Raw Materials in Mechanical Wood Processing[5]

The results of two Wood Wisdom research projects in wood technology carried out at Metla in 1998-2001 as a subproject under the umbrella the project aforementioned are summarised in the following sections. The projects delt with the properties of domestic hardwood (birch, aspen and alder) and Scots pine from first and subsequent thinnings and their utilisation in mechanical wood processing.

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[4] *Further information: Dr. Erkki Verkasalo. Finnish Forest Research Institute*
*Email: erkki.verkasalo@metla.fi*
Website: Forest Research Institute. Research projects. Metla Research project 3192 "Properties and utilisation of domestic wood raw materials in mechanical wood rocessing" – http://www.metla.fi/tutkimus/index-en.htm

[5] *Further information: Dr. Erkki Verkasalo. Finnish Forest Research Institute.*
*Email: erkki..verkasalo@metla.fi*
*Website: Wood Wisdom – A Finnish Forest Cluster Research Programme (1998-2001) – http://www.woodwisdom.fi/*

The Finnish Forest Cluster Research Programme WOOD WISDOM (1998–2001) was a multidisciplinary cluster programme co-funded by the National Technology Agency Tekes, Academy of Finland, Ministry of Agriculture and Forestry, and Ministry of Trade and Industry of Finland. The programme combined basic and applied research with R&D targeting specific industrial applications. The aim was to raise the competitiveness of forestry and forest-based and related industries in today's changing operating environment. The focal point of the research was market-driven use of Finnish wood raw material in optimal wood and paper products. The purpose of two projects included in this multidisciplinary research consortium and carried out at Metla was to study the properties, availability and potential of the wood and timber from Finnish hardwoods (birch, aspen and alder) as well as Scots pine from thinnings in mechanical wood processing, both from the view of forestry and industrial processes and end-products. The last report will be published soon.
The projects provide new information about the properties and potential of Finnish hardwoods and pine from thinnings for sawmilling and further processing in Finland. It instructs forest owners about the optimal stand treatment and stand structure. There is new knowledge from experiments about the recovery of sawable logs per tree and sawnwood per log using short length bucking options. The information supports forest owner's decision making concerning the bucking options providing best value yield. The results inform about the mechanical properties of wood (density, knotiness) and how they can be identified from location parameter. The results provide also insight into the geographic variation in availability and quality of Finnish hardwood resources. The investigations yield new information valuable for the sawmilling industry on sawlog recovery, harvesting and transportation methods, sawing techniques and the respective revenues and production cost. The results of experimental studies on sawing and further processing especially by various drying techniques of hardwood lumber are reported. The requirements for high value yield in the mechanical wood processing of hardwoods, e.g. dimension and stem location of components are assessed also.

**Utilisation Potential of Small-Sized Scots Pine and Birch Timber as a Raw Material for Engineered Wood Products – a Pre-Feasibility Study[6]**

The study was carried out in 2002. It addresses the quantitative availability and technical suitability of specific small-sized roundwood material for construction wood products and evaluates the price competitiveness, market and the financial feasibility of innovative engineered-wood-products. According to the results of the study, domestic small-sized Scots pine and birch timber can be considered competitive on behalf of their technical characteristics as compared to alien species. EWP innovations are expected to improve financial feasiblity compared to established products. Examinations made about the cutting potential confirmed supply to be sustainable.

[6] *Further information: Dr. Henrik Heräjärvi. Finnish Forest Research Institute.*
*Email: henrik.herajarvi@metla.fi*
*Website: Forest Research Institute. Research projects. Metla Research project 3355 "Novel upgraded products of mechanical wood processing" – http://www.metla.fi/tutkimus/index-en.htm*
*Final Report: Small-Diameter Scots Pine and Birch Timber as Raw Materials for Engineered Wood Products. International Journal of Forest Engineering.*

Subjects for further research:

- in-detail feasibility study of production for different regional locations;
- R&D requirements for manufacturing technologies;
- market-analysis for Europe and other export markets;
- integrating raw material supply and production into the supply and production chain of other wood-processing industries.

**Product Innovations in Wood-Frame and Intermediate Ceiling Building Construction, Competitiveness of Wood Materials and the Socio-Economic Benefits to the Local Community of Wood Compared to Concrete Structures – a Case Study Concerning Metla's New Wooden-Frame Office Building**[7]

The study addresses the following tasks:

1. (i) Product innovations used and emerging during the project: pilars, beams and intermediate ceilings, structures; (ii) the innovation process: ideas, testing, practicability, networks; (iii) reasons for choosing wood materials, what were the alternatives; (iv) further utilisation of innovations.
2. Differences in cost and material flows between competing wood and concrete structures and the impact of material consumption and weight of building masses on the process of construction and labor input.
3. Local and regional income and employment impacts of wood-based building construction: (i) origin of purchases of wood materials: local, regional non-regional sources; (ii) associated income and employment impacts; (iii) differences between wood and concrete structures.

The study will utilise life cycle data. It will be implemented in cooperation with the builder, other authorities and contractors participating in the construction project.

**Potentials for the Utilisation of Finnish Roundwood and Other Wood Raw Materials in Wood Product Markets**[8]

The objectives of this ongoing project is to analyse the possibilities to develop and increase the demand of Finnish wood products. The project involves detailed surveys of consumers, companies and forest owners in the forest-wood products chain. The questions to be investigated are what are the attitudes of consumers and companies towards wood products as well as towards wood in relation to its substitutes, what are the purchasing motives, what are the possibilities to find new geographic market areas and new ways of using for wood products.

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[7] *Further information on the topic: Mr. Eero Vatanen. Finnish Forest Research Institute*
*Email: eero.vatanen@metla.fi*
*Website: Forest Research Institute. Research projects. Metla Research project 3398 "Success factors of wooden house and other woodworking firms in a changing competitive environment" – http://www.metla.fi/tutkimus/index-en.htm*

[8] *Further information: Ms. Raija-Riitta Enroth. Finnish Forest Research Institute.*
*Email: raija-riitta.enroth@metla.fi*
*Website: Forest Research Institute. Research projects. Metla Research project 3356 "Competitive advantage of Finnish wood and timber in wood products markets" – http://www.metla.fi/tutkimus/index-en.htm*

## 4. RESEARCH ON COOPERATION IN FORESTRY AND THE WOOD WORKING INDUSTRY

### Competitiveness of Forestry and the Woodworking Industry[9]

The objective of this ongoing research project is to analyse factors affecting the competitiveness of forestry and the woodworking industry. Legal forms of companies and forms of cooperation are analysed and compared and investigations on economies of scale in production are made. The results will give support to forestry extension and forest policy. They will be helpful as a basis for decisions concerning new legal forms of companies and forest corporations.
There is few information about forestry activities in forest communities, forest corporations and forest co-operatives, although this kind of co-operation between private forest owners have a long tradition. The main focus in forest policy aiming to alleviate the negative impacts of fragmentation of forest ownership have been on regional co-operation in forest operations.
The other fields of research addressed in the project are:

- quality and environmental management;
- forest and forest industry as object of investment;
- investment and financing strategies;
- business planning and monitoring;
- and financing strategies,economic planning;
- the economy of forest regeneration and the economic performance of forest stands;
- strengths and weaknesses of alternative forms of business organisation;
- the profitableness of ownership and management frameworks;
- economies of scale in production.

### Comparison of Organisational Forms in Timber Procurement and Analysis of Competitiveness Requirements for Forest Service Providers[10]

These two closely related projects, terminated in 1997 and 2000, payed special attention to the wood supply of SME's in the woodworking industry applying customer-oriented business concepts. In the first project organisational forms in wood procurement were compared. Information was provided about how service costs reflect differences in the size of the business unit, ownership, organisation and the roundwood pricing system. Examinations about the impact of market deregulation on the business performance of transport contracting and the success of different business strategies in the new business environment were made.

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[9] *Further information: Dr. Markku Penttinen. Finnish Forest Research Institute*
*Email: markku.penttinen@metla.fi*
*Website: Forest Research Institute. Research projects. Metla Research project 3337 "Competitiveness of forestry and the woodworking industries" – http://www.metla.fi/tutkimus/index-en.htm*

[10] *Further information: Mr. Arto Rummukainen. Finnish Forest Research Institute.*
*Email: arto.rummukainen@metla.fi*
*Website: Forest Research Institute. Research projects. Metla Research project 3125 "Comparison of the organizing models of wood procurement" – http://www.metla.fi/tutkimus/index-en.htm*
*Mr. Jukka Aarne.Finnish Forest Research Institute.*
*Email: jukka.aarne@metla.fi*
*Website: Forest Research Institute. Research projects. Metla Research project 3223 "Competitive preconditions for wood procurement and forest based service enterprise" – http://www.metla.fi/tutkimus/index-en.htm*

Information was provided about the differences in the form of integration between logging contractors and its impact on business performance and business strategy.
In the second project the competitiveness requirements for forest service providers were analysed. The project addressed the questions how the operations in the roundwood markets of the integrated forest industry companies possibly encumber the raw material supply of SME's, and how important are customer-oriented supply chain management concepts. The project compared the concepts of standwise sale and sale by timber assortment with respect to their ability to provide appropriate wood raw material. The project also gave a portrait of forest service providers, e.g. their sector distribution, number, kind of services produced, clients and future business perspectives. It also looked at the roundwood marketing services provided by the forest owners' forest management associations and their role in the roundwood supply of SME's. Investigations were made to detect differencies in the operational efficiency between forest management associations.

## 5. RESEARCH ON HORIZONTAL COOPERATION IN SMALL-SCALE NON-INDUSTRIAL PRIVATE FOREST (NIPF) MANAGEMENT

### Models, Planning and Decision Support for Multi-Functional Forestry[11]

Optimality of forestry management planning of a single business unity – in the Finnish context NIPF-holdings – is dependent on the production decisions made in business unities located in their spatial proximity. Traditionally horizontal cooperation in forestry management planning aims at sustainability and cost efficiency in timber-production-related decision making. However, new demand for forest-based production of public goods, i.e. environmental, ecological and recreational services, has required a widening scope in joint decision-making in forest management planning.
To be efficient in aiming to produce public goods, market mechanisms should be included as well in decision-making methods. New policy instruments create new options for forest holdings of how to allocate their forest resources to the production of private goods – typically roundwood – and public goods. In the present policy context the production of public goods is subject to the forest owners' autonomous and decentralised decision on how to maximise his private net benefit, where net benefit is the difference between his private opportunity cost and his revenues from compensation payments. Cooperation in the production of public goods is advantageous for single NIPFs, since it creates pronounced scale effects in the production of the new services related to the size, mutual location of stands and the quality of their treatment. However, for implementing cooperative decision-making appropriate multiple-objective decision-making routines and instruments are needed.
At Metla models and management planning devises have been developed to support multi-functional-forestry decision-making. Ongoing research activities focus

[11] *Source: Protection of forest biodiversity in multi-objective forest planning. Summary. Project plan 2005-2009.*
*Further information: Dr. Jouni Pykäläinen. Finnish Forest Research Institute.*
*Email: jouni.pykalainen@metla.fi*
*Websites: http://www.innovatiivisettoimet.fi/*
*http://europa.eu.int/comm/regional_policy/innovation/intro_en.htm*

on methods, techniques and models for tactical and strategic forest management planning with multiple objectives, to be especially applied both at forest holding and area level. Special attention is given to the commensuration of different forest uses and objectives in management planning calculations, multi-objective forestry optimization, producing efficient production programmes in case of multi-functional forestry, applying optimization in group decision support, managing risk and uncertainty, integrating ecological and recreational objectives into multiple criteria comparison of alternative plans, modelling expert knowledge, spatial modelling and spatial optimization, integrating numerical tools into the planning process.
The applicability of the results in practical planning tasks is of great importance, therefore the results are tested and disseminated in close cooperation with forest owners and their representatives. Special attention has been given to the adaptability of planning procedures, methods and tools to be able to respond to the special requests of the planning exercise and the user's learning capacity.
In 2002-2004 Metla participated in a R&D programme called Modern Networked Periphery (MONEP). Activities have targeted on developing and applying innovative IT-technologies to create new business opportunities in four peripheral regions in Eastern Finland. Based on applications utilising an open-access data-base-network Metla headed a pilot project devoted to the development of forest-resource-inventory and forest management planning services to NIPF-owners.

Икономически изследвания

# DISCUSSIONS

Година XIV, 2005, 1

*Alexander H. Alexandrov*[1]
*Hristo Tsakov*[2]
*Denitsa Pandeva*[3]

## FOREST SECTOR IN BULGARIA: KEY ISSUES FOR FURTHER DEVELPOMENT

*The paper presents data on the forest resource development in Bulgaria during the 20th century, as well as contemporary challenges.*
*It is summarized that during the last 14 years, forestry in Bulgaria has passed through numeral structural and economic changes, directed to its adaptation to market economy. The forest industry in the transition to market economy after 1989 overcame the state monopolism but went to the opposite extreme. The weak sides of the forest industry in this period are summarized as: decreasing of the production; insufficiency of quantity and quality raw material for the existing processing capacities; lost markets for the production of the wood processing industry; problematic credit allowance. The strong sides of the Bulgarian forest industry are the high qualified specialists and the low labor price. The main challenge for sustainable development of economically viable forest sector is implementation of multifunctional forest management. Among the identified new priorities are: restoration of the economic activities in the state-owned forests; comasation of the small forest plots of land; interruption of experiments in the management of the forestry sector.*
*The quantitative criteria for meeting the new challenges by the Bulgarian forest industry is achievement of annual growth of production and export by 10%.*
*JEL: O13, Q23*

### 1. Historical Background

As a political formation Bulgaria is one of the oldest countries in Europe, created on the Balkans in the 7th century (681) by the proto-Bulgarians, seven Slav tribes and the Severs, has specific history, of its forests in this account. At the end of the 9th and the beginning of the 10th century under the rule of king Simeon I the state boundaries were at the Black sea, Aegean sea and Adriatic sea. In 1396, however, Bulgaria fell under Ottoman yoke, which continued till 1878. The liberation of the country from the Turkish domination is a result of the Russian-Turkish war from 1877-1878.
Bulgaria, as a country in South Eastern Europe, is part of the bridge between the European and Southwest Asian flora and due to its geographic situation and geological history plays the role of species diversity formation center with rich

[1] *Alexander H. Alexandrov is Director of Forest Research Institute at BAS – Sofia, Fax: +35929620447.*
[2] *Hristo Tsakov works in Forest Research Institute at BAS – Sofia.*
[3] *Denitsa Pandeva works in Forest Research Institute at BAS – Sofia.*

genetic pool. Bulgaria is part of this refugium for the European flora and conserved it during the Diluvium and the Holocene. The products of the forest industry in Bulgaria for the period 1900 – 2000 are presented in table 1.
The total growing stock, which is raw material source for the development of the forest industry, increased from 199.7 million $m^3$ (1940) up to 243.5 million $m^3$ (1960), 303.8 million $m^3$ (1980), 404.5 million $m^3$ (1990) and to 526.1 million $m^3$ (2000) (Radenski, 1999; UNECE-FAO, 2003).

## 2. Recent State of the Art

The forest resource now is characterized with the following features: forest land is 3 466 223 ha (31% forest cover), of which 1 500 000 ha are the forest plantations created in the second half of the 20$^{th}$ century; total annual increment – 12 300 000 $m^3$; average annual increment per ha – 4$m^3$. About 34% of the forests are with special functions – protective, recreational and in protected territories. The coniferous forests present 32% and the deciduous ones 68%, the area distribution according species being 23% oaks, 17% beeches, 9% Adriatic oak, 16% Scots pine, 9% Black pine, 4% Norway spruce and 22% other species (NFB, 2003).
The forests are divided by ownership as follows: state forests – 85.3% and non-state forests – 14.7% (of them 8.2% – private forests, 5.8% – municipal forests, 0.5% – owned by religious communities, 0.1% – owned by schools and 0.1% – owned by other juridical persons).
The projected annual production with respect to the inventory plans is 6 235 000 $m^3$ and the yield is 4.7-5 million $m^3$. Of them 72% are for the forest industry and 28% for the local population (BSFP, 2002). The share of the annual average industrial yield of coniferous wood is 34% and of deciduous wood – 66%, as the percentage distribution according to categories is: full-size timber, middle-size timber, small-size timber and fuel wood by conifers as follows 37:34:15:14 and by deciduous forests – 18:15:4:63 (MAF – NFB, 2003).

## 3. Challenges to Forest Sector Development in the Country

In the last 14 years the forestry in Bulgaria has passed through numerous structural and economic changes, directed towards its adaptation to market economy. The main goal is sustainable development of economically viable forest sector through multifunctional forest management. Some new priorities in this sector include: restoration of economic activities in the state-owned forests; comasation of the forests of small forest owners; interruption of the experiments in the management of the forestry sector; attention to the Bulgarian experience and traditions in forestry.
In the beginning of the 20$^{th}$ century the forest industry comprised 1145 small water-power saw-mills distributed mainly in the coniferous forests. The economic progress in the 1930s led to quick development of the timber processing industry and till 1945 their number increased up to 1533 with capacity of 2 167 000 $m^3$. Saw-mill factories and log band-saws were 521 in number with capacity of 1 598 500 $m^3$, water-power saw-mills were 630 with capacity of 379 000 $m^3$, sleeper installations – 39 with capacity of 50000 $m^3$, plywood factories – 8 with capacity of 60 000 $m^3$, veneer factories – 5 with capacity of 8 000 $m^3$, paper factories – 5 with capacity of 27 000 $m^3$. There were 3 shipyards, 1 match factory

and 321 furniture workshops. The ownership of the timber processing enterprises was as follows: private – 73.3%, cooperative – 17.2%, state – 6.9% and municipal – 2.6%. The share of the wood yielding and timber processing industry at that time was 11.8% of the total industrial production and the workers involved – about 12000 (Stoyanov, 1968; Vuchovski, Dimitrov, 2003).

After the nationalization in 1947 a process of consolidating of the forest industry, increasing its capacity and developing new productions, as well as increasing the quantity of manufactured timber started. The production of particle boards, cellulose and wood pulp and wrapping began. From several to ten times increased the production of plywood – from 17 000 $m^2$ (1948) up to 70 700 $m^2$ (1970); of veneer – from 700 000 $m^2$ (1948) up to 35 211 000 $m^2$ (1980); of parquet – from 77 000 $m^2$ up to 1 880 000 $m^2$ (1970); of paper and paperboard – from 25 100 t (1948) up to 377 200 t (1980) (see table 1).

The yield from the resin tapping in the first years of its introduction was just several tons – 5 t (1937), 12 t (1939) but it increased continuously, reaching up to 3 250 t (1968). The utilization of the lightwood as industrial raw material for production of turpentine, tar, alcohol, acetone, acetic acid and wood charcoals show the same tendency. During this period other branches of the chemical forest industry such as production of tannin substances, essential oils, fodder, viscose, artificial fibers, etc. also developed. The impregnation and modification of wood extended.

The enlarged capacity of the forest industry allowed not only to process local raw materials but also to import timber. Significant was the share of the Bulgarian wood yielding in the Republic of Komi. For the period of 1968-1992 Bulgaria yielded for its own needs 21 780 000 $m^3$ mainly full-size coniferous timber, which contributed for the decreasing of the harvesting in our forests in conditions of totally increasing wood consumption for the country (Vuchovski, Dimitrov, 2003). The number of Bulgarian specialists and workers in Komi in relation with the cooperative wood yielding of about 40 000 000 $m^3$ was 14 000.

Generally, in the second half of the 20$^{th}$ century the forest industry was developing quickly and competitively, as this period of reconstruction and modernization led to significant increase of the production. The disadvantages of the period were: centralized planning, concentration of production and limitation of private economic initiative, irrational utilization of the raw materials especially of the deciduous logs.

The forest industry in the transition to market economy after 1989 overcame the state monopolism but went to the opposite extreme. In few years all factories under different forms turned to private enterprises and some of them were bought by foreign companies. Part of the big plants was liquidated and others strongly decreased their production. The 2170 saw-mills installed in the coniferous region created big problems for the protection of the forests. The newly created small companies for wood yielding and timber processing started illegal cuttings. Generally, since 1989 there has been great decrease in the forest industry. The small-scale enterprises prevail, part of which are with amortized and ineffective equipment, and the loading of the capacities is about 50%.

The weak sides of the forest industry in this period could be summarized as:

- decreasing the production;
- insufficient in quantity and quality raw material for the existing processing capacities;
- lost markets for the production of the wood processing industry;

- problematic credit allowance.

We should note, however, that the reconstruction and modernization of some plants and factories of the forest industry contribute to improve the structure and quality of the production and its export orientation. Since 1997 increasing and improvement in the production of furniture and plywood has been observed. Other strong sides of the Bulgarian forest industry are high qualified specialists and low labor price.

## 4. Contemporary Problems

Strategic goal of the forest industry is effectiveness and competitive ability and increase in the annual growth of production and export by 10%.

One of the contemporary problems, especially for the countries in transition, is the energy problem. The restrictions in the nuclear energy, the petroleum crises, the air pollution from burning brown coals and lignite imposes reconsideration of the problem of the use of wood as fuel. The exploitation of firewood in the country for the last century varied from 1.9 million $m^3$ up to 3.8 million $m^3$ and the production of charcoal – from 7 000 t up to 29 000 t. In the last decade there is tendency towards increase of the use of firewood and decrease of charcoal yielding.

The new economic circumstances and ecological requirements impose again the utilization of biomass for energy use. The Bulgarian forestry attains some experience in this aspect creating 150 000 ha of industrial forest plantations during the period 1973-1990.

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Table 1

Products of the forest industry in Bulgaria for the period 1900-2000

| Year | Total felling | Fuel wood | Charcoal | Balsamic resin | Lightwood | Plywood | Veneer | Parquet | Wrapping | Particle board | Cellulose and wood pulp | Paper and paperboard |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $m^3$ | $m^3$ | t | t | t | $m^3$ | $m^2$ | $m^2$ | $m^3$ | $m^3$ | t | t |
| 1900 | 2406000 | 2021000 | 7140 | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1910 | 2783000 | 2250000 | 4000 | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1930 | 4198000 | 3570000 | 24000 | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1939 | 5042000 | 3760000 | 25000 | 12 | 3000 | 7400 | 626000 | 101000 | 0 | 0 | 0 | 17200 |
| 1948 | 6180000 | 3738000 | 29000 | 251 | 10000 | 17000 | 700000 | 77000 | 70000 | 0 | 14900 | 25100 |
| 1960 | 8568000 | 3373000 | 20000 | 1154 | 16844 | 64300 | 5028000 | 1801000 | 308000 | 22000 | 31400 | 77700 |
| 1970 | 7141000 | 2742000 | 18000 | 2616 | 14843 | 70700 | 23544000 | 1880000 | 324000 | 200000 | 91600 | 214900 |
| 1980 | 5908000 | 2223000 | 3000 | | | 55600 | 35211000 | 832000 | 294000 | 378000 | 233500 | 377200 |
| 1990 | 4681000 | 1894000 | 3000 | | | 48700 | 19837000 | 444000 | 191000 | 321000 | 127100 | 323500 |
| 2000 | 4630000 | 2162000 | 8000 | 0 | 0 | 51600 | 3000000 | 200000 | 85000 | 179900 | 77200 | 136000 |

Source: Forestry Research Institute, Bulgarian Academy of Sciences.

Икономически изследвания
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*Ivan Jovkov*[1]
*Diana Ivanova*[2]
*Nicola Grigorov*[3]

# CHALLENGES FACED BY THE MANAGEMENT SYSTEM OF FORESTRY SECTOR IN BULGARIA

*On the base of analysis of the existing management system of the forestry sector symptoms of deepening crisis in forestry management, forests and forest industry in the years after 1997 are identified. They are systemized and directions of their removal are suggested. The main conclusion, which is drawn, is that change in the management system in forest sector is necessary. Otherwise, it is expected the resources in the territory of the forest fund constantly to decrease their potential (economic, social and ecological). The negative consequences will concern the carbon and water balances, agriculture and forestry, forest industry, tourism, etc.*
*JEL: O13, Q23*

The analysis of the results of the functioning management system in the forestry sector have shown their further decline. The symptoms of deepening crisis in forestry management, forests and forest industry in the years after 1997 are systemized in figure 1. The directions of their removal are presented in figure 2. The main conclusion is that change in the system is necessary. Otherwise, the resources of the territory of the forest fund will constantly decrease their potential (economic, social and ecological) with negative consequences concerning the carbon and water balances, agriculture and forestry, forest industry, tourism, etc.

[1] *Ivan Jovkov is from Forest University – Sofia.*
[2] *Diana Ivanova is from Forest University – Sofia.*
[3] *Nicola Grigorov is from Forest University – Sofia.*

Figure 1

Symptoms of Crisis in Forestry Management in Bulgaria

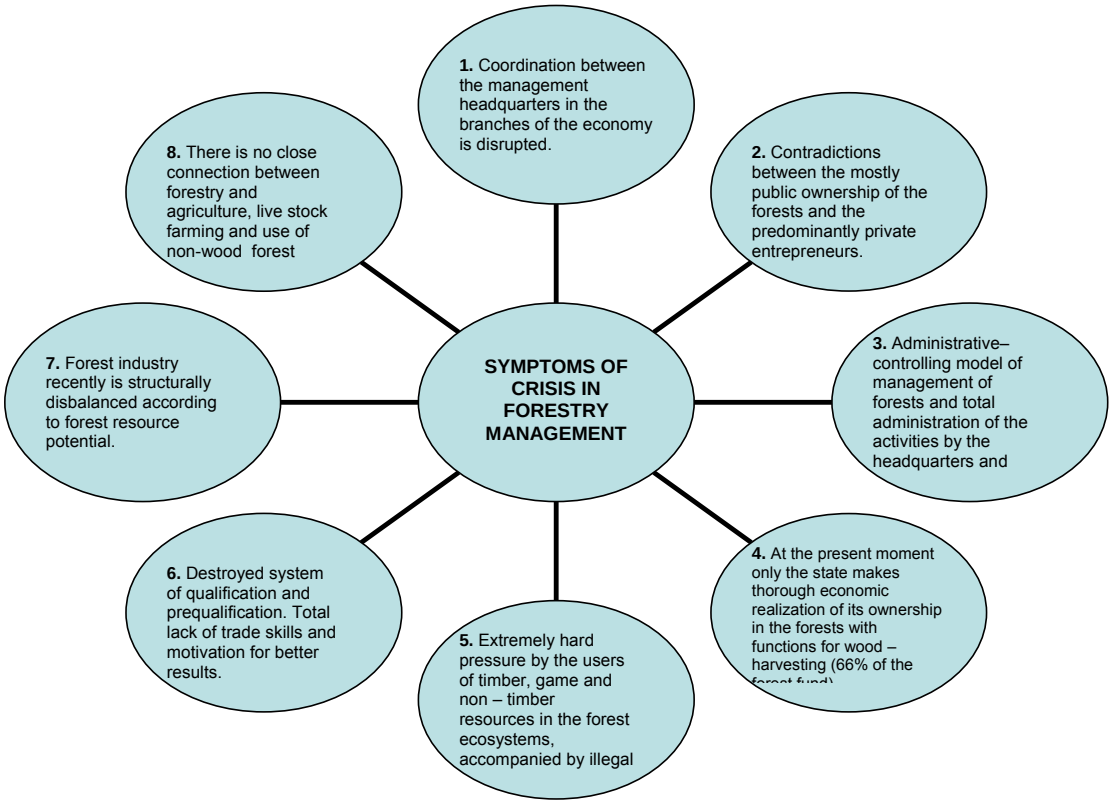
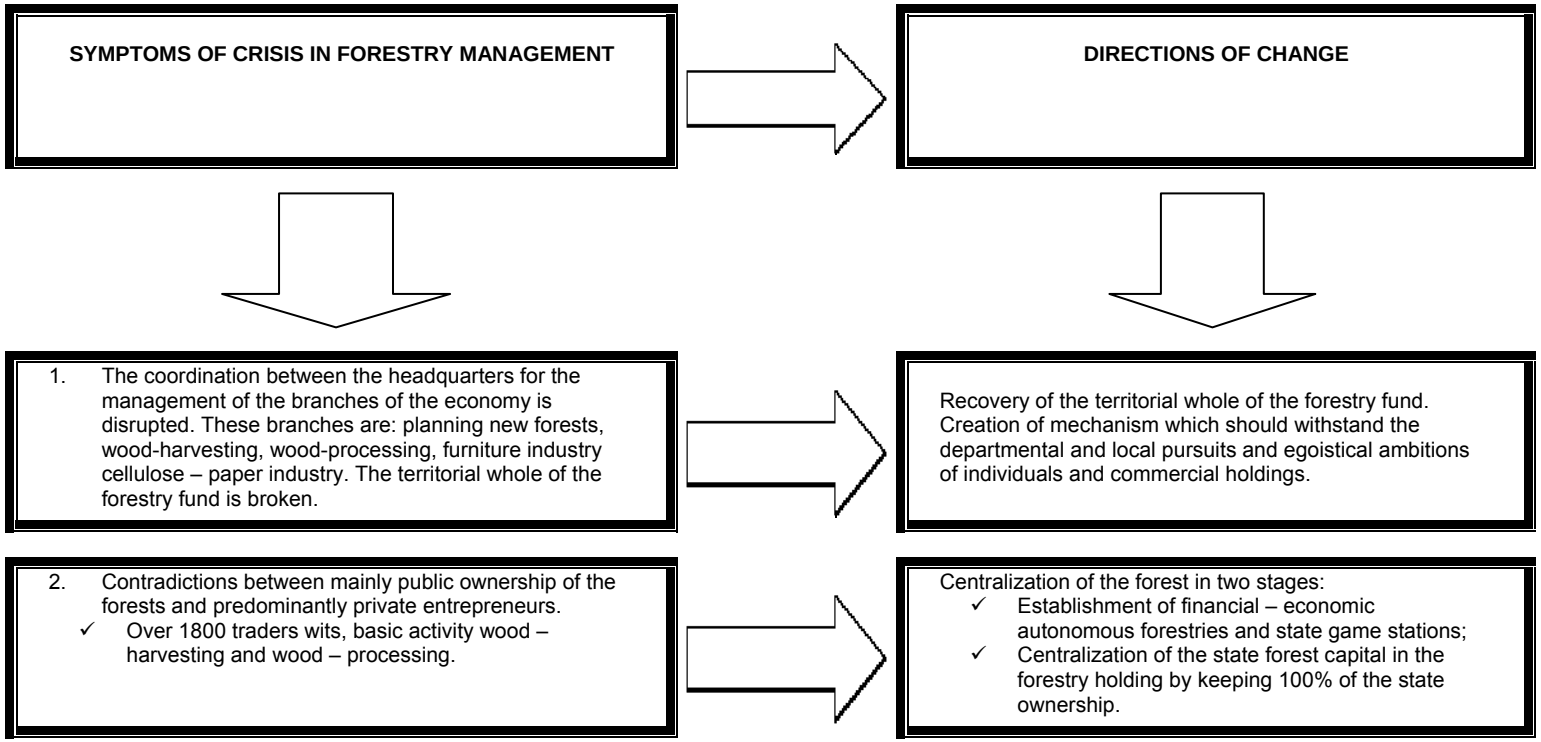
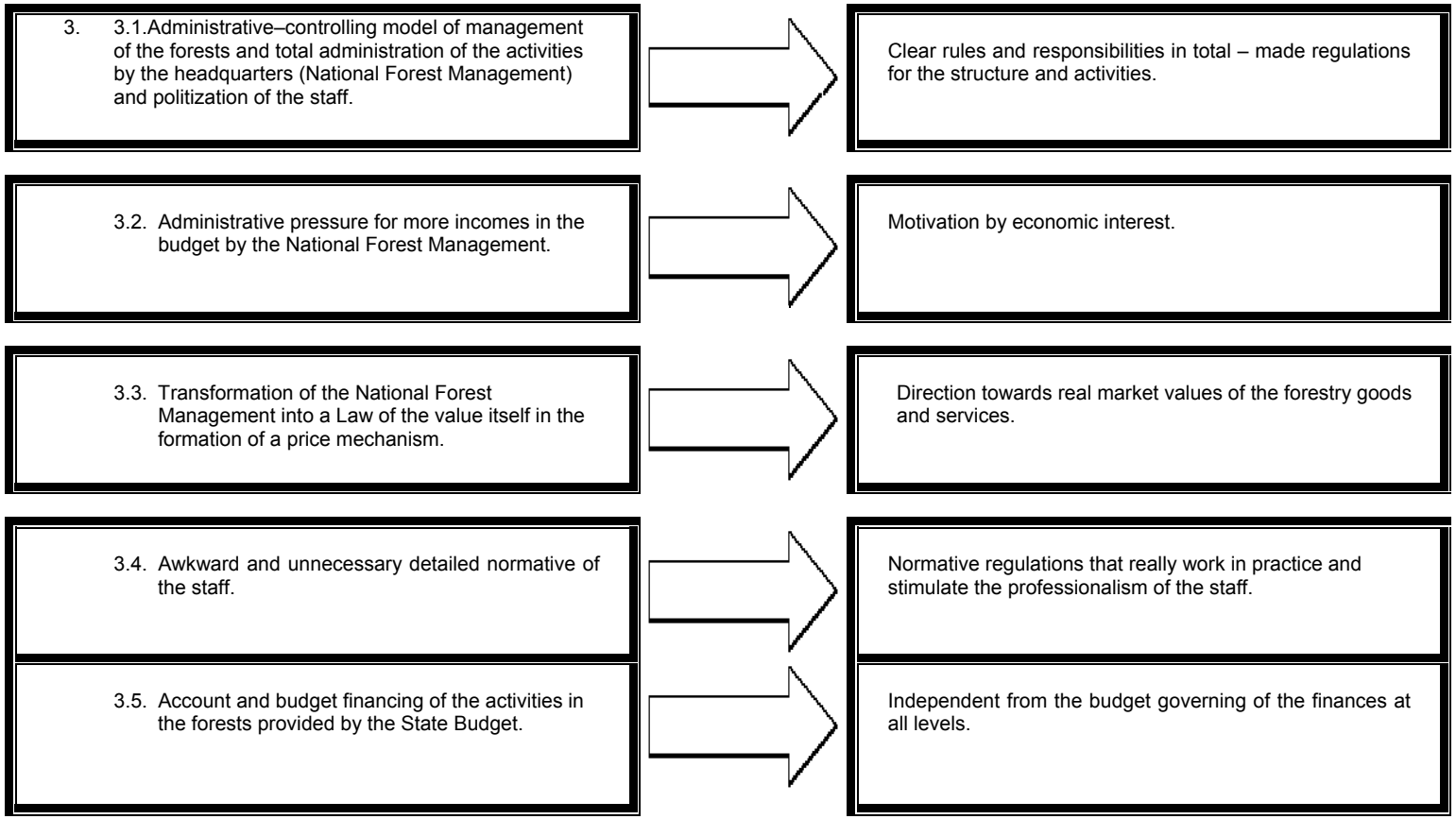
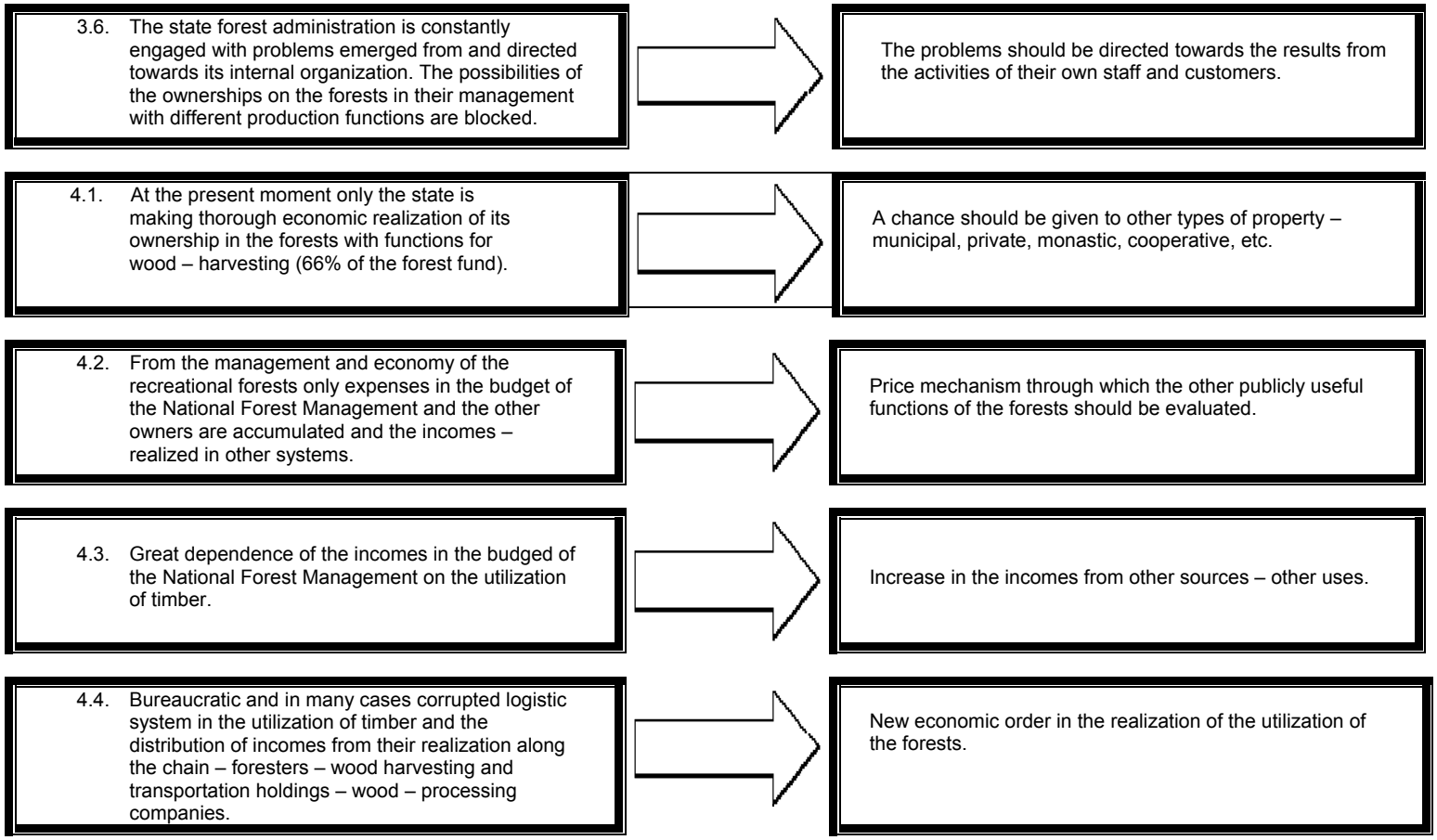


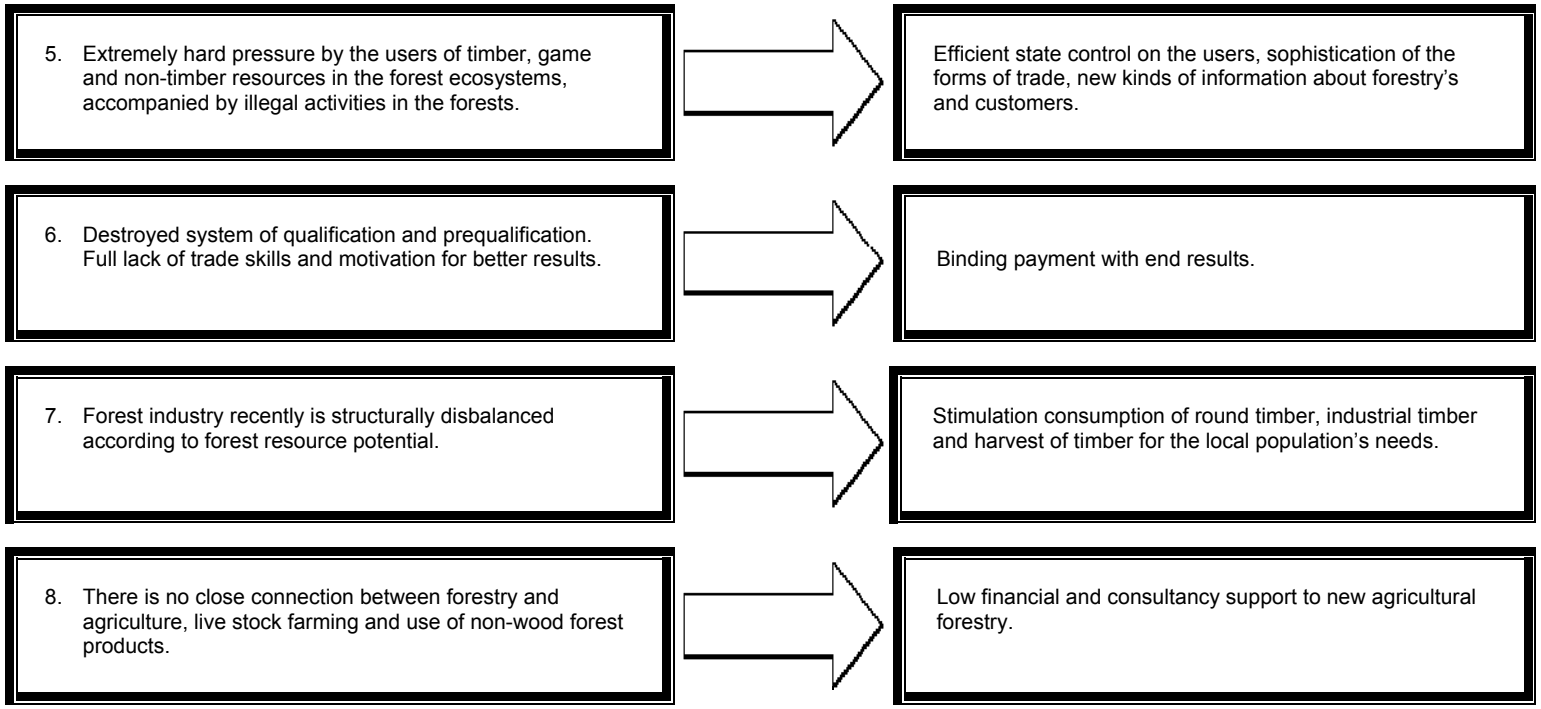
Figure 2

Directions of Removal the Symptoms of Crisis in Forestry Management in Bulgaria




3. 3.1.Administrative–controlling model of management of the forests and total administration of the activities by the headquarters (National Forest Management) and politization of the staff.
Clear rules and responsibilities in total – made regulations for the structure and activities.
3.2. Administrative pressure for more incomes in the budget by the National Forest Management.
Motivation by economic interest.
3.3. Transformation of the National Forest Management into a Law of the value itself in the formation of a price mechanism.
Direction towards real market values of the forestry goods and services.
3.4. Awkward and unnecessary detailed normative of the staff.
Normative regulations that really work in practice and stimulate the professionalism of the staff.
3.5. Account and budget financing of the activities in the forests provided by the State Budget.
Independent from the budget governing of the finances at all levels.


3.6. The state forest administration is constantly engaged with problems emerged from and directed towards its internal organization. The possibilities of the ownerships on the forests in their management with different production functions are blocked.
The problems should be directed towards the results from the activities of their own staff and customers.
4.1. At the present moment only the state is making thorough economic realization of its ownership in the forests with functions for wood – harvesting (66% of the forest fund).
A chance should be given to other types of property – municipal, private, monastic, cooperative, etc.
4.2. From the management and economy of the recreational forests only expenses in the budget of the National Forest Management and the other owners are accumulated and the incomes – realized in other systems.
Price mechanism through which the other publicly useful functions of the forests should be evaluated.
4.3. Great dependence of the incomes in the budged of the National Forest Management on the utilization of timber.
Increase in the incomes from other sources – other uses.
4.4. Bureaucratic and in many cases corrupted logistic system in the utilization of timber and the distribution of incomes from their realization along the chain – foresters – wood harvesting and transportation holdings – wood – processing companies.
New economic order in the realization of the utilization of the forests.


5. Extremely hard pressure by the users of timber, game and non-timber resources in the forest ecosystems, accompanied by illegal activities in the forests.
Efficient state control on the users, sophistication of the forms of trade, new kinds of information about forestry's and customers.
6. Destroyed system of qualification and prequalification. Full lack of trade skills and motivation for better results.
Binding payment with end results.
7. Forest industry recently is structurally disbalanced according to forest resource potential.
Stimulation consumption of round timber, industrial timber and harvest of timber for the local population's needs.
8. There is no close connection between forestry and agriculture, live stock farming and use of non-wood forest products.
Low financial and consultancy support to new agricultural forestry.

Икономически изследвания
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*Nikola Grigorov*[1]
*Radulina Tzolova*[2]

# CONCENTRIC CIRCLES AROUSING THE PROCESSES TOWARDS SUSTAINABLE DEVELOPMENT OF THE ENTERPRISES FROM WOOD PROCESSING INDUSTRY

*The transition to market economy and the restructuring of the production and ownership in Bulgaria, as a whole and specifically for the enterprises from forest industry, raised the questions for their adapting to the new conditions and their forthcoming integration to the European market space. In this connection the article discusses the role and significance of the branch territorial formations (clusters), of the base production capacities, of the entrepreneurship incubators, of the R&D centers, as main factors influencing on the increase of the competitiveness of the wood processing and furniture enterprises.*
*JEL: L13, O13*

In the last years the wood processing and furniture production sector endured serious changes in the ownership structure, juridical status and number of enterprises (firms) dealing with production and trade of wood and furniture. The development of the market economy is a reason the production organization to change and form. Today the wood processing and furniture sector already has over 4500 small private subjects, a little more than half of which are acting. The share of SMEs in the structure of the working enterprises is almost 99%. For comparison, in the beginning of the transition to market economy in 1990 the total number of state enterprises from the wood processing and furniture industry was 85, most of them large.

Some questions follow logically – to which direction the change in the ownership, the increased number of enterprises (firms) and their structure led? What is the production volume, its effectiveness and competitiveness in this situation on the domestic and international market?

The general conclusion we can draw out is that, first, in 2000, compared with 1990, the production has decreased in value about 10 times in the wood processing and about 6 times in the production of furniture (see table 1), in case there is a usable resource of wood from the forests for development of the different productions.

[1] *Nikola Grigorov is Ass. Prof. In University of Forestry – Sofia.*
[2] *Radulina Tzolova is PhD student in University of Forestry – Sofia.*

Table 1

Production, Import and Export of the Production of the Wood Processing Industry

| | Production | | Export | | Import | |
|---|---|---|---|---|---|---|
| | 1990 | 2000 | 1990 | 2000 | 1990 | 2000 |
| | (mill. LV) | (mill. USD) | (mill. LV) | (mill. USD) | (mill. LV) | (mill. USD) |
| Wood processing (timber without furniture) | 1357* | 124,7 | 81* | 68,7 | 33* | 21,5 |
| Furniture | 553* | 91,4 | 56,4* | 48,2 | | 11,9 |
| Total for the wood processing industry and the production of furniture | 1910* | 216,1 | 137,4* | 116,9 | | 33,4 |

* In 1990 Bulgarian LV is convertible to USD.

Another characteristic of the transition period is that despite the smaller production volumes in 2000 the export of furniture and production of wood processing has similar values to the reported in 1990. To some extent the same goes for the import too. From the total production of 124.7 million dollars in the sub-branch “Wood Processing” in 2000 is realized export for 68.7 million dollars, of which 37 million dollars are the incomes from production of veneer, plywood, flaggy materials. For the same 2000 production of furniture for 91.4 million dollars is reported, of which the export was 48.2 million dollars including chairs for 25.4 million dollars. This structure of furniture export is not very favorable, having in mind that the production of chairs uses valuable massive wood, mostly beech, which resources in our country are limited and tending to decrease.

In 2000 the import of wood material and wood products was 21.5 million dollars and of furniture – 11.9 million dollars. So with total export of 116.9 million dollars the total import was 33.4 million dollars.

The conclusion we can make is that despite the difficulties accompanying the development of the industry, its production is accepted well on the European market. But the lagging behind in the production, efficiency, quality, material-intensity and energy-intensity of the production is considerable, even compared with the other Eastern European countries. This inevitably influences also the prices of the production for export and for the domestic market as well as its competitiveness.

Which are the main weaknesses and problems in the analyzed transition period in the development of the wood processing and furniture industry? The developed middle-term strategy till 2005 for the German-Bulgarian cooperation with participation of specialists from the National Forest Office, Branch Chamber on Wood Processing and Furniture Industry, Forest University and others, shows the following groups of problematic areas:

1. Material technical base of the enterprises

Old and amortized equipment and technologies, strong need of capital. Insufficient investments in R&D. Insufficient information about donor and credit programs.

2. Management of the material technical base of the enterprises

Weak skills for planning, personnel management, management the investment processes, production and risk, lack of vision and short-term planning horizons.

3. Marketing activity of the enterprises

Lack of professional and systemized marketing in the management of the enterprise. Insufficient maintaining and following of business contacts on domestic and international markets by many of the firms.

4. Production quality

Insufficiently reliable and sustainable quality. Weak knowledge of the technical standards and quality norms (national and international). Insufficient introduction of quality and control management systems (to 2002 less than 10 firms have been certified by ISO 9001). Lack of laboratories for testing the production.

5. Interaction between the firms

The firms declare willingness to cooperate with other producers but in fact they have no concept to form strategic analyses and cooperations. Ineffective horizontal links in the branch. Lack of established territorial formations (clusters).

6. Scientific service

The Branch Chamber on Wood Processing and Furniture Industry has the necessary capacity to provide the desired services together with the necessary quality. The national agencies do not coordinate well their interrelations on horizontal (between each other) as well as on vertical (between them and the firms) level. There is not enough joint work with project and development bases and design institutes, the Forest University and the Forest Institute at BAS. Insufficient financing of their activities. Insufficient applying of the scientific achievements (know-how transfer).

The conclusions we can draw out are that the forest industry has endured significant quantitative changes concerning the introduction of the enterprises in real market economic environment. But the same cannot be said about their quality state – technique, technology, management, cooperative links, scientific service, production competitiveness.

What policy should be followed so that the conducted already quantitative accumulations will lead to quality changes in production for stable and sustainable development of the branch? Which are those concentric circles, with the help of which the realizing of this policy can be possible? What is their role for activating the human potential, material, financial and information resources?

According to us the directions of change concerning the enterprises from the forest industry and connected with them scientific, public and state institutions and offices are as follows:

## 1. Establishing Base Production Capacities

In the transition period to market economy Bulgaria endures dynamic processes concerning increase of the import of furniture, details and elements for furniture. The quantities of import of improved (glulam, MDF, etc.) in format as well as in details, usually masked and laminated, and of other semi-manufactured wood articles are significant.

This process is accompanied with and is a result of the conducted structural change in the different productions, which led to significant increase of the number of small and medium-sized enterprises on account of the large ones. Those SMEs form the image of the wood processing and furniture industry in Bulgaria. They do not have financial capacity to invest funds in expensive equipment for finish processing of the materials they use, and it is not economically advisably. That is why they buy on the market (in this case mostly from import) ready improved slabs (laminated and masked, veneered with natural veneer, etc.) or details and diversify the assortment and quality of the final production.

In order for our wood processing industry to meet these needs, the policy of the state and the branch chamber has to be directed towards initiatives and support of the desires and intentions of the entrepreneurs to create base enterprises in the branch, which will be technological centers for increasing the degree of processing of the massive wood, of the slab and list materials. Such approach introduces an element of sustainable development of the production of shaped materials of veneer, slabs of fragmented and carded wood, plywood, and at the same time the increased production scale is a premise for using new contemporary technologies, with which the processing and use of less important wood source for their production is possible.

This assumption is directed towards the use and development of the existing nowadays production capacities, coordinated with the regioning of the source and the users. The production technological models of configuring base capacities in Bulgaria will have a multiplicated effect on:

- Economic effectiveness in the base enterprises as a result of the increased production scale, increased degree of processing of the wood source and materials for it, opportunities for introducing more perfect technologies and more fully and complex use of the wood source.
- Economic effectiveness in the firms-consumers producing furniture, joinery, wood precast units and other wood articles, which production will be on higher level concerning quality and assortment, their productivity will significantly increase, as well as the opportunities for increase of their production potential based on the provoked by the interaction with the base enterprises technical-technological rearming.
- Effect will be realized also for the traders and end users as a result of additional variation in the structure and increase of the functional and esthetical specifics of the sold and bought goods.
- Strengthening the positions in export of furniture due to increase of competitiveness of the domestic production on the international markets.

## 2. Forming Territorial Branch Complexes and Cooperative Networks

The national plan for regional development for the period 2000-2006 states that "… The national economy is strongly dependable on its real components and only the market powers cannot insure balanced regional development…" On the other hand this development is connected also with the pre-accession instruments for associating Bulgaria to EU and social-economic coming together.

The objectives of the regional development policy are mainly creation of premises for sustainable and balanced development of the regions, softening the regional differences in employment and incomes of the population and opening the national space and supporting the regional and local development through cross-border cooperation.

The regions for purposeful impact are 77, determined with the plan for regional development. They cover 63% of the national territory and 73.9% of the population in the country. We should note that territorially 24.3% of these regions are covered by the group of underdeveloped rural regions. This group ranges mostly villages and small towns with mostly rural life style and agricultural and forest function. This group includes Stara Planina, Sredna Gora, Rila-Pirin, Rodopi, Sakar-Strandga

mountain regions and West outlying districts. There the main sources of wood concerning forest area, wood stocks, annual use are focused. These are also regions with established main wood processing enterprises for primary mechanical processing of the wood. During the years of transition to market economy many new small and medium-sized enterprises were established in these same regions for wood processing as well as for production of furniture and other wood goods.

Together with the sewing industry, information technologies, food industry and tourism the wood processing and furniture industry are identified by the government of Bulgaria as most suitable areas for creating cluster formations. The reason is that the image of these economic sectors is formed mainly by SMEs, for which the area of development providing them biggest advantages is the cluster structure. The branch territory production structures (clusters) are formations of working closely geographically enterprises, which productions belong to the same branch. As a result of the interactions between the branch enterprises higher effectiveness is achieved based on deepening the specialization, increase of technological potential, opportunities for increase of the adapting, development of innovation and increase of the competitiveness.

*Characteristics of the development of the branch industrial potential in the mountain regions of the country are:*

- The main sources of wood concerning forest area, wood stocks, annual use are focused in the mountain regions.
- Main wood processing enterprises are situated in Stara Planina, Rodopi and Rila-Pirin mountain regions. Low transportability of wood source and high transport costs are reasons why the enterprises for primary processing of the wood are established exactly in these regions, sources for wood. The impact of these factors is also a reason for their low mobility.
- Enterprises for wood-based end-production – furniture, joinery, wood precast units – are situated in the big consumers centers. The reasons for the bigger mobility of the end-production capacities in the big consumers centers are increased transportability of the used materials after the primary processing of the round wood, more certain realization of the production, presence of qualified labor force.
- Acquired wood resource from the mountain regions of West outlying districts, Sredna Gora and Sakar-Strandga in its main part is transported and processed in enterprises for primary processing in the valley areas. The reasons lie in the weakly developed industrial potential and settlement network in these regions, poor forest resources and migration processes observed there.
- Due to the clear differentiation in territorial position of the wood processing enterprises and the enterprises producing furniture, joinery, etc. (the first are in the mountain regions, and the second are in the big towns and consumer centers) there are no clear technological or cooperation links between them. The middle part of Stara Planina region is an exception to a certain extent.

The conclusion is that the enterprises, despite being open to suppliers and markets, are an autonomous closed system, in which each one of them solves the problems alone.

Despite this situation, we should note that one of the first created branch clusters in Bulgaria belongs to the forest industry and is established in 1999 in Razlog. It unites about 30 small enterprises, each of them participating with production of

details or elements for the final article. Organizational work on establishing similar territorial production complexes in Velingrad and Troian run now.

### 3. Following Innovation Policy through Entrepreneurship Incubators

These are the so-called centers for "incubating entrepreneurship". Their role is based on common economic interests to join for creating opportunities for development of the different production entities, for increase of their potential and competitiveness. The joining can be based on the use of some of the following indications:

- classic business incubators (joining enterprises with different products);
- industrial zones – focusing enterprises with common interests;
- zones for export processing of resources and materials;
- scientific (technological) parks;
- territorial production complexes and cooperative networks;
- virtual business incubators which offer services in cyber space.

Especially useful are those business incubators which give real support on developing a business plan, drawing the market segments in consumers groups, establishing distribution channels and competitive advantages, methods of management and administration, etc.

With the help of the firms incubators transfers of know-how are made, especially in the small and medium-sized innovative enterprises. They support and limit the risks accompanying any economic organization in the search and provision of new solutions for access to technological know-how and information, capitals, accompanying services and infrastructure, etc.

The analysis shows that most dynamic development happens in those regions, where the so-called industrial or innovation clusters are formed – complex of enterprises (industrial companies, research centers, scientific institutions), organs of state governance, unions, public organizations, etc. – based on territorial concentration of network of specialized suppliers, main producers and consumers, connected with technological chains. The cluster structures ease the access to capitals since the geographic concentration of firms has big attracting power to the investors and joint ventures.

The significance of forming and strengthening the regional innovation clusters can be noticed also by the attitude of the USA government on this matter. They place them among the most important national priorities. The report of the National Council of Competitiveness in 2001 states: "… In the era when the national borders become less important with the global movement of capitals, technologies and talent, the innovation engine become local as never before".

What is the situation in Bulgaria? Do entrepreneurship incubators exist and are there premises for them?

In certain regions the country has already a newly formed and revealed industrial potential. These are regions as the conglomerates Haskovo, Asenovgrad, Plovdiv; Lovech, Troyan, Teteven; Stara Zagora, Nova Zagora, Kazanluk; Varna, Bourgas, Sliven; Sofia, etc. Quantitative changes occurred, which in some economic entities are solved in technical-technological way too. But there are no quality changes, subdued to a common course towards interaction between the different economic entities, towards leading centers, concentrating the role of conductor, coordinator

and multiplicator of the power of science, innovation, infrastructure, etc. This is exactly the direction in which the work must be done, so that the innovation processes for technical-technological rearming of the different productions, increase of economic potential by regions in the country are activated for homogenizing the economic environment and its integration to the European environment.

## 4. R&D Activity (Scientific Service)

For the increase of the economic potential of a certain country significant is the attitude, which it has towards the research studies, developments and introductions, the place which the policy of scientific service of different activities in part and as a whole occupies. Japan is an example for achieved results from such approach. As a result of its long-lasting science-technology policy in the last two decade of the 20th century Japan encountered significant results, revealed in increase of GDP per capita and achieving of levels of about 80% compared with the values of the same index for USA. This policy is conducted mainly in a few directions towards:

- increasing the role of the state in the development of the national science-technology potential of the country based on expansion of the financial base for research and development; stimulating the fundamental science;
- expanding and improving the cooperation of the main sectors of the science – production, academic and state; improvement of the training of research staff;
- activating the regions and local administration for strengthening their role in insuring the science-technical progress of the country, increasing the effectiveness of the science-technical information;
- activating the development of international contacts in science-technical area together with internationalization of the Japanese science;
- in order to achieve results in realizing the state policy in this period the increased scientific expenses of GDP must also be noted. At the end of 20th century they reached about 3%.

The policy of USA is not different than the one of Japan. At the forum “Science and Technology Form 21st Century” in 1997 president Clinton stated: “… we enter the century of technology, information and global competition, where the leading technologies have always been the core of competitive advantage of USA” (…) Exactly the achievements, which the country realized in the 90s of the 20th century are due to the technological changes in the society as a result of the innovations. The technological changes concern areas as trade (internet), bank and finances, biotechnologies, robotisation, etc.

The executors of programs of R&D activity in USA have a free use of state production equipment and scientific laboratories, concessions for purchase of necessary resources and materials, concessions on corporate profits, advance payments on the orders, pre-preparation of science-technical and production staff and specialists in foreign companies, research centers or universities, etc.

Stimulating the technological development of the enterprises for increase of their competitiveness and vitality is a long lasting policy for the EU countries as well. For this purpose global and specific for each country programs at research, production, political level are developed. The main directions in which the government policies run are support of the new technologies firms, of renewing the technological

potential in traditional for the country branches, of the firms in their management skills, marketing, information service, employees qualification, etc.
What is the situation of the scientific service of enterprises and firms from wood processing and furniture industry in our country today? We have to note that the connections between the economic organizations, which in the past had its own R&D departments and offices, with central research organizations, institutes, colleges, higher schools and centers is broken, with few exceptions, due to their physical liquidation. This is the reason why the economic organizations and the state will draw their attention to the existing scientific potential from the branch institutes and scientific departments, Forest University, Forest Institute at BAS, etc. These organizations could successfully participate in solving many scientific, technical, technological, project-constructing, organizational and information service issues at branch, regional and national level in the area of forest industry, for the needs of each enterprise and for the interaction between them in regional and international plan.
Of course, the development of the activity of these centers should be carried out with the help of the state, which should face the problems of the science and R&D activity through the relevant form and ways of financing and support. On the other hand, the firms and enterprises from the production should realize the necessity of technical-technological rearming of their material base in order to survive and have sustainable development.

**Conclusion**

The technical-technological rearming and increase of the scale of different production capacities, producing shaped materials, slabs, veneer, plywood, furniture, etc. in the branch, aiming increasing the degree of processing the wood resource in them and turning them into base enterprises, will give opportunity to increase the total level of production in wood processing and furniture industry and also increase their competitiveness based on links with other enterprises from the branch and development of production and technological specialization.
The specific sources of wood in Stara Planina, Sredna Gora, Rila-Pirin, Rodopi, Sakar-Strandga mountain regions and West outlying districts, in which the main production capacities for primary wood processing are concentrated. In the years of transition to market economy the existing small and medium-sized enterprises were restructured and new ones were established. They can become natural economic environment for establishing branch territorial formations (clusters) with which the industrial branch potential will increase.
Another opportunity, adding to the branch formations for increase of the innovative ability of different enterprises from the sector, is their participation in future entrepreneurship incubators in regions with developed industrial potential. This form of integrating organizations definitely has an attractive power for gathering investors and establishing innovative climate through which SMEs get access to capital, technological know-how, scientific technological information, etc.
For the total development of the branch is necessary to note also the role of the state, the Branch Chamber and the scientific organizations for recovering the broken link between the production and the science and scientific service, which certainly will contribute to the increasing of the science-technical branch potential, financing and stimulating the research, project-constructing and R&D activity,

forming innovative, flexible and competitive production systems, their integrating to the European economic space.

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*Diana Ivanova*[1]
*Venelina Tsvetkova*[2]

# MANAGEMENT AND MARKETING PROBLEMS OF WOOD PROCESSING AND FURNITURE PRODUCTION ENTERPRISES

*The paper presents results of a survey in the wood processing and furniture sector. It is identified that there is no system for obtaining professional qualifications; inadequate qualifications of middle and upper management; the strong protection of the employees by labour legislation hinders management; difficulties in employing specialists with good qualifications; lack of motivation in employees; limited opportunities for efficient improvement of qualifications.*
*It is summarized that to deal with the problems facing the Bulgarian woodworking and furniture production companies, solutions should be pursued in the following directions: establishing a strategic basis for company management; improving the efficiency of investment process management; developing a well-functioning system for collecting and maintaining market information for the sector; activating the international marketing; improving the qualifications of managers and entrepreneurs in the area of management and marketing.*
*JEL: L10, O13, J31*

For several years now the wood processing and furniture production industry in Bulgaria has been changing dynamically. The market economy has posed new challenges to the companies in this sector.
*According to an expert opinion one of the problem areas to be considered is the qualification of managers and entrepreneurs in the field of management and marketing. A radical change is needed in the way of thinking as well as in the complex company management.* This opinion is confirmed by several consecutive surveys of the sector.
The data obtained from the survey of the state, problems and necessary changes in the wood processing and furniture production enterprises in Bulgaria and the survey of the processing enterprises' demand for wood show that ***the sector experts identified the following specific problems with qualifications:***

- no system for obtaining professional qualifications;
- inadequate qualifications of middle and upper management;
- strong protection of the employees by labour legislation hinders management;
- difficulties in employing specialists with good qualifications;
- lack of motivation in employees;
- limited opportunities for efficient improvement of qualifications.

Many companies, which stated **they collaborated with research institutes**, evaluated this collaboration as insufficient.

[1] *Diana Ivanova is from University of Forestry, Sofia.*
[2] *Venelina Tsvetkova is from University of Forestry, Sofia.*

As summarized data show (Table 1) 35% of the surveyed companies collaborated with research institutes.

Table 1

Companies Collaborating with Research Institutes by Number of Employees

| Number of employees | 1-10 | 11-50 | 51-100 | >100 | Total |
|---|---|---|---|---|---|
| Number of companies collaborating with research institutes | 2 | 3 | 2 | 3 | 10 |
| Number of companies not collaborating with research institutes | 3 | 10 | 2 | 3 | 18 |
| Total | 5 | 13 | 4 | 6 | 28 |

Another serious management problem of the companies in this sector are the activities related to ***planning and developing plans for various time periods.*** ***Mostly the main reasons for lack of long-term company strategy are stated as follows:***

- dynamic changes in market demand;
- lack of market information;
- dynamic changes in the common economic environment in Bulgaria;
- lack of time and resources for developing the strategy.

Most of the difficulties related to the development of company strategies resulted from **the inability of managers to cope with the new marking conditions** due to **the unsatisfactory level of their management skills**. This problem reflects on the weaknesses in planning, short-term orientation and lack of perspective of most companies.

The complicated and dynamic environment of the new time has transformed company management into a hard task for Bulgarian managers. The problem at the top of the list of problems to be resolved by company management, including the management of furniture production companies, is **achieving better competitiveness**.

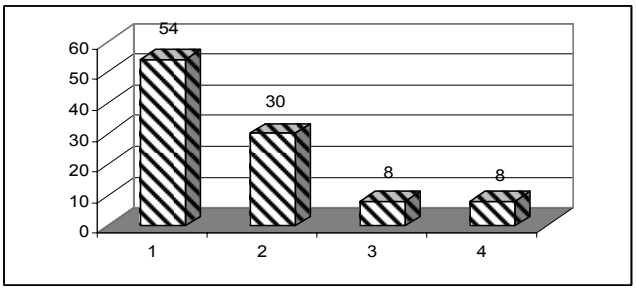
Competitiveness is related to the existence of advantages with regard to machines, technologies, marketing, employees, products and quality which is directly correlated to another even "hotter" problem – **investment**.

The extent to which the Bulgarian furniture production companies manage their investments strategically can be shown by the sector survey of 26 leading furniture production companies aiming at growth and competitiveness improvement, and which are supposed to be more active in investing.

The results from the survey of investment management in furniture production companies show the following:

Figure 1

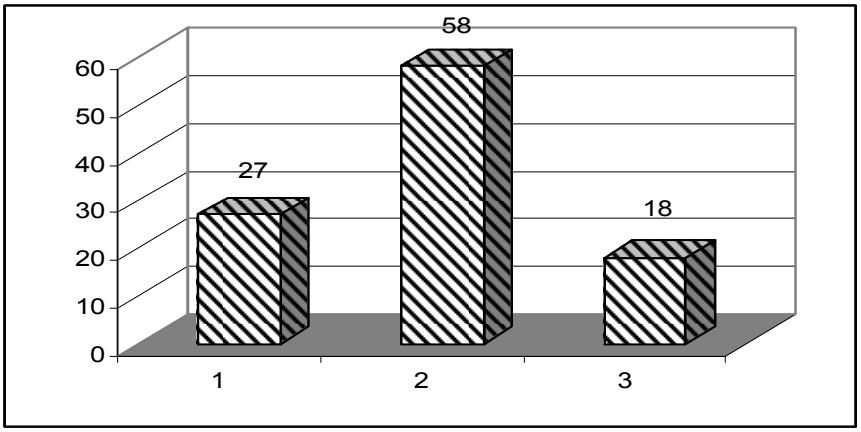
Distribution of answers of the question: Is it necessary to have a written investment strategy, which is known to everybody in the company?




*Legend:*
1 – Yes;
2 – Yes, but this is not a current task for us;
3 – No, due to the unsteady environment; 4 – Others

Figure 2

Distribution of answers of the question: Is there an investment strategy developed in the company?




*Legend:*
1 – Yes;
2 – There is an investment strategy which is unwritten and known to the managers;
3 – There is no investment strategy whatsoever

The reasons for the lack of investment strategy were stated as follows:

- by 2 companies (8% of the total number) – due to lack of financial resources;
- by 2 companies (8% of the total number) – because the management is situational;
- by 1 company – due to lack of specialists who are able to develop such.

According to the Strategy for Sector Development one of the main problems of the furniture production companies is ***lack of up-to-date and timely market information***.

This problem is discussed in the survey of the processing enterprises' demand for wood, carried out among the companies. In this survey a question about the main sources of market information was asked.

As shown by the data from the survey of the processing enterprises' demand for wood the enterprises are mainly interested in the following types of market information:

- clients in the country and abroad;
- demand and supply prices of the main products;
- demand quantities of the main products;
- supply quantities of the main products;
- distribution channels;
- offers for demand of wood products;
- legislation related to wood trade;
- advertising information.

The sources of new ideas and know-how are ranked as follows:

- fairs and exhibitions;
- meetings with other companies' representatives and clients;
- press and specialised publications;
- Internet.

## Conclusion

To deal with the problems facing the Bulgarian wood processing and furniture production companies, solutions should be pursued in the following directions:

- establishing strategic basis for company management;
- improving the efficiency of investment process management;
- developing a well-functioning system for collecting and maintaining market information for the sector;
- activating the international marketing;
- improving the qualifications of managers and entrepreneurs in management and marketing.

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*Kipra Djevizova*[1]

# eSTRATEGIES FOR PROMOTION END-USE EFFICIENCY PRODUCTS AND SERVICES ON THE LOCAL MARKET (Some Results of a Survey of Forestry and Non-Wood Products, Sofia Area)

*The paper presents results of analysis of the framework of traditional and Web channels which affect achievement of transformation of marketing business strategie. We study the fulfillment of business strategies for promotion and attracting consumers to support solving the traditional public problems in the area of urban consumption - market for end-use efficiency of forestry and non-wood products on traditional and Web channels (an example: parquet and raspberry productions, Sofia area). Our empirical results show slow infiltration of the new ways of virtual promotion for end–use forestry products and services on the local market.*
*JEL: R22, L19*

## Introduction

The enterprises began 21st century using Internet as a business activity environment for marketing communication channel for promotion products/services via developed eStrategies. In competitive economy customers may choose from whom and how to buy, receiving information for products and services by traditional information channels (radio, newspapers, TV, mail, magazines, billboards) and/or using electronic channels (searching engine, e-mail, SMS, MMS) in virtual space. Marketing concept is the base of market-oriented business (the paradigm of 6 Ps – product, price, promotion, place, people and performance, and the paradigm of 7 Cs – content, communication, customer care, community, convenience, connectivity, customization) [1, 2]. The eStrategies provide a basis for successful business usage of Internet today: when it comes to quality, price and services for customers the enterprise must always provide exclusive value, better than competitors. Marketing combination of management activities should find the best way to fulfill customer needs on the local market and follow new corporate changes. The internal dimensions of marketing are related with collaboration between departments and creation of databases about customers on the local market and business partners, and the external ones – with developing partnership relations (customers, suppliers and distributors).
Internet today is the environment for realization of basic business functions – communication, transaction and distribution functions. Communication function is to inform the present and prospective consumers of the availability and features of the products and related services (promotion). Transaction function facilitates

[1] *Kipra Djevizova is in Institute of Control and Systems Research – BAS, Acad. G. Bonchev Str. Bl. 2 , 1113 Sofia, Bulgaria, Tel: 0887 057250, E-mail: kdjevizova@icsr.bas.bg*

economic exchanges between producers and consumers of end-use efficiency products. Realization of distribution function on Internet is possible only for the goods of information type (price changes, promotion period and other business activity initiatives).
The purpose of marketing is to create exchanges that satisfy consumer and corporate goals. To achieve this purpose marketing involves two important tasks: communication and operating task. Communication task can be considered as information primarily conveyed through promotion, price, product label, etc. This information is used to position the product on the market and to inform and persuade present or potential customers. A marketing channel can be viewed as performing functions to support the flow of products and information.
Internet is capable to transform the communication process and the consumer need satisfaction through new consumer processes [6, 7, 9 and etc.]. A consumer process is a collection of tasks or steps that a consumer passes to achieve a goal, usually purchasing and consuming a product.
During the purchase process many consumers experience needs such as product knowledge, interaction with provider of goods, aggregation of related and required services and customization to suit individual needs.
As a communication media the Internet is different from the traditional mass media. Using the Internet consumers can gather information about products and services, communicate with other consumers and corporate for related products and services and complete transactions. Corporations can use the Internet to provide product information to consumers, collect information about consumers, and communicate with consumers and partners.
Two-way communication capability and information processing power of connected computers is a key to building interactive relationships with consumers and offer them personalized marketing messages. Interactivity enables a consumer to seek and access more information using databases and search engines, and allows the marketer to have an electronic dialogue with each consumer on a personalized basis.

## A Framework of Traditional and Web Channels in the Mining of Transformation Business Strategies

The Web and traditional retail channels differ in fundamental ways, which we summarize on Table 1. These differences in channel characteristics imply that different channels are appropriate for different products. Even if a product can be sold simultaneously on the Web as well as through traditional channels, the marketing strategies are likely to be different for each channel. There are several factors that affect the decision to use a channel and among them the type of product and the type of market are important. There are two levels of presence that organizations can have on the Web. The first level is to use the Web to communicate with their consumers, provide them product information and other information-based services. The second level is in addition to providing information to sell directly to the consumers over the Web, bypassing the retail channel (this opportunity is real for other type products, it is not real for ePayment and end-use efficiency forestry products on this local market).
The implications of this strategy, when the retail channels are independently owned, are not clear at this moment. Companies following this strategy can use the

two channels to enhance one another, explore different market segments using the different channels or allow the Web channel to cannibalize the traditional retail channel. We summarize the marketing needs and the strategy types on Table 2.

Table 1

Comparison of Traditional and Web Channels ([8], p. 370)

| Characteristics | Traditional Retail Channel | Web-Based Direct Channel |
|---|---|---|
| Product distribution | 1.Critical infrastructures are physical, such as warehouse and stores.<br>2. Exploits product bundling and economies of scale in shipping to keep distribution costs low.<br>3. In-store inventory.<br>4. Products in inventory and display are immediately available. | 1. Critical infrastructures are electronic, such as Web, e-store fronts and e-payment systems<br>2. Ships products to individual consumers in small lot sizes.<br>3. Virtual inventory.<br>4. Products always require lead time for delivery. |
| Customer service | 1. Reaching consumers usually limited by geographic location and time.<br>2. Provides physical services, such as consultation, testing and installation.<br>3. Support in-person interaction with sales person.<br>4. Sales support, limited by knowledge and information of retailer, can focus on the shopping experience. | 1. Reaching not limited by geographic location and time.<br>2. Provides information-based services, such as searches, product information and online help.<br>3. Uses electronic databases.<br>4. Sales support can interactively link to use knowledge distributed across the Web; service support depends on the update service a site provides. |
| Product promotion | 1. Product promotion usually targets aggregate consumer segments.<br>2. Product display designed to aggregate consumers.<br>3. Product display is usually static and reflects aggregated consumer choice.<br>4. Suitable for experience goods that need personal inspect or trial. | 1. Product promotion customized to individual consumer.<br>2. Product display can accommodate more personalization.<br>3. Product display can adapt in real time to suit the changing preferences of individual consumers.<br>4. Suitable for search goods that can be evaluated by information and images. |
| Market intelligence | 1. Provides aggregated market demand and preference information to the marketer.<br>2. Information flows through intermediaries, possibly causing distortion. | 1. Market has direct access to market demand and preference information.<br>2.Information flows directly, reducing distortion.<br>3. Consumers can easily collect information on competing products. |

Table 2

Channel Management Strategies (eStrategies)

| Marketing Needs | Channel Management Strategy |
|---|---|
| • Functional products with low segmentation<br>• Highly differentiated products<br>• New markets not served by traditional channels<br>• New consumer needs, new markets familiar with Web channel and not served by current products<br>• Existing consumers can be served better through additional channel<br>• Traditional channel challenged by Internet-only businesses<br>• Existing business model is too restrictive for new channel | • Traditional channel promotes Web<br>• Web enhances traditional channel<br>• Web channel used to explore new markets<br>• Add new product lines only on the Web<br>• Integrate Web and traditional channels<br>• Cannibalize the traditional channel<br>• Spin-off the Web channel |

## Current State of Internet Usage in Sofia Area

In the last 10 years Internet as media of mass communication grows at a rate faster than any other. According to Nua Internet Survey by March 2004 the users of worldwide network were over 500 million individuals. The average age of users on a global scale is 37.6 and gradually climbs up with “ageing” of Internet as a media. The younger Internet is in a given country, the lower the age limit of the users is. It is obvious though that the use of Internet depends on the standard of living.
The local Bulgarian sociological agency “Alpha Research” has investigated trends and users behavior and established that:

- in 2000 Internet users were 9.6%, in 2004 – 20.7% of total population;
- 40% of all citizens in Sofia area over age of 18 are active Internet users: 37.5% make entries every day, 30% make entries 2-3 times a week, 17.6% make entries 2-3 times a month, and 13.2% less often.
- Citizens in Sofia area use Internet for different motives: 76.5% for e-mail, 69.9% – to search specific information, 42% – to surf out of curiosity, 30.9% – to chat, 8.1% – to play online games, 5.1% – to shop and pay bills.
- The Internet usage by age grouping of citizens is: most active are individuals between age of 20 – 29, while students in schools and universities represent 40%, individuals over 60 add up to merely 0.6%.

The commoditization of Internet for producers and customers activity depends on deployment of Internet infrastructure and government policy and non-government organization behavior. Most recent undertaking of Internet Society – Bulgaria is the initiative under motto “PC at home” is the one the first activities followed by annual exhibition “Expo” of Bulgarian Associate on IT and other. The more new communication technologies and their applications are implemented, the more enhanced the development of urban consumption is.

## Case Study 1

We did a research about the existing of some of the most typical forestry products and services (for example parquet production) on Internet pages and corporate offers. The promotion of the parquet types, suitable for common residential and public application, is the basis for research of corporate business strategies in the local Internet space. The realized corporate business strategies, investigated by the customer information available on their web-sites, are presented on Table 3. The main conclusions of this research are:

1. The way a corporation shows the information on offered goods and services on its own site shows the estimation for possibilities of Internet as an environment for business communications and transactions. The information for the local users of the corporate sites (Ela-Bg OOD, Space OOD, Vidira, EOS OOD) does not express the actual profile of the customers of the end-use efficiency of forestry products. On the sites of the corporations with longer history the information is multiaspect and actualized (technical standards, functional features, eco-trends), but nevertheless the possibilities of choice for customers are weakly presented.

Table 3

Product and Services Information about Customers, Found in Corporate's Sites (Illustration of Case Study 1)

| № | Corporate Title | Mail Address | Establish | Offering (Products or Services) | Site | Language |
|---|---|---|---|---|---|---|
| 1. | Space OOD | Sofia, Madrid Str. 7 | 1992 | Parquet production | http://space.bgcatalog.com | BG/English |
| 2. | Petkov-m | Sofia, Industrialna zona 5 | N | Parquet production | http://www.petkov-m.com | BG/English |
| 3. | Vidira | Sofia, "Nadejda" J. Hadgykonstantinov Str. 97A | N | Parquet production | http://www.vidira.dir.bg | BG/English |
| 4. | Parket-Bg OOD | Sofia, Industrialna zona 7 | 1994 | Parquet production | http://www.parket-bg.com | BG/English |
| 5. | ET Limextrading | Sofia, Irechek Str. 2A | N | Parquet production | http://www.limex-lm.com | BG/English |
| 6. | EOS OOD | Sofia, N. Raynov Str. 5A | N | Parquet production | http://www.eos-bg.com | BG/English |
| 7. | Parket OOD | Sofia, Industrialna zona 11 | N | Parquet production | http://www.maksoft.net/parket | BG/English |
| 8 | Planaing OOD | Sofia, | 1995 | Parquet production | http://www.planaing.com/ | BG/English |
| 9. | Sholekoff AD | Sofia, Mussala Str. 10 | 1994 | Parquet production | http://free.top.bg/sholekoff/parket/eng/ | BG/English |
| 10 | Ela-Bg OOD | Sofia, Sv. Troica, Lom Str. 91 | 1992 | Parquet production | http://www.ela-bg.com/ eng_index.html | BG/English |
| 11 | Park Vitosha AD | Sofia, Moskovska Str. 10 | N | Planting&Grassing | http://www.park-vitosha.com | BG/English |
| 12 | Arts Parks OOD | Sofia, Knyaz Boris I Str. 104 | N | A wooden bench, planting | http://artpark.abv.bg | BG/English |
| 13 | Nitan ET | Sofia, Panica Str. 10 | N | Planting&Grassing | http://www.alpin.northbg.com/USLUGI.html | BG/English |

* Sites reached between July and October 2004

Table 4

Information about Producers of Raspberry and Customer Support on Local Corporate's Sites (Illustration of Case Study 2)

| № | Corporate Title | Mail Address | Establish | Offering (Products or Services) | Site | Language |
|---|---|---|---|---|---|---|
| 1. | Sandrinia AD. | Sofia, Kokush Str. 39 | 1999 | Raspberry Production | http://www.sandrini-a.com | BG/English |
| 2. | Shampion-71 OOD | Sofia, Haydushko kladenche Str. 3 | 1998 | Raspberry Production | http://www.shampion-71.com | BG/English |
| 3. | Djeyzi91 ET | Sofia, Plovdisko pole Str. 3 | 1998 | Raspberry Production | http://www.djeyzi91.abv.bg | BG/English |

* Sites reached between July and October 2004

2. The web-pages of the local producers on local markets rarely express clear business strategy. The actualization of the information is done in large time intervals and seldom contains price information and promotional campaigns.

Of 134 companies offering parquet products and services on the Bulgarian market 10 have made certain attempts to use the resources of Internet for establishing relations with would-be customers.

The results are divided into groups of 3 types:

Some companies (4) are presented only by a mail address and offer list (products, services without prices, promotional periods and other).

Another group of companies are presented by uncompleted sites or sites of European manufacturer of parquet production, with missing information about sales offered to Bulgarian consumer. Presented information on the site http://space.bgcatalog.com, the English and Russian versions, is not targeted at the Bulgarian consumer and provides unadapted information about products and services.

The site http://www.kanor.inet.bg (which was in the beginning of our research (June 2004)) remains unfinished whereas pages related to parquet and services are missing and labelled “under construction”, nor is the whole structure consecutive in development.

Four of the companies have developed web sites of their own, where information about products, prices, conditions of delivery and services of installation is submitted.

Parket-bg Co. on http://www.parket-bg.com is presented by visual and text information for the same service. It is different from the rest by offering the on-line access for consumers to ask questions. Through an e-contact on their web-site the consumer is rendered a different and better level of satisfactions. Remote e-contact and consulting in combination with an interactive access to database through Internet and mail enables consumer’s control (http://www.eos-bg.com/contacts.html). This company has achieved flexible and quick response to market modification.

Business activity today is stimulated by tight time terms and hard competition. Companies that are not presented or do not have the appropriate business behavior on Internet are demonstrating a monopolistic conduct on the local market.

**Case Study 2**

The object of this study was investigating a typical public problem: homes provisioning with non-wood products – means traditional solutions for yearly feasts and health consolidation and prophylactic summer and winter times consumption in the households (for example raspberry production, since offers of other non-wood products – cranberry, blueberry, cornel, walnut, christmas trees, parks trees and bushes, etc. on local Internet space are not to be found).

Research has been carried out for promotion of companies that offer raspberry production in the Sofia area displayed on corporate sites. It is shown on Table 4. The information of product and services (which provides actual price information, opportunity of products choice, orders, payments through current Internet facilities) about customers and retail dealers are not to be found.

## Conclusion

The study of the business strategies for promotion and attracting consumers on urban market for end-use efficiency of all forestry products (parquet and raspberry) and services on traditional and Web channels have shown:

- slow infiltration of new methods of promotion for end-use forestry and non-wood products and services;
- local corporate units have realized the role of web presence to enhance the performance of traditional channels;
- they do not strive to increase their web-site usefulness (provision of information, opportunity of products choice, orders, payments and after purchase support through current Internet facilities) and attract target segments on Sofia area market.

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Икономически изследвания
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*Rayna Tzaneva*[1]

# FACTORS AFFECTING INNOVATION ACTIVITY OF ENTERPRISES IN WOOD PROCESSING IN BULGARIA (Some Results of a Survey)

*The aim of the paper is to identify factors, affecting innovation activities of enterprises in Bulgarian wood processing.*
*The database used and the methodology applied are developed by R. Chobanova on the base of OECD Oslo manual requirements.*
*The results presented concern:*
*a) internal and external sources for innovation ideas in enterprises in Bulgarian wood processing, divided into domestic and foreign;*
*b) factors, supporting innovation activities;*
*c) factors, hampering innovation activities.*
*The conclusions and policy making considerations, drawn at the end, concern modernization of the wood processing technology in the context of EU requirements for environmental protection and sustainable development.*
*JEL: O33, O31, Q23*

## 1. General Characteristics of the Survey

Factors for innovation activities of enterprises from the forest sector in Bulgaria were studied by interviews. A questionnaire was used for collecting information on the current state of innovation process in the country. The database used contents results of a survey of 310 enterprises which were conducted under the supervision of and using methodology, developed by Dr. Rossitsa Chobanova, Senior Research Fellow. The methodology applied is developed on the base of OECD Oslo manual requirements and approbated at the Institute of Economics at the Bulgarian Academy of Sciences.

*The distributions of surveyed enterprises in forestry sector is shown in figure 1.*
The newly established private enterprises have the biggest share – 84%. Concerning the staff number – enterprises with staff number 20-49 are the dominant group (Figure 2). The distribution by R&D intensity shows that the first group has the largest share – almost half of the enterprises allocate below 1% of their budgets in percentage for R&D, 17% of enterprises spend 1 – 4% and 7% of enterprises spend above 7% (Figure 3). The distribution by R&D intensity and size confirms the above conclusion.
The analysis of R&D and export intensities shows that they are interconnected. The largest share have "1 – 4%" and "above 7%" groups which proves the positive effect of R&D intensity on export intensity of enterprises.

[1] *Rayna Tzaneva is PhD Research fellow in Institute of Economics at BAS, e-mail: r.tzaneva@iki.bas.bg*

The empirical data on the observed Bulgarian forest sector enterprises shows that funds allocated to R&D are insufficient which leads to unsatisfactory export intensity.

Figure 1

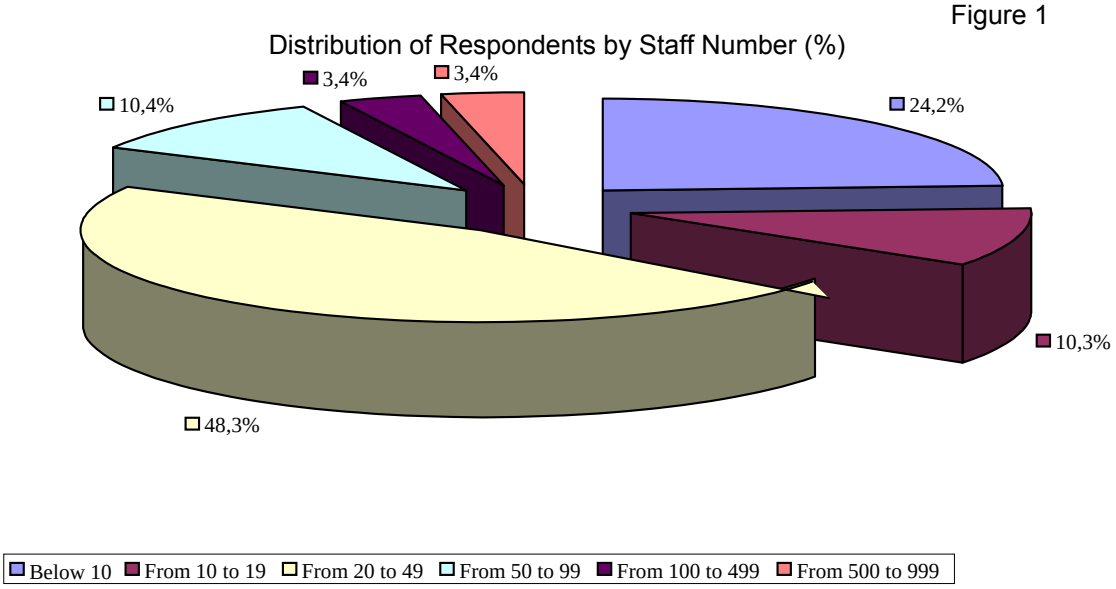



Figure 2

Distribution of Respondents by Ownership (%)

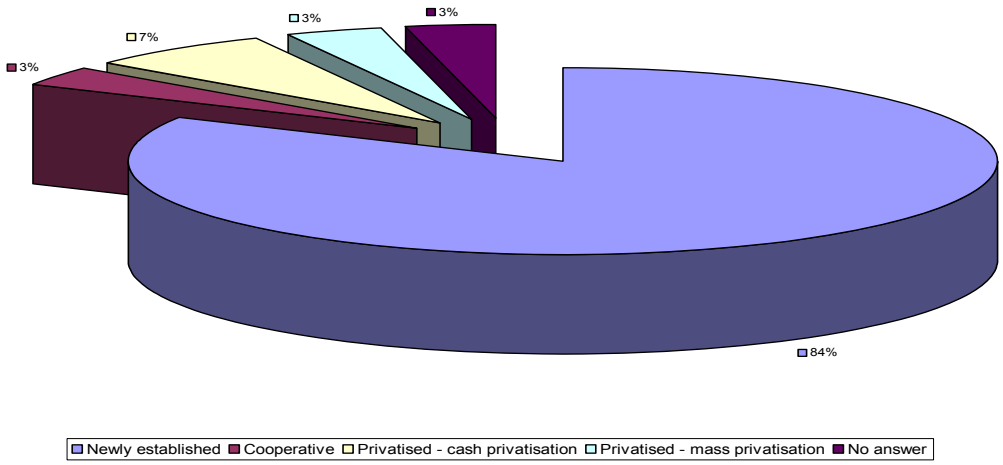


Figure 3

Distribution of Respondents by R&D Intensity (%)

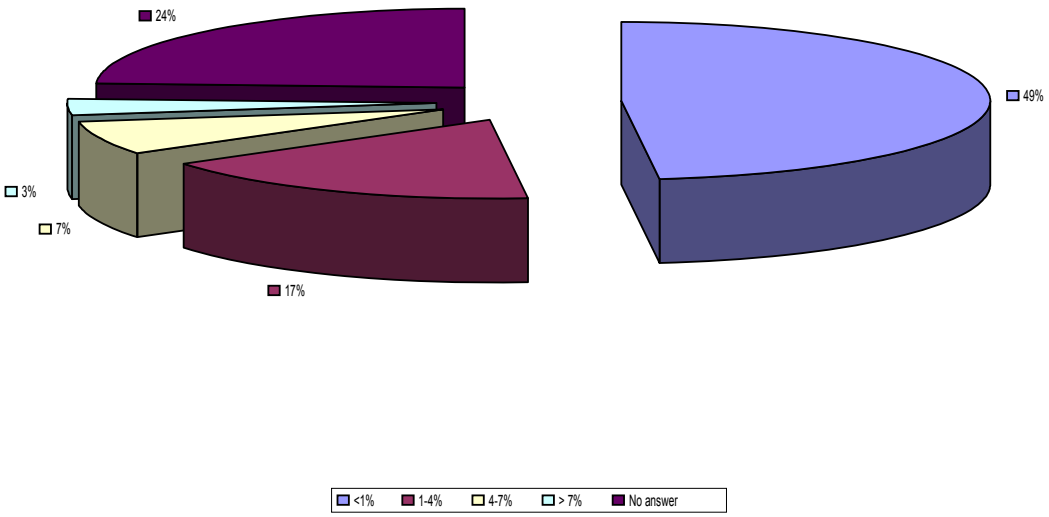



Figure 4

Distribution of Respondents by Export Intensity (%)

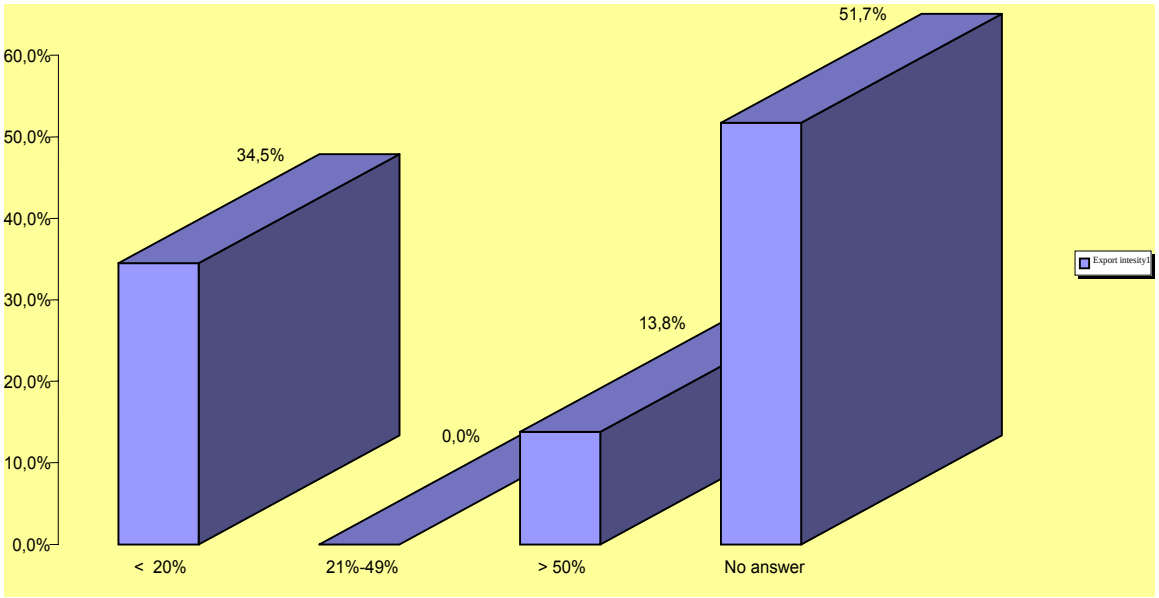


Table 1

Distribution of Respondents by Size and R&D Intensity (%)

| | 0% | < 1 % | 1-4% | 4-7% | > 7% | No answer | **TOTAL** |
|---|---|---|---|---|---|---|---|
| Below 10 | - | 17,24 | - | - | - | 3,45 | 21 |
| 10 - 19 | - | 10,34 | - | - | - | - | 10 |
| 20 - 49 | 17,24 | 17,24 | 6,90 | 3,45 | - | 3,45 | 48 |
| 50 - 99 | 3,45 | - | - | - | - | 10,34 | 14 |
| 100 -499 | - | - | - | - | - | 3,45 | 3 |
| 500 -999 | - | 3,45 | - | - | - | - | 3 |
| No answer | - | - | - | - | - | - | - |
| TOTAL | 20,69 | 48,28 | 6,90 | 3,45 | - | 20,69 | 100 |

Table 2

Distribution of Respondents by R&D and Export Intensities (%)

| | 0% | < 1% | 1-4% | 4-7% | > 7% | No answer | TOTAL |
|---|---|---|---|---|---|---|---|
| < 20% | 3,45 | - | 13,79 | - | 6,90 | 24,14 | 48,28 |
| 21-49% | - | - | 6,90 | - | 6,90 | 6,90 | 20,69 |
| > 50% | - | - | 6,90 | 3,45 | - | - | 10,34 |
| No answer | - | - | 3,45 | - | 3,45 | 13,79 | 20,69 |
| TOTAL | 3,45 | - | 31,03 | 3,45 | 17,24 | 44,83 | 100,00 |

## 2. Internal[2] and External Sources of Innovation Ideas

Table 3 presents the average values of answers (columns distribution) and factors (row distribution). Row 52 has the highest value (0.37). This means that the most important internal source of innovation ideas for forest sector enterprises in Bulgaria are **inter-company stimulation schemes.** Initiatives by managers and managing bodies are on second place. Control on the technological process, specialised personnel and marketing researches are of relatively limited importance.

There could be two groups of external sources of innovations – local and foreign. Empirical data on external sources show that factor 89 – business connections – is the most important – 65.5% of enterprises list it on first place. Another important factors are environmental regulations, health and labour safety regulations, quality standards and local customers and suppliers.

[2] Seven internal for enterprises sources of innovation ideas are listed in the questionnaire. Respondents are asked to mark 1 out of 4 alternatives for using these sources – never, seldom, often, always.

Table 3

Distribution of Respondents by Strength of Internal Sources of Innovation Ideas

| # Internal idea | 0 | 1 | 2 | 3 | No answer | Average value |
|---|---|---|---|---|---|---|
| 48 | 13,79 | 27,59 | 20,69 | 27,59 | 10,34 | 0,34 |
| 49 | 6,90 | 10,34 | 31,03 | 44,83 | 6,90 | 0,27 |
| 50 | 3,45 | 27,59 | 27,59 | 37,93 | 3,45 | 0,23 |
| 51 | - | 10,34 | 55,17 | 27,59 | 6,90 | 0,25 |
| 52 | 17,24 | 24,14 | 13,79 | 13,79 | 31,03 | 0,37 |
| 53 | - | 3,45 | 58,62 | 27,59 | 10,34 | 0,25 |
| 54 | - | 17,24 | 24,14 | 48,28 | 10,34 | 0,25 |
| Average value | 5,91 | 17,24 | 33,00 | 32,51 | 11,33 | |

Figure 5

Distribution of Respondents by Factor N 87 – Business Relation

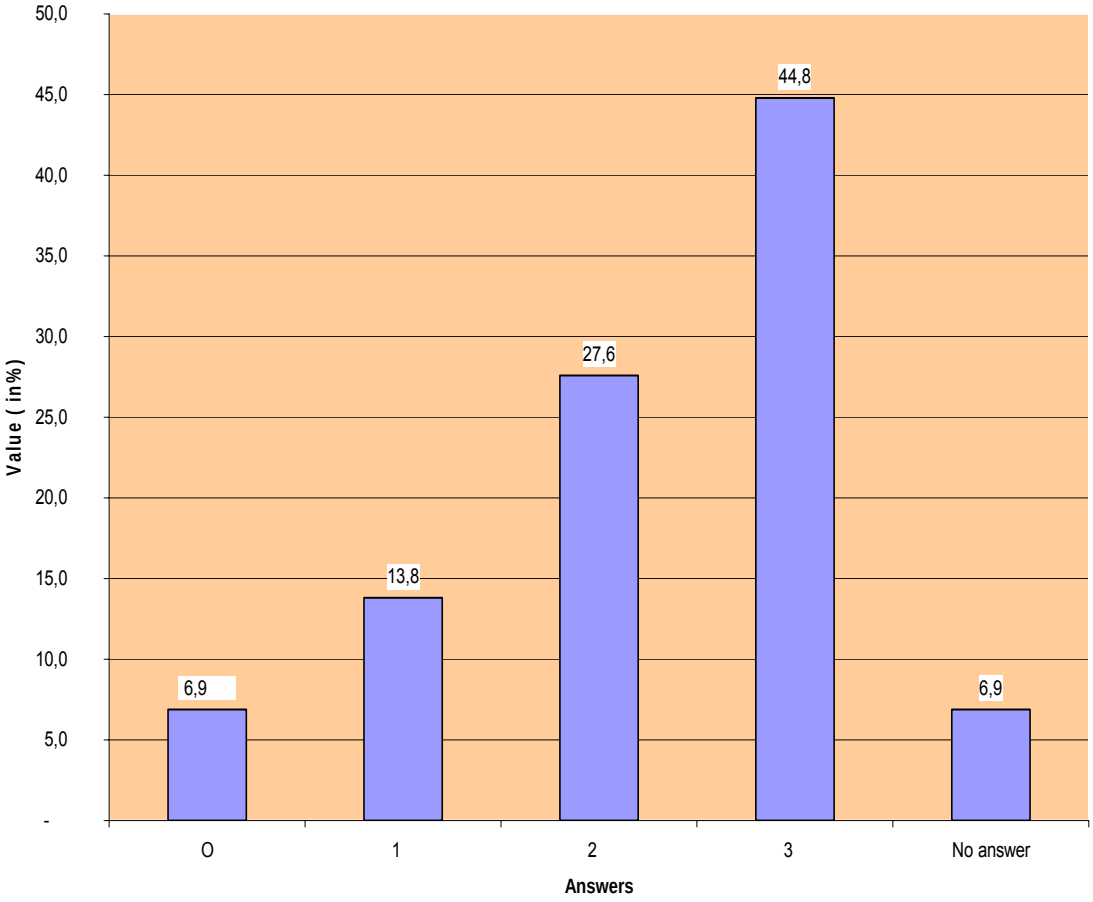
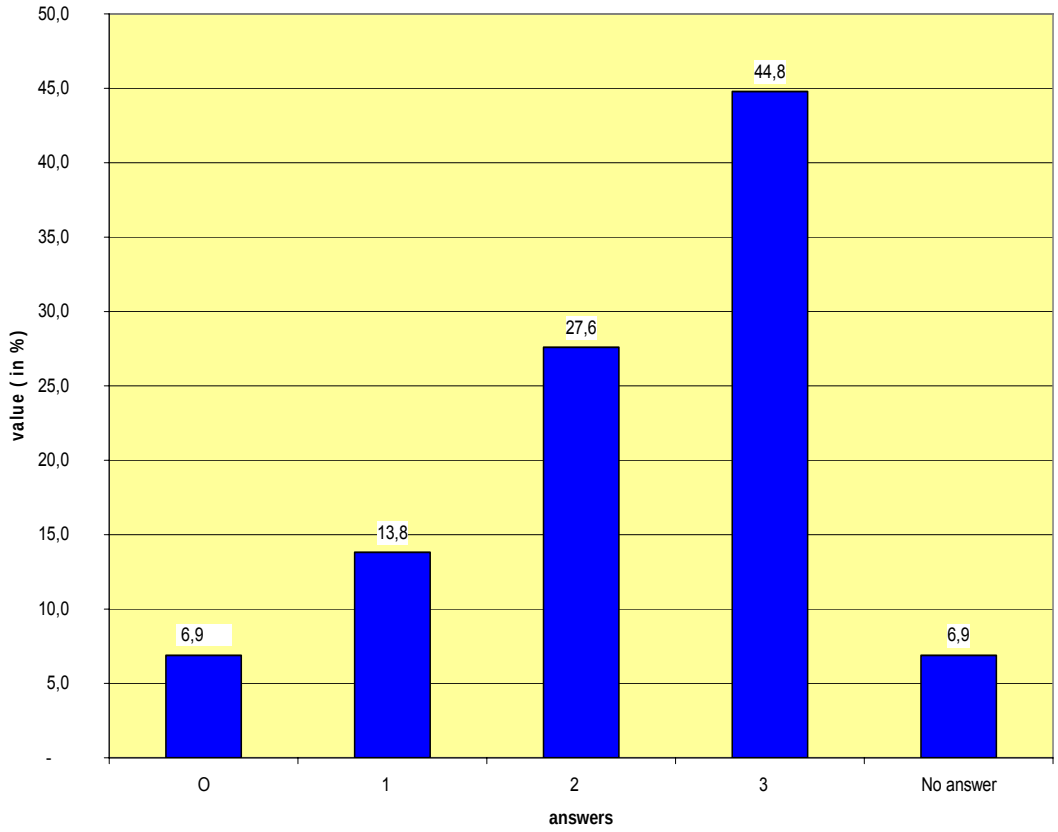


Figure 6

Distribution of Respondents by Factor N 69 – Local Customers and Suppliers




## 3. Factors Affecting Innovation Activity of Enterprises

| Factors | 1 | 2 | 3 | No answer |
|---|---|---|---|---|
| **104** | 6,9 | 20,7 | 13,8 | 58,6 |
| **105** | 17,2 | 13,8 | 13,8 | 55,2 |
| **106** | 6,9 | 17,2 | 10,3 | 65,5 |
| **107** | 6,9 | 3,4 | 0,0 | 89,7 |
| **108** | 6,9 | 6,9 | 0,0 | 86,2 |
| **109** | 3,4 | 3,4 | 6,9 | 86,2 |
| **110** | 6,9 | 0,0 | 6,9 | 86,2 |
| **111** | 13,8 | 0,0 | 0,0 | 82,8 |
| **112** | 3,4 | 10,3 | 0,0 | 86,2 |
| **113** | 3,4 | 3,4 | 6,9 | 86,2 |
| **114** | 3,4 | 3,4 | 3,4 | 89,7 |
| **115** | 3,4 | 3,4 | 6,9 | 86,2 |
| **116** | 3,4 | 3,4 | 0,0 | 93,1 |
| **117** | 0,0 | 0,0 | 0,0 | 100,0 |

Insufficiency of financial resources and significant economic risk are the main barrier to the innovation activity of forest sector enterprises in Bulgaria. 13.8% of enterprises have marked ”insufficiency of market information” as an obstruct factor. Lack of information about innovation trends in different product fields have a negative impact too. A large part of respondents have not answered the questions 104-117 of the questionnaire (Table 4, column 5) which also indicates the respondent’s lack of interest in innovation process. This conclusion corresponds also to lower R&D activity – see Section 2, Figure 3.

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# COUNTRY EXPERIENCE

*Rossitsa Chobanova[1], Diana Ivanova[2], Katinka Mihova[3]*
*Venelina Koleva[4], Genoveva Hristova[5]*
*Hristina Doichinova[6], Kamen Bonev[7]*
*Radulina Tzolova[8], Tatiana Terzieva[9]*

## ECONOMIC INTEGRATION OF URBAN CONSUMERS' DEMAND AND FORESTRY PRODUCTION IN BULGARIA

*The objective of the paper is to contribute to a better understanding of the problems of economic integration of urban consumers' demand and rural forestry production and possible solutions of forest-based entrepreneurship in small-scale forestry, wood processing and non-wood forest products and services in Bulgaria.*

*The paper presents some results of the work undertaken in the frame of the first phase of the European project COST Action E30 "Economic integration of urban consumers' demand and rural forestry production". The presented five topics concern consumption of forest related products and services, small-scale forestry practices as a factor affecting consumption and living standards in the country, wood-processing industries, non-wood forest products and services, as well as forests resources and their ownership structure as factors, affecting forestry production.*

*It has been assumed the economic integration of urban internal and external consumers' demand and forestry production in Bulgaria has to be developed. It is concluded that Bulgaria has significant resources and potential for further forestry production, which are not used effectively. The identified main barriers to entrepreneurship in the forestry, wood processing and non-wood products and services in Bulgaria are the low level of production and demand for forest – wood product services, and respective national policy. The lack of consensus for enterprise development in the forestry in Bulgaria defines a broad area of questions to be answered. Among them are which model for innovation system in forestry to be chosen? Which is the effective strategy for further integration to EU forestry structures, what kind of effective marketing strategies for Bulgarian products to develop in order to increase foreign consumers'demand? What kind of instruments to be introduced in order to increase sources for purchasing modern forest machinery, building forest roads and forestation? What kind of incentives to be implemented to improve the quality of local production and to protect industrial property rights? How to speed processes of standardization and certification?*

*JEL: O13, L13, E20*

[1] *Dr. Rossitsa Chobanova, Senior research fellow (Institute of Economics, Bulgarian Academy of Science), e-mail: r_chobanova@iki.bas.bg – part 1, 2, 5*
[2] *Dr. Diana Ivanova, Assoc. Prof. (University of Forestry) – part 3.*
[3] *Dr. Katinka Mihova, Assoc. Prof. (University of Forestry) – part 4.*
[4] *Venelina Koleva, Ass. Prof. (University of Forestry) – part 3.*
[5] *Genoveva Hristova, Ass. Prof. (University of Forestry) – part 3.*
[6] *Hristina Doichinova, PhD student (University of Forestry) – part 2.*
[7] *Kamen Bonev, PhD student (University of Forestry) – part 4.*
[8] *Radulina Tzolova, PhD student (University of Forestry) – part 2, 3.*
[9] *Tatiana Terzieva, Ph. D.student (University of Forestry) – part 4.*

## 1. Consumption of Forest Related Products and Services[10]

*Summary*

The consumption of forest related products and services has taken important place in Bulgarian rural consumption traditions. The approximately big share of urban population (67.4%) and structure of household expenditure distribution in the country are factors, which affect positively the forest products' and services consumption, while the level of income is factor with a negative influence. The bigger share in forest-related products and services consumption obtains round wood consumption, paper and paperboard apparent consumption, and packaging materials apparent consumption, which characterizes market demand for forest products' and services in the country. It has to be taken into account that export plays an important role in developing market demand in the country. The largest share of Bulgarian export of forest sectors and groups belongs to VeneerSheets; Plywood, Laminboard,Particle Board, Fibre Board & Other Panels and Board, followed by Sawmilling & Planing ofWood; Impregnation of Wood. All forest sectors and groups export more than 1/3 of their turnover. The most foreign consumption oriented production is those of VneerSheets; Plywood, Laminboard, Particle Board, Fibre Board & Other Panels and Board, which have exported more than 2/3 of the turnover.

### *1.1. State of the Art and Historical Development*

The consumption of forest related products and services has taken important place in the Bulgarian economic development. This has its roots on the one hand in the strong historical traditions of forest product and services consumption, and in the stable raw materials' base and develeoped skilled work force, on the other. The challenges of recent decade developments have affected forest related products and services consumption and have raised new problems.

Now there are many improtant research questions on the country and regional level with no satisfied answer. Among them are how to increase the level of internal market demand for forest related products and services, and for non-wood forest products and services by urban population, which are the specific problems of entrepreneurship in the firms in the sector. Recreational use of forests in Bulgaria is known field but because of changing the property system in Bulgaria – it needs more comprehensive investigations.

### *1.2. Potential for Forest Products' and Services Consumption in the Country*

The level of the demand of forest products and services is defined by country's (rural and urban) and foreign consumption. The main factor defining the country's forest products' and service consumption is its population. The population in Bulgaria is 7,621 million inhabitants as of 2002.[11] The largest share is urban population – 67.4% of total one (2001). Over the last decade there is a tendency of decreasing the urban population, defined by the negative influence of

[10] *Author: Rossitsa Chobanova – Institute of Economics, Bulgarian Academy of Sciences, 3 Aksakov, str. Sofia 1040, Bulgaria, e-mail: r_chobanova@iki.bas.bg.*

[11] The data in this part is obtained from the National Statistical Institute.

demographical and brain drain factors. While the average annual growth rate of urban population is 0.3% for the period 1990-1995, it is negative –1.2% for the period 1995-2000. Nevertheless the urban population determines comparatively good potential for increasing the forest products' and service consumption in the country. A significant share of the forest products' and services consumption is concentrated in the capital. 1096389 Bulgarians live in the capital city Sofia (2002), which is 14.4% of the total population. There are 22 cities with more than 50 000 inhabitants, of which 8 cities are with more than 100 000 inhabitants, which defines the potential for increasing the forest products consumption in the Bulgaria.

Another factor affecting the level of forest products' and services consumption is the overall level of consumption in the country, defined by the gross domestic product per capita and expenditures distribution. For 2001 the gross domestic product per capita is 3743 Levs[12], which is 1923 euro per inhabitant. The total average per capita income is 1830 Levs. Its distribution by source shows that the most important sources of income are the wages and the salaries – 631 leva, the pensions – 377 leva, and household plot (in 2001). In spite of the level of consumption in the country is low comparatively to the other European countries, the low prices of national forest products' and services could increase their share in national consumption structure.

Household expenditure distribution in the country also affects forest products' and services consumption. The total household expenditure in 2001 is 4249 Levs, of which 4031 are the overall expenditures, and 3546 are consumer ones. The major part of consumer expenditures – 1758 Levs, is for food and non-alcoholic beverages, followed by those for housing, water, gas and other fuels – 465 Leva. The conclusion is that consumer expenditures take big share in household expenditure distribution in Bulgaria. This confirms the above assumption that the low prices of forest products' and services could contribute to increasing their share in overall consumption expenditures.

At the end we may conclude, that the large amount of population, and household expenditure distribution are factors, which affect positively the forest products' and services consumption, while the level of income is factor with a negative influence to its level.

### *1.3. Market Demand for Forest Related Products and Services by Urban Population*

The market demand for forest-related products and services is characterized by apparent urban consumption in the country and abroad. The internal market demand for wood product categories in the country is shown in Table 1.

The majour wood product categories observed include roundwood apparent consumption (1000 $m^3$), sawn hardtwood apparent consumption (1000 $m^3$), practice board apparent consumption (1000 $m^3$), Plywood apparent consumption (1000 $m^3$), fiberboard apparent consumption (1000 $m^3$), chemical wood pulp apparent consumption (1000 m.t.), paper and paperboard apparent consumption (1000 m.t.), graphic papers apparent consumption (1000 m.t.), sanitary and household papers apparent consumption (1000 m.t.), Packaging materials

[12] According to the Bulgarian Law, the national currency LEV is fixed to Euro. 1 Lev = 0.511249 Euro.

apparent consumption (1000 m.t.), and other paper and paperboard apparent consumption (1000 m.t.).

Table 1

Consumption of Some Forest Products in Bulgaria

| Products/years | 1998 | 1999 | 2000 | 2001 | $m^3$ per 1000 inhabitants 2001 | % change 2000 to 2001 |
|---|---|---|---|---|---|---|
| Roundwood apparent consumption (1000 $m^3$) | 2975 | 4176 | 4529 | 3769 | 479,1 | -16,8 |
| Sawn softwood apparent consumption (1000 $m^3$) | 176 | 128 | 107 | 95 | 12,1 | -11,2 |
| Sawn hardtwood apparent consumption (1000 $m^3$) | 44 | -70 | -42 | -36 | -4,6 | … |
| Practice board apparent consumption (1000 $m^3$) | 119 | 35 | 126 | 130 | 16,5 | 3,2 |
| Plywood apparent consumption (1000 $m^3$) | 22 | 23 | 12 | 31 | 3.9 | 158,3 |
| Fiberboard apparent consumption (1000 $m^3$) | 55 | 19 | 195 | 241 | 30,7 | 23,7 |
| Chemical wood pulp apparent consumption (1000 m.t.) | 42 | 30 | 31 | 27 | 3,5 | -12,8 |
| Paper and paperboard apparent consumption (1000 m.t.) | 201 | 196 | 211 | 239 | 30,4 | 13,3 |
| Graphic papers apparent consumption (1000 m.t.) | 40 | 62 | 77 | 83 | 10,6 | 7.8 |
| Sanitary and household papers Apparent consumption (1000 m.t.) | … | 21 | 9 | 11 | 1.4 | 22.2 |
| Packaging materials apparent consumption (1000 m.t.) | … | 99 | 110 | 124 | 15,8 | 12,7 |
| Other paper and paperboard apparent consumption (1000 m.t.) | … | 14 | 15 | 21 | 2,7 | 40,0 |

Source: UNECE/FAO TIMBER database, 2002.

Round wood apparent consumption has performed the largest share of forest products consumption in Bulgaria – 479,1 $m^3$ per 1000 inhabitants in 2001. Paper and paperboard apparent consumption per 1000 inhabitants is 30700 m.t. Packaging materials apparent consumption is also well developed in the country.

Table 2

Production and Export of the Bulgarian Wood Sector

| Sectors and Groups | Gross Output (1000 US$) | | | |
|---|---|---|---|---|
| | 1997 | 1998 | 1999 | 2000 |
| Saw milling & Planing of Wood; Impregnation of Wood | 22,669 | 39,255 | 45,061 | 44,175 |
| Veneer Sheets; Plywood, Laminboard, Particle Board, Fibre Board & Other Panels and Board | 47,469 | 43,982 | 55,631 | 49,733 |
| Builders' Carpentry and Joinery | 18,366 | 14,981 | 18,360 | 14,391 |
| Wooden Containers | 4,348 | 5,174 | 7,590 | 6,735 |
| Other Wood Products; Cork Articles, Straw, Plaiting Materials | 6,135 | 6,090 | 7,292 | 9,647 |

Source NSI, NKID.

The foreign market demand for forest related products and services is an important factor, which influences those product and services development in small and opened economies like Bulgarian one. This hypothesis is confirmed by the fact that the largest share of Bulgarian forest output is exported. All forest sectors and groups export more than 1/3 of their turnover. The most foreign consumption oriented production is those of veneer sheets, plywood, laminboard, particle board,

fibre board and other panels and board. The exported volume of these products consists more than 2/3 of the turnover of the producing enterprises.

Table 3

Production and Export of the Bulgarian Wood Sector

| Sectors and Groups | Turnover ( 1000 US$) | | | Export (1000 US$) | | | |
|---|---|---|---|---|---|---|---|
| | 1998 | 1999 | 2000 | 1997 | 1998 | 1999 | 2000 |
| Sawmilling & Planing of Wood; Impregnation of Wood | 43,401 | 48,045 | 49,819 | 13,565 | 19,201 | 20,552 | 19,011 |
| Veneer Sheets, Plywood, Laminboard, Particle Board, Fibre Board & Other Panels and Board | 44,330 | 60,360 | 53,734 | 28,049 | 31,245 | 35,381 | 37,014 |
| Builders' Carpentry and Joinery | 15,473 | 19,083 | 14,382 | 3,879 | 4,593 | 7,252 | 5,192 |
| Wooden Containers | 5,623 | 8,155 | 7,166 | 986 | 1,622 | 2,117 | 2,891 |
| Other Wood Products, Cork Articles, Straw, Plaiting Materials | 6,538 | 7,553 | 10,982 | 4,037 | 5,656 | 5,178 | 4,616 |

The main factor for higher level of forest products and services demand is urban consumption. The prevailing population in Bulgaria is urban – 67.4% of total one, which might lead to bigger share of consumption. The fact, that many people having secondary residence – cottages, stimulates forest products and services consumption.

Table 4

Share of Export in Wood Production

| Sectors and Groups | Export/Turnover (%) | | | |
|---|---|---|---|---|
| | 1997 | 1998 | 1999 | 2000 |
| Saw milling & Planing of Wood; Impregnation of Wood | 61.2 | 44.2 | 42.8 | 38.2 |
| Veneer Sheets; Plywood, Laminboard, Particle Board, Fibre Board & Other Panels and Board | 63.9 | 70.5 | 58.6 | 68.9 |
| Builders' Carpentry and Joinery | 21.5 | 29.7 | 38.0 | 36.1 |
| Wooden Containers | 21.8 | 28.8 | 26.0 | 40.3 |
| Other Wood Products; Cork Articles, Straw, Plaiting Materials | 65.1 | 86.5 | 68.6 | 42.0 |

At the end we may assume that the market demand for forest-related products and services in Bulgaria is defined mainly by external (foreign) apparent urban consumption. Taking into account the figures, less important is the apparent urban consumption in the country. But here it has to be considered, that many people, living in towns, have secondary residence – cottages, which stimulates forest products and services consumption.

### *1.4. Main Problems and Research Questions in Consumption for Enterprise Development*

The main research questions for enterprise development in the forest in Bulgaria can be summarised as follow:

- how to develop internal and external market for forest – wood product / services;
- how to attract more investments in forest establishment for utilization of productive potential of the forest – land asset;
- how to improve the quality of forest related products and services;
- how to develop effective marketing strategies for forest related products and services.

The current research has identified several concrete areas of lack of information, which exposes the necessity of a large scale investigation of the problems of the consumption of forest related products and services by population.

## 2. Small-Scale Forestry Practices[13]

*Summary*

The small-scale forestry practices, applying modern technical achievements, have obtained a big potential to contribute to the increasing of consumption and living standards of the population, which makes them important subject to be investigated. Historically they have taken modest place in Bulgaria. This state-of-the art is defined by the fact that the numbers and scale of small-scale forests is very limited (the small-scale forests are at about 9% of the forest reserve of the country and are of a scale of 1-2 decars up to 10 hectars). From the other hand the share of the small-scale forests products towards the national and regional gross domestic product – GDP is very small. It is assumed that the entrepreneurship in small-scale forests is hampered by the lack of well developed forest market in the country, by the problems with restitution of forests and land of the forestry reserve, by the bad claims of the municipalities for ownership over the former "baltalatzi" (forests, given in the past, by the state to the municipalities to use). In addition, the market of forestry goods and services is restricted to the use of wood only. The high level of fragmentation of the forest property due to the process of restitution is another barrier to small-scale forest entrepreneurship development. As a result, the share of wood harvesting from the small-scale forests compared to the total wood harvesting of the country is not statistically outlined. For the very moment the functions of these forests are mainly recreation, protection, landscape, bio-variety, hunting tourism. The non-wood forest products (mushrooms, herbs, forest fruits, etc.) are not well performed in the small-scale forests, while the recreation and hunting tourism have major impact in their development.
The basic economic and management characteristics of current small-scale practice are connected with the process of restitution and privatisation, and also with the timber wood harvesting to a limited extent. Practices, connected with the regeneration of the small-scale forests are very limited, because the financial supplies (either private or bank credits) are almost impossible. As far as it concerns the wood harvesting, small amounts of wood are obtained mostly in the forest cooperatives in the Rhodopy Mountains. The harvested small-scale forests' wood is preliminary used for firewood and quite seldom for timber. The wood harvesters are mainly the owners themselves, and the wood is used mainly for their own needs. The small-scale forests' harvest of wood assortments is extraordinarily minor to produce basic characteristics of the small-scale forests' wood market.

### *2.1. State of the Art of the Topic in the Literature*

The small-scale forestry practices have taken modest place in Bulgarian history, in spite of they contribute to the increasing of consumption and living standards of the population. May be this is one of the reasons for the lack of information for small-sc ale forests on the territory of the country, in addition to the limitations of the research programs of the institutions and organisations, dealing with research and

[13] *Authors: Assoc. Prof. Dr. Rossitsa Chobanova – Institute of Economics, Bulgarian Academy of Sciences, Ph. D.student Hristina Doichinova and Ph. D.student Radulina Tzolova – University of Forestry.*

investigation of forest ecosystem and forestry have never performed a systematic investigation. Nevertheless there are some programmes, which are used for fragmentary assumptions. One of them is the Bulgarian-Swiss Forest Program, which has organised investigations about the small forests in the agricultural land and the plains, and about the single centurial threes. The results have concerned the genetic and species variety in these ecosystems, but not economic aspects of their development. On the other hand these types of forests cannot be determined as a small-scale in the particular circumstances. The studies and programs concerning the restituted private forests, realized in the frame of the German-Bulgarian Forest Program (GBFP) are also insufficient for the purposes of our study. The information gathered about the above mentioned problem is almost fully based on an expert assessment of forest science specialists. In addition, we have to mention, that the term small-scale forest has different meaning in the different European countries and the conclusions provided have to be précised. The observation says that for the countries with large forest recourses and centurial traditions in forest uses the small-scale forests consist of about 100 ha. For the Bulgarian circumstances, a small scale-forest consists of up to 10 ha. That is why it is difficult to rely on comparisons and conclusions in that respect. The provided further results of the study are aimed to contribute to improvement of the understanding of small-scale forest practices in the country.

### *2.2. Small-Scale Forest Holding*[14]

The small-scale forests obtain very small share in the country – about 9% of its forest reserve. The forest reserve of Bulgaria amounts up to 3 980 032 hectares.[15] The state forestry reserve of the country is 85.93 % of the total area of the forests, 8.1% – private property, 5.3% – property of the municipalities, 0.45% – property of religious communities and 0.22% – property of corporal bodies.

The small-scale forest holdings in Bulgaria have different historical origins. The economic reform, started about 14 years ago put the privatisation and restitution of the agricultural and forest territories in the agenda of country.

Now the area of the small forests differs, depending on the origin, and varies from 1 – 2 decares to 10 hectares for the restituted forest massifs. The borders of these forests are usually other forest massifs and territories.

Over 95% of the private forests are of small area – up to 10 ha, i.e. almost all the forests of the private forest owners are included in the investigated category – the small-scale forests. And if we include small state forests here (bellow 1% of the total), the small-scale forests would be assessed as of about 9% of the forest reserve of the country, according to an expert opinion.[16]

The regional distribution of the small-scale forests along the territory of the country is characterized by a concentration mainly in the Balkan Range. Most of them are situated in the Sofia District, in the regions of Lovetch, Veliko Tarnovo, Montana. The most of the undersized parcels are situated there.

[14] Here we consider the area of a forest, held by one person or firm.

[15] Annual Report of the National Forestry Board for 2002, "Gora"magazine, issue 6, 2003.

[16] The authors express their gratitude to Assoc. Prof. Dr. N. Stoyanov" University of Forestry in Sofia, for his cooperation and expert assessments in the process of investigations.

The share of the small-scale forests products towards the national and regional gross domestic product – GDP is very small.
The provided survey shows, that the entrepreneurship in small-scale forest ownership is hampered by the lack of forest market, by the problems with restitution of forests and land of the forestry reserve, by the bad claims of the municipalities for ownership over the former "baltalatzi" (forests, given in the past, by the state to the municipalities to use). Another problem is that the market of forestry goods and services is restricted to the use of wood only. The fragmentation of the forest property due to the process of restitution is another barrier to small-scale forest development. This state of the art in addition to the other reasons also is defined by the fact that some of the owners are not yet legally owners and are excluded from the wood harvesting. Concerning the process of the forest ownership reform, the restitution of the forestry reserve land and woods is completed up to 95 – 98%. But in fact the restitution is completed only in of about 14% of the forests, which is a barrier for entrepreneurship development there.
As a result, the share of wood harvesting from the small-scale forests compared to the total wood harvesting of the country is not statistically outlined. The harvested small-scale forests' wood is preliminary used for firewood and quite seldom for timber. The wood harvesters are mainly the owners themselves, and the wood is used mainly for their own needs. The small-scale forests' harvest of wood assortments is extraordinarily minor to produce basic characteristics of the small-scale forests' wood market. For the very moment the functions of these forests are mainly recreation, protection, landscape, bio-variety, hunting tourism. The non-wood forest products (mushrooms, herbs, forest fruits, etc.) are not well performed in the small-scale forests, while the recreation, hunting tourism have basic impact for developing them.

### *2.3. Small-Scale Forestry Practices*

The basic current small-scale forestry practice in the country is characterised on the first place by the process of restitution and privatisation, and by the timber wood harvesting to a limited extent. Practices, connected with the regeneration of the small-scale forests are very limited, because the financial supplies (either private or bank credits) are almost impossible. As far as it concerns the wood harvesting, small amounts of wood are obtained mostly in the forest cooperatives in the Rhodopy Mountains.
Micro economic and legal framework, as well as the lack of experience creates barriers to the private forest owners in the process of formation of strategy of the economical realization of their property. The increased forest products' and services' demand and the newly formed relations and interests in the process of their production and regeneration, maintain the difficulties in the performance of the management process of the forests.
The restitution of the land and forests from the forestry reserve has created small and scattered property. That fact, together with the lack of attitude towards the forests as a specific type of property, settles obstacles for effective management. That exposes the necessity of land consolidation of the territories of the municipalities or the forestry. Otherwise the small-scale forests will gradually lose their functions and that will lead to further development of the erosion process, reduction of bio variety and the change for the worse of the ecological situation as

a whole. At the present moment, with minor exceptions, the private owners have not organised their own associations and delegations for common decisions. The share of the private forests is the most expanded in the Rhodopy Mountains and there is the only place, where the floristries and the so-formed forest cooperatives interact actively.

There is an experience of association in forestry practivies in the country. There are 10 –15 forest associations and forest cooperatives. That reflects the higher level of protection and maintenance of the forests, orientation towards eco production and the higher quality of the manufactured goods up to the demands of the European market. It is also a prerequisite for utilization of the opportunities for co-financing and protection of forestry owners' interests.

The wood harvest of the small-scale forests is preliminary used for the self-satisfaction of the owners' necessities. But the proper statistic data is not available, as receipts and expenditures, as well as the average income per hectare are not included in the actuarial reports.

The expert assessment declares that the investment activity is nearly absent in the restituted small-scale forests. The deficiency of private resources and the severe bureaucracy prevent the private forest owners to apply for credit granting in order to afforest and maintain their property; to build forest roads and to purchase forest machinery, etc. Since August, 2003, the "SAPARD" program, measure "Forestry" has given the forest owners the opportunity to apply for credits, but the conditions and first of all the requirement for large forest massifs, make the application of the small forest owners impossible.

The newly formed pluralistic ownership, according to some opinions, defines the necessity of actualization of the forestry projects and their organization in a Single forestry fund. Presently there is no financial procedure in function for the private forest structure. The structural organization of the private forests is financially supported and maintained, as before the restitution process. The only exception is the cadastral mapping of the forest according to the type of property.

According to inquiry investigations of the Timber and Furniture Industrial Branch Association and GTZ, the innovational activity of the forest owners is hindered by the absence of knowledge, experience, state aid and private resources for the performance of the necessary undertaking for the commencement of economic activity and attainment of economic realization of the forest property. The shy innovational behavior is very seldom available. It is a resultant dimension of the credit system status and the status of the legislation basis in the atmosphere of an unstable macro economic environment, and also it is an outcome value of the yet infant undertakers' experience and the insufficient knowledge of variable financial instruments. Purposes that differ from the mentioned above are not registered as a platform for any forest owners associations, which is a barrier to find quicker political solution of existing problems.

At the end we may conclude, that the main current small-scale forestry practice in the country is characterised on the first place by the process of restitution and privatisation, and by the timber wood harvesting to a limited extent. The harvested small-scale forests' wood is preliminary used for firewood and quite seldom for timber. The wood harvesters are mainly the owners themselves, and the wood is used predominantly for their own needs. The small-scale forests' harvest of wood assortments is extraordinarily minor to produce basic characteristics of the small-

scale forests' wood market. The innovation activities are very limited in the sector. The lack of statistic information, and surveys, which concern the aims and the plans for cultivation of the small-scale forests, affects efficiency of management of the small-scale forestry in the country.

### *2.4. Policy Framework and Production Conditions for Small-Scale Forestry Practices*

The legal framework for regulation of the relations, connected with the restitution of the forests and the land in the forestry reserve is based on the Law for the restitution of forests and forest fund lands and the Regulations for Implementation (passed at the end of 1997). The governmental bodies, dealing with restitution are the Ministry of Agriculture and Forestry and the Land Commissions. Regional Commissions for inquiry control of the filled applications for the private forest territories, has been constituted in order to solve the problems in verification of the interest in lands and forests.

The presently existing legislation providing and directly connected to the uses of wood from the Bulgarian Forestry Reserve are as follows:

- Restoration of Ownership over Forests and land in the Forestry Reserve Act, ROFLFRA, published in the State gazette of Bulgaria, issue 110/ 25.11.1997; revised, issue 33 and 59/ 1998; amended, issue 133;
- Forestry Act. Published in the official gazette of Bulgaria, issue 125/ 29.12.1997; amended, issue 133/1998; issue 26/1998; issue 29 and 78/2000.
- Hunting and Game Protection Act. Published in the official gazette of Bulgaria, issue 78/ 26.09.2000;
- Rules on the implementation of the Restoration of Ownership over Forests and land in the Forestry Reserve Act. Published in the official gazette of Bulgaria, issue 41/1998; amended, issue 105/1999;
- Regulation on the Implementation of the Forestry Act. Published in the official gazette of Bulgaria, issue 41/1998;
- Regulation of the Right of usage of wood;
- Ordinance № 32 of the Valuation of forests and the land in the Forest Reserve. Published in the official gazette of Bulgaria, issue 3/12.01.1999;
- Regulation on the Licenses of physical and legal personalities for pursuit of private forestry practice. Published in the official gazette of Bulgaria, issue 80/14.07.1998;
- Regulations on the Terms and Procedures for the Administration of the Restituted Agricultural Land. Published in the official gazette of Bulgaria, issue 76/27.08.1999; etc.

The appropriate state economical regulation for the direction of the restored owners to a positive attitude towards their property is still missing. Up till now there has not been presented any direct opportunities to the forest owners for financial support, because the objects of accrediting can be only investment projects of small and medium sized enterprises (SME) in the branches of industry, transport, processing of agricultural production and tourism, and the necessary condition is the establishment of employment and the export orientation of the production. The investment programs of the State Fund "Agriculture" and "SAPARD" Program are also accessible only to SME – agricultural producers. Intermediary and consultation

support of international bilateral programs is granted to SME only, and not to physical personalities, municipalities and Boards of Church Wardens.
The Bulgarian Swiss Forest Program (GTZ) promotes the national policy towards the forests and the legislation. It contributes for the balance of the ecological, economical and social functions of the forests by their long-term and natural management. The German – Bulgarian Project for promotion of the private forest restitution (DBFP) has a very significant role for the development of the small-scale forest property.
The institutions that are responsible for the regional development and the small-scale forest property are the Ministry of Agriculture and Forestry – the Ministry has worked out a National Plan for Development of Agriculture in the Rural Districts for the period 2000 – 2006; Ministry of Regional Development and Public Works – the Ministry has worked out regional plans for development, based on the municipal strategies and the National Forestry Board, as a state control authority.
The private forest owners are able to enjoy the services of expert consultants from: the National Forestry Board, the Regional Forestry Boards, the State Forestries, the Forest Institute, the German – Bulgarian Project for promotion of the private forest restitution (DBFP) The Forest University, the Bulgarian Swiss Forest Program (GTZ).
The German – Bulgarian Project for promotion of the private forest restitution (DBFP) gives the private forest owners the opportunity for "training" in the forestries in order to form an adequate attitude towards the forest. Science and educational institutions in the sphere of forestry are also the Forest University, Forest Institute of the Bulgarian Science Academy and the Bulgarian-German Center for Professional Training.
The owners of private forests may look for support by the above-mentioned organizations in order to obtain expert assessments and researches, and also by the Regional Development Agencies. But the inquiries still declare that the necessary relations of cooperation and support between both sides in the process of optimization of the small-scale forest property uses are not established yet.
The National Forestry Board, as a section of the Ministry of Agriculture and Forestry performs the state control functions in the forestry sector; it manages a policy of protection and extension of the forests, the stable forest development, the protection of the biological diversity and multifunctional uses. The Regional Forestry Boards realize the State Policy for the Management of the Forest Reserve and the control over the forests and the land in the forest reserve.

### *2.5. Supporting and Limiting Factors for Enterprise Development in Small-Scale Forestry and Barriers to Entrepreneurship*

The supporting factors for enterprise developments in small-scale forestry are very few, and would by summarised in one word – enthusiasm. But this is not enough and practically development in this area is blocked.
The main problems and research questions for enterprise development in small-scale forestry and barriers to the entrepreneurship have concerned: a) development of market for forest – wood product/services; b) identification and attraction of considerable investments in forest establishment for utilization of productive potential of the forest – land asset; c) how to increase sources for purchasing forest machinery; build forest roads and forestation; d) how to increase

the quality of introduction of harvesting regulation; e) to improve the quality of introduction of the level of competency of the "new" forestry owners, or to find new forms for effective forestry management; f) how to make state policy towards transformation of ownership and management system in forest sector clearer. The change of the policy approach of the recent government and lack of ideas for implementing new one leads to blocking the reform and stagnation in the forest sector.

### *2.6. Conclusion*

The above analyses make clear the necessity of a large scale investigation of the problems of the small-scale forests – contribution to the consumption, quality and standard of production, property, markets, quantity of the wood harvests and services, investments, innovational policy, management and organization, cooperation, etc. The possible solutions could be similar to the countries from Central Europe with small-scale restituted forest holdings like Bulgaria: Romania, Hungary, Poland and Slovenia. The topics of the future research could be focused on: forest owners and their attitudes and actions; where forest owners' actions connect to entrepreneurial activity elsewhere in the economy, whether in timber or non-timber supply chains or through halo effects, especially in locally based activity; recognition of wood and non-wood elements as potential contributions to this entrepreneurial activity; recognition of a regulatory environment which might constrain or enable entrepreneurial action; and recognition that there is often a structure of forest owners' associations which can help small-scale forest owners overcome some of the obstacles of small-scale forestry.

## 3. Wood Processing Industries[17]

*Summary*

The main factors affecting the competitiveness of forest – wood / non-wood / services – consumer chain from the point of view of entrepreneurship are: the old and amortized equipment and technologies; shortage of investments for scientific researches; insufficient information about credit programs; the low ability for planning and managing the investment processes, the production and the risk; the low quality of the production; poor knowledge of the international standards; lack of functioning laboratories for testing the production; the low level of the co-operation between the enterprises; lack of regional formations (clusters); the lack of partnership between the industrial enterprises and designers and scientific centers; inadecuate financial support of the know-how transfer.

The barriers to entrepreneurship concern too high collaterals required by the banks; the high interest rates; the lack of information about different financing possibilities; the inadequate system for risk assessment by the banks; the insufficient bank products.

To guarantee sustainable development of the sector, we consider that possible policy implications can be: a) stimulation and financial support of the scientific and

[17] *Authors: Assoc. Prof. Dr. Diana Ivanova, Ass. Prof. Venelina Koleva, Ass. Prof. Genoveva Hristova, Ph. D. student Radulina Tzolova – University of Forestry.*

research activity; restoration of the relations between the science and the production; b) Supporting the formation of regional sectoral complexes (clusters) and the building of business incubators, in order to increase the economic potential especially in rural regions in Bulgaria and its approach to European economic environment.

### *3.1. State of the Art and Historical Development*

Woodworking and Furniture industry in Bulgaria has traditionally an important meaning for the Bulgarian economy. This has its roots on the one hand in the rich history and on the other on the stable raw materials' base. The enterprises from the branch produce wide range of semi-manufactured products of timber both for the domestic and foreign market.
During the last years in the branch "woodworking and furniture industry" becomes some serious changes, according to:

- Increasing of the number of the enterprises with activity dealing and trade with wooden products and furniture;
- Change in the property and juridical status of the companies;
- Uniting of the enterprises in branch organizations, defending their interest in front of the official institutions and participating in the legislation frame;
- Increasing of investments and TFA – techniques and technologies, including foreign investments;
- Appearance of cooperative enterprises and est.

All of this makes the branch attractive and interest object for research, as for a domestic, also for international projects.

### *3.2. Wood Processing Industries*

***Historical development.*** The historical development of Woodworking and furniture industry passes over several stages, corresponding to the evolution of the processing factors. Till the 1970s in the economy centrums in the country are founded outstanding enterprises with big volume of output, basic founds and labor force. After 1970, aiming more completely utilization of the resource and solving others arisen social, economical and others problems are formed small and medium size enterprises in the undeveloped economical regions. Up to the structural reform in 1988, as a private owner of the forest the country was determinating the size of the forest, which was utilized on the base of needs for domestic and foreign market. The given public subsides make the economical status of the enterprises worse and these leads to disruption of their traditional manufacture – business links, and the high per cent interest of the bank loans, contribute for drop of the industrial production. The crisis in the woodworking, cellulose-paper and furniture industry find an expression in not fully utilization of the manufacturing capacity and in the impossibility for financing of the repairing and innovations. The development of the economy and rehabilitating of the private property is an alternation of the forms of management of the production. For the period 1995 – 1998 in woodworking and furniture industry were founded over 4500 small private economical characters.
***Structure of the enterprises, number of employees, sales, turn over, regional allocation.*** The companies in the branch are relatively regularly allocated within

the Bulgarian territory. There total number in 1997 is 2718, where 2612 are in private sector. Based on the National Statistic Institute data there are 1710 woodworking enterprises and 1008 furniture in 1997. 1654 of them are private in woodworking sector and 958 – in furniture. Their allocation by regions is shown in Table 5.

Table 5

Number and Allocation of the Enterprises, 1997

| No | Region | Total | Woodworking | Furniture |
|---|---|---|---|---|
| 1 | Blagoevgrad | 254 | 174 | 80 |
| 2 | Bourgas | 111 | 80 | 31 |
| 3 | Varna | 110 | 64 | 46 |
| 4 | Veliko Tarnovo | 85 | 54 | 31 |
| 5 | Vidin | 24 | 16 | 8 |
| 6 | Vratsa | 25 | 9 | 16 |
| 7 | Gabrovo | 118 | 56 | 62 |
| 8 | Dobrich | 38 | 18 | 20 |
| 9 | Kurdjaly | 25 | 20 | 5 |
| 10 | Kjustendil | 38 | 21 | 17 |
| 11 | Lovech | 220 | 130 | 90 |
| 12 | Montana | 51 | 39 | 12 |
| 13 | Pazardjik | 227 | 177 | 50 |
| 14 | Pernik | 21 | 16 | 5 |
| 15 | Pleven | 64 | 35 | 29 |
| 16 | Plovdiv | 215 | 125 | 90 |
| 17 | Razgrad | 27 | 14 | 13 |
| 18 | Rousse | 103 | 45 | 58 |
| 19 | Silistra | 50 | 39 | 11 |
| 20 | Sliven | 65 | 51 | 14 |
| 21 | Smoljan | 136 | 123 | 13 |
| 22 | Sofia - city | 239 | 67 | 162 |
| 23 | Sofia - region | 103 | 90 | 13 |
| 24 | Stara Zagora | 133 | 73 | 60 |
| 25 | Targovishte | 41 | 27 | 14 |
| 26 | Haskovo | 65 | 40 | 25 |
| 27 | Shoumen | 101 | 79 | 22 |
| 28 | Yambol | 29 | 18 | 11 |
| | TOTAL | 2718 | 1710 | 1008 |

Among active enterprises existed in the year 2000, 97% are small-sized (1-50 employees), 2% medium (51-150 employees) and 1% large (more than 151 employees), and 99% of them are private owned.

Based on a survey made by the SFB Capital market JSB in 2002, there are 5.545 woodworking companies, which are divided into following sectors as it is shown on Table 6.

The biggest is the share of the companies of “Cutting out, edging and impregnation of wooden material”, following by “Manufacture of woodworks, structures and details from wooden material for the construction“. The smallest is the share of producers of “Manufacture of products from cork, straw and materials for knitting“.

With the relative share of 7% of the gross output in the manufacturing industry, has gradually extended its the share from 5.7% among all manufacturing industries in Bulgaria during the period 1997-2000, as only the volume of production of “Manufacturing of timber and wooden products” has increased with 26%.

Table 6

Wood Processing Companies by Sectors

| Production type | Number |
|---|---|
| Cutting out, edging and impregnation of wooden material | 2,041 |
| Manufacture of plywood and wooden plates | 141 |
| Manufacture of woodworks, structures and details from wooden material for the construction | 1,880 |
| Manufacture of packing from wooden material | 165 |
| Manufacture of other products from wooden material | 1,286 |
| Manufacture of products from cork, straw and materials for knitting | 32 |

As for the turnover, its trend of share change during the period 1997-2000 it has increased by 15.7, as the increase of the turnover only in the sector “Manufacturing of timber and wooden products“ for the same period is a 43.5%. During the period the number of employees has decreased with 22.5% or with 3 806 real workshops and during 2000 they were 13 099 employees.

In spite of this more effectively utilization of the labor force in the branch is ensured an increase of the GVA and of the productivity of the labor. The average salary is increased with 47.5% for the period 1997-2000, while for the same period the growth of the BDS is only 2.2%. In 2002 the production of raw materials exceed 293 millions lv., witch is with 2,4% more of the levels reached during 2000 and with 26.4% from those in 1998. The data for the individual industries are systemized in table 3, Annex 2. The total volume of production of the woodworking industry for the period 1998 – 2000 increased with 23.4% ,as the manufacturing of veneer and plywood are with biggest share – 40%, followed by the timber – 34.5% and details for construction (mainly doors and windows) – 12.5%.

Based on the SFB Capital market JSB/2002 survey the companies operating in the furniture industry are 3 351, which are divided into following sectors.

Table 7

Number of Furniture Companies

| Sectors | Number of companies |
|---|---|
| Manufacture of chairs and seats | 299 |
| Manufacture of office and trade furniture, excl. chairs | 306 |
| Manufacture of kitchen furniture, excl. chairs | 688 |
| Manufacture of other furniture | 1,986 |
| Manufacture of frames and mattresses | 72 |
| Total | 3,351 |

The biggest is the share of the enterprises from “manufacturing others kind of furniture”, followed by “manufacturing of furniture used in kitchens, office furniture. The manufacturing of furniture during this period continues to increase and in 2000 is 194 millions lv. The share with clients orders is too big. With material of foreign clients are manufactured about 45% in 1999 and during 2000 – 40% from the production. The analysis shows that the growth is due mainly of the increasing of manufacturing of tubular furniture. The manufacturing of furniture of massive wood is various and it depends from the needs of the market.

The dynamic of the structure of the furniture industry is shown on table 5. After the big increase of the manufacturing of office furniture in 1999, compared with 1998 – with 48%, during 2000 it decreased with 19%. It is observe an increasing in the manufacturing of furniture used in kitchens in 1999 with 27%, witch bears a positive

correction in 2000 with 7%. The tendency in the manufacturing of furniture used in bedrooms, living rooms, dining- rooms is towards decreasing. With relative share of 1.2% from the production of the processing industry in country in 2000 the branch has the smallest share from all branches, in spite of this that there is a growth of current prices of 22.7%. The turnover during the period 1997-2000 has an increasing with a 33.2%,as a biggest is in the manufacturing of furniture , which share is 75%. The volume of the production and the turnover have a growth, appropriate 35.3% and 42.5% for the period 1997-2000. The same is the situation for the GVA, which increased with 17.9%. During the period 1997-2000 the number of employees in the furniture branch have decreased with 18.5% or with 4400 real workshops. In 2000 the employees were 19 174 or 3.4% from the total number of the employees in the processing industry. In spite of this the productivity of the labor during the same year is increased with 39.1%. Higher is the work load in the sector “manufacturing of furniture” – 77.4% from the total workshops. The average annual salary in the branch, which accounts to 851 USD, is about 30% lower from the average for the processing industry in 2000. The rate of the gross operative profit have decreased from 15.0% in 1997 to 12.9% in 2000, as a result of the comparatively high rate of increasing of the average salary – with 34.6% for this period.

Table 8

Manufacture of Furniture over the Period 1998-2000 by Sorts

| Products | 1998 | 1999 | 2000 |
|---|---|---|---|
| Office furniture from solid wood | 83,682 | 123,482 | 68,437 |
| Kitchen furniture | 132,751 | 96,928 | 103,712 |
| Bedroom furniture (complex) | 91,652 | 76,413 | 86,499 |
| Furniture from solid wood for living-rooms and dining-rooms | 149,342 | 126,415 | 136,669 |
| Chairs - total | 1,217,924 | 1,573,314 | 1,572,090 |
| Non-upholstered chairs | 532,507 | 575,229 | 793,167 |
| Trestles | 28,049 | 12,007 | 16,502 |
| Tubular furniture (excluding office) | 457,022 | 731,219 | 1,117,311 |

Macroeconomic Indicators of the Bulgarian woodworking and furniture industry are shown in tables 9 and 10.

Macroeconomic Indicators of the Bulgarian woodworking and furniture industry are shown in Tables 12 and 13. The wood industry is stable at a little lower level from the line of GVA share equals gross output share. In fact, the share of GVA has been catching-up with that of gross output during the same period. For the period 1997-2000 the turn over have increased with 15.7%, and GVA – with 2.2%. In the sector “manufacturing of timber and wooden products” for the same period have been market growth of the turnover – 43.5% and of the GVA – 10.8%. The negative process in the furniture sector gives an expression in the decreasing of GVA with 12.0% during the period 1997-2000. in the frames of the branch, the GVA of the sector “manufacturing of furniture” for the period 1997 – 2000 have an increase in a amount of 17.9%.

Table 9

Macroeconomic Indicators of the Bulgarian Wood Sector

| Sectors and Groups | Gross Value Added (1000US$) | | | | Labour Productivity (US$) | | | |
|---|---|---|---|---|---|---|---|---|
| | 1997 | 1998 | 1999 | 2000 | 1997 | 1998 | 1999 | 2000 |
| Sawmilling & Planing ofWood; Impregnation of Wood | 4.600 | 6.819 | 8.844 | 5.927 | 1.166 | 1.234 | 1.635 | 1.103 |
| Veneer Sheets; Plywood, Laminboard, Particle Board, Fibre Board & Other Panels and Board | 12.462 | 9.790 | 12.086 | 8.299 | 2.368 | 2.506 | 3.616 | 2.934 |
| Builders' Carpentry and Joinery | 3.909 | 4.109 | 5.445 | 3.585 | 762 | 1.249 | 1.814 | 1.286 |
| Wooden Containers | 948 | 1.108 | 1.588 | 1.401 | 966 | 1.287 | 1.345 | 1.367 |
| Other Wood Products; Cork Articles, Straw, Plaiting Materials | 2.013 | 2.198 | 2.183 | 2.129 | 1.268 | 1.582 | 2.040 | 1.960 |

Source: NSI, NKID

| Sectors and Groups | Number of Employees | | | Average Salary (US$) | | | |
|---|---|---|---|---|---|---|---|
| | 1998 | 1999 | 2000 | 1997 | 1998 | 1999 | 2000 |
| Saw milling & Planing ofWood; Impregnation of Wood | 5.527 | 5.408 | 5.372 | 536 | 631 | 672 | 735 |
| Veneer Sheets; Plywood, Laminboard, Particle Board, Fibre Board & Other Panels and Board | 3.907 | 3.342 | 2.829 | 901 | 1.353 | 1.481 | 1.413 |
| Builders' Carpentry and Joinery | 3.289 | 3.001 | 2.787 | 444 | 665 | 717 | 675 |
| Wooden Containers | 861 | 1.181 | 1.025 | 580 | 606 | 791 | 745 |
| OtherWood Products; Cork Articles, Straw, Plaiting Materials | 1.389 | 1.070 | 1.086 | 476 | 736 | 819 | 694 |

Source: NSI, NKID

Table 10

Macroeconomic Indicators of Bulgarian Furniture Sector for 1997-2000 in 1000 US$

| Sectors and Groups | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|
| Gross Output (1000US$) | 67,572 | 81,095 | 84,942 | 91,422 |
| Turnover (1000US$) | 65,200 | 83,489 | 88,825 | 92,926 |
| брутна добавена стойност (1000US$) | 20,436 | 23,921 | 25,023 | 24,100 |
| Labour Productivity (US$) | 1,167 | 1,479 | 1,726 | 1,623 |
| Export/Turnover (1000US$) | 31,478 | 35,278 | 39,151 | 48,224 |
| Export/Turnover (%) | 48.3 | 42.3 | 44.1 | 51.9 |
| export (1000US$) | 7,614 | 10,358 | 10,893 | 11,877 |
| Number of Employees | 17,512 | 16,179 | 14,497 | 14,850 |
| Average Salary (US$) | 607 | 803 | 859 | 817 |

Source: NSI, NKID

### *3.3. Wood Processing Industries Practices*

***Companies by juridical status and types of their registration.*** During the last years were founded great number of micro- and small family and craft companies, which were registrated more frequently as a Self-employed (SP), which leads to big increasing of the number of the companies – juridical and physical person in the branch. By the type of the juridical registration in all sectors in the woodworking industry the highest is the share of SP – 78% or 4334 numbers. Analogical is the situation in the furniture industry – the leading place is taken from SP with total number of 2507. Detailed information for the grouping of the companies from

woodworking and furniture industry by their juridical registration is given in the Tables 11 and 12.

Table 11

Companies by Juridical Status and Types of Their Registration
(Sole traders (ST), Self-Employed (SP))

| | Cutting out, impregnation of wood | plywood and wooden plates | timber elements, construction frames | packing from wooden material | other timber products |
|---|---|---|---|---|---|
| JSC | 21 | 14 | 25 | 1 | 3 |
| SPJSC | 0 | 1 | 3 | 0 | 0 |
| SPLtd | 83 | 27 | 87 | 8 | 53 |
| SP | 1,621 | 59 | 1,468 | 107 | 1,052 |
| Branch | 1 | | 1 | 0 | 1 |
| Cooperation | 26 | 1 | 46 | 7 | 9 |
| Ltd. | 234 | 37 | 178 | 33 | 109 |
| Partnership | 53 | 2 | 67 | 8 | 52 |
| Others | 2 | 0 | 5 | 1 | 5 |

Table 12

Group of Companies by Registration

| | Chairs and seats | Office and trade furniture | Kitchen furniture | Other furniture |
|---|---|---|---|---|
| JSC | 7 | 12 | 7 | 45 |
| Others | 2 | 1 | 1 | 10 |
| SPJSC | 1 | 0 | 1 | 3 |
| SPLTD | 15 | 24 | 32 | 101 |
| SP | 239 | 209 | 552 | 1507 |
| Branch | 1 | 0 | 0 | 2 |
| Cooperation | 4 | 3 | 10 | 21 |
| Ltd. | 21 | 43 | 61 | 214 |
| Partnership | 9 | 14 | 24 | 83 |

The gross increasing of the number of the companies during the last 10 years is explained with the lowest barriers for entering in the branch (low initially expenses for starting of business in the branch, availability of great number of experts in the country, low levels of the salary in the branch and est.). The intensively competition is high, especially after the appearance of foreign presence in the market.

In the last years, and especially after 1997 and 1998, is observed a big interest from foreign investors for buying of separate stakes and also of whole enterprises. As an examples can be given: “Bules” – JSC Bourgass, “Orion luks” – JSC Sofia, “Pirinska mura” – JSC Bansko, “Hemus” – JSC Troian, “Ludogorie” – JSC rp.Kubrat, “Shwedski kibrit” – JSC Kostenec.

The statistic information about the direct foreign investments by countries and sectors for the period 1998 – 2001 marks the following tendencies:

- Growth of the absolute investment’s rate (excepting 2001)
- Increase of the countries investing in Bulgaria
- Increase of the direct foreign investments in woodworking and furniture industry – totally over the period are invested 105,6 million USD
- Relatively small share of direct foreign investments in the sector in comparison with total investments in the country.

By a expert estimations the biggest foreign investors in the woodworking and furniture industry for the period 1998-2001 are:

1. IKEA – Sweden
2. KRONOSHPAN – Austria
3. GROSS – USA

In 2001 the timber production (without furniture) exceeds BGN 293 million. It is higher in comparison with 2000 with 2.4% and 1998 with 26.4%.

So far the National Statistics Institute has processed only the information from the extraction observations. The information of it is used mainly for calculation of indexes of producer's prices with which is re-calculated the volume of the production at comparative prices.

The information on the whole nomenclature of the observations for manufacture of timber and its products, according to preliminary data and to the shortened nomenclature the manufacture in 2001 is, as it shown in the Table 13.

Table 13

Survey on Timber Manufacturing, 2001

| Manufacture of: | Measure | Quantity. |
|---|---|---|
| Timber – cut and sawn | $m^3$ | 11,043 |
| Oak, wooden parquet boards and details | $m^2$ | 105,835 |
| Oak, beech and others. | $m^2$ | 0 |
| Parquet, boards and details, profiled | $m^2$ | 290,231 |
| Wooden traverses for railroad | $m^3$ | 0 |
| Three-ply | $m^3$ | 43,417 |
| Timber panels | $m^2$ | 169,437 |
| Plywood sheets | $m^3$ | 4,148 |
| Windows, double windows | $m^3$ | 26,076 |
| Doors and frames, ledges | $m^2$ | 70,998 |
| Ordinary timber pallets | pcs. | 818,015 |
| Cases, boxes and crates | kg | 291,203 |
| Rolls for cables of wooden material | kg | 448,339 |

In 2000 the production of the furniture industry at current prices is BGN 194 million, which is 1.2% of production of the processing industry.

The share of deals by clients' orders is quite big. With materials of foreign clients in 1999 are produced about 45 and 40% of the production – in 2000.

The analysis shows that the growth is due mainly to the enlarged manufacture of metal and tubular furniture. The manufacture of solid furniture is not regular and depends entirely on the orders for export and for sales at the domestic market.

***Commercial characteristics*.** The realized export from the woodworking industry has increased with 17.3%, but his relative share from the total export of the processing industry is still smaller then the manufacturing indexes. Therefore it will be considerable to make the conclusion for the export orientation of the branch. The biggest is the increase in the sectors "manufacturing of raw material and wooden products"and "manufacturing of veneer, plywood and plates", respectively with 36% and with 32%. In the furniture branch is worth to be mention the growth of the export, realized from the "manufacturing of furniture" – 53. 2%.

Over the period 1998 – 2001 the import of timber and its products constantly grew. This increase is different in various product ranges. The biggest is an increase in cases, boxes, crates and other packing, where the basic index is 4,09, while the lowest level has increase in three-play, plywood flatnesses and laminar wooden

material – 1,28. The negative rate registered two products ranges – Firewood (0,51) Plywood sheets and specific plywood (0,54).
The import of furniture has a lower pace of increase in comparison with timber products import. The highest basic index is in other furniture –1,74, while the lowest is in Furniture used in kitchens (1,11), as well as chairs and seats (1,12).
In the export of timber for the period 1998-2001 the higher levels are reached in 1999 – 99 989 000 USD. The veneer, plywood, laminar wooden materials and the plates from wooden fragments and fibres are more frequently exported groups and they increase the export with more over 30%. After 1999 the volume of the export begins to decrease and in 2001 is with 6% lower, compared with 1998.
During the period 1999 – 2001 the export of furniture from wood is constantly growing and during 2001 have been exported USD 50 096 000, as the higher levels of exportet groups are *Chairs and seats*, and *Other furniture* are 30.5%. The biggest quantities Bulgarian furniture are exported to USA – 19.8%, Greit Britan – 18.4%, France – 8.2% and Germany 8%. The study of the structure of the export acording to the Customs rate, shows that about 45% of the export is a reexport of products, after processing materials of foreign clients. The biggest growth is in the first quarter of 2002 is marked in the furniture used id bedrooms – 616 thousand USD (69.4%) and chairs and seats – 1 467 tousand USD (23.0%). It is observe a decreasing of the export of office furniture – 118 thousand. USD (26%). The dinamic of the export and the basic domestic markets are shown in tables 10, 11 and 12 in Annex 2.
***Technical characteristics of the production.*** For providing of the production competitiveness in domestic and foreign markets, by law the quality of the products are regulate with Legislation concerning technical norms of the products and the relevant technical standards.
In contrast to many states, where the national standards are compulsory and have a statute as a law or regulation, in Bulgaria the technical standards are advisable**..**
In the sector woodworking and furniture industry exists about 350 Bulgarian state standards and about 120 European (EU and ISO), which should be implemented as BDS EN and BDS OSO. In figure 1 the standards, related the production of woodworking and furniture industry are presented.
The consumer's protection in Bulgaria is settled by a specialized Law of consumer's protection and rules of trade, as well as by operating sub legal framework. The control is made by the Commission of trade and consumer's protection and the Ministry of Economy. Legally, the consumer's protection is well regulated in the field of woodworking and furniture industry. The existing legal framework protects consumers basically in panels' utilization, made by unhealthy sticked resins and glues, paints and varnishes. Legally is ensured also the consumer's protection against furniture production and its quality, as well as the harmlessness of utilized materials.
The technical innovations, made in the period 1998-2001 are reduced to building of new lines for production of WB (wafen boards), used in construction and production of packings and line for the plates from wooden fragments. Also are modernized some technical parts of existing installation, aiming current maintaining. The production of seats and backs is enlarged. Leading Bulgarian enterprises are concentrating their efforts during the period towards installing of:woodworking centres with numerical program control for working of furniture details on all stages

of manufacturing process, contemporary machines for sawing plates;contemporary canting machines.

***Management and education.*** By an expert opinion, one of the problematic directions, in which must be fine a decision for the companies of the branch is the qualification of the managers and the businessmen in the fields of management and marketing. Because of the specific of the branch, where are most SME, in the biggest part of the companies the property is not speared from the management. The owners of the biggest part of the new founded companies are experts from the branch, who doesn't have the required qualification and management skills. Only in the big enterprises the management is separate from the property and it is given to special engaged management teams. As a main problems in the management, can be mention the follow:

1. Scanty knowledge for modern and rational methods for production and management.
2. Low effectiveness of the production, connected with weakness of the organization.
3. Necessity of increasing the qualification of the staff, especially in implanting of new techniques and technologies in the manufacturing.

### *3.4. Policy Framework and Production Conditions*

The well-developed legal and sub legal system in Bulgaria, elaborated by Ministry of environment and waters, Health ministry, Ministry of regional development includes the common laws of environment preservation as well as the relevant regulations and orders. Here are included the law for environment preservation; the law for limitation of the waste harmful influence on the environment; the law for purity of the atmosphere; the law for preservation of water and soil from waste; the law for people's health; the sub legal framework, which defines content of wood dust in the atmosphere, the limits of admissible concentrations of harmful substance in the air and in the working environment, values of harmful emissions within the exhaust gases from drying installations and burning of industrial wastes. Important for the branch are the norms for physical load down of the workers and hygienic-physiologic and ergonomic requirements for optimal organization of the working process and place. These norms are compulsory concerning organization and physiologic work standardization

Expert consultations and market researches can be done by Bulgarian association of regional development (BARD), Bulgarian Association for Management Development and Entrepreneurship (BAMDE), Bulgarian Association of Management Consulting Organizations (BAMCO), Bulgarian Industrial Association (BIA), Bulgarian Chamber of Commerce and Industry (BCCI), experts from Forestry University and GTZ.

Connected with the enlarged of the export, since 1998 firstly for the EU countries and after for the rest countries, the export taxes for some round and sawn timber materials are removed. Since 2000, the export regime is strongly liberalized. It is put in operation registered regime for the export of raw unprocessed timber (customs tariff 4403). It concerns coniferous and wide leave timber with diameter in the thin end more than 4 cm, excluding destroyed by fire timber. For burned timber, there are disallow regime.

The conditions and rules for registering of export transactions are defined by Regulation No 4, article 7 – PMS 233. Registering of export transactions for unprocessed timber and firewood is accomplished by Forestry Ministry. It is necessary to be presented documents for the company, the goods and for the transaction.
The unprocessed round and sawn timber materials, which are from local tree types are free of taxes and duties for export and import.
Different types of boards (particle, fiber, OSB etc.), plywood, veneer, windows, wrap page, furniture and other timber products are free of export taxes, bur for the import there are duties from 2.5 – 3% up to 20.5%, depending from the country, conformable to the Customs tariff of Bulgaria.
The companies from the branch formulate the main problems in the fields of the finance in the following descending order, by a degree and importance:

- Too high collaterals required by the banks;
- High interest rates;
- Lack of information about different financing possibilities;
- Inadequate system for risk assessment by the banks;
- Not developed bank products.

These problem areas are especially relevant for the micro and small companies, which are typically characterized by:

- Insufficient assets suitable as collaterals;
- Higher risk, hence higher interest rates required by the banks;
- Poor credit record because of relatively short market presence;
- Small loan amounts, which lead to relatively higher processing costs;
- Poorly developed market strategy and lack of export orientation;
- Lack of adequate accounting.

The analysis of the financial data, provided by the National Statistical Institute, substantiates the above mentioned obstacles through the following conclusions:
The companies from the woodworking sector demonstrate negative and further shrinking profit margins; the same indicator for the companies in the furniture industry is fluctuating between 2.7 and -2.7%.
The debt ratio of the companies from the branch, expressed as total debt divided by total assets, shows a stable trend of growth. This proves an increased capability for attracting external funds; it leads to higher risk levels though. This is especially true for the woodworking industry, where in the last years the debt to equity ratio exceeds 3.
The furniture industry shows good possibility to serve its debts – in the period 1997-2001 the ratio 'Times interest earned' exceeds 5. Quite unfavourable is the trend of this ratio for the woodworking industry, where it dropped under 1 in 2001.
***Regional policy.*** The woodworking and furniture enterprises are allocated non regularly on territory of the country, as the capacity are concentrated mainly on territorial and raw materials principles. As an example typical regions, in which are concentrated the manufacturing of wooden products and furniture in the country are: Troyan – Teteven, Veliko Tarnovo, Velingrad – Batak – Peshtera, Bourgass and ets. Technical and consulntance help the businessmen can take from Agency for regional development and from Agency for SME, Branch chamber of woodworking and furniture industry.

***Institutions for education and science.*** The education and science institutions are allocated mainly in the towns with big woodworking and furniture enterprises and regions with rich of raw materials. In the region of Pazardjik there are 7 specialized schools, region of Plovdiv – 7, in region of Smolian – 6, in Blagoevgrad – 5, town of Sofia – 4,the region of Stara Zagora – 5. Specialists with tertiary education are trained in the Forestry University in the profiles „Forestry economy", "Wood-processing and furniture manufacture industry" and "Engineering design". Post graduate, qualification and re-qualification courses in the field of "Wood-processing and Furniture manufacture industry" are organized at the Forestry University. The University research sector provides for scientific and contractual projects for the teaching and technical personnel. There is a research and design sector, laboratory for wood modification and a wood-work shop.
Institution for forestry science in the field of "Forestry" and "Timber processing industry and furniture production" are as follows: 71 secondary specialized schools, Forestry University, Forest Research Institute, and some non-profit organization amomg them are Branch chamber of woodworking and furniture industry, Federation of Bulgarian wood processing and producers of furniture at the Bulgarian chamber of handicrafts, Bulgarian Forestry chamber, Union of independent Bulgarian professional foresters, Bulgarian German center for vocational Training (DBBZ).
***Degree of bureaucracy, support of SME***. Credit lines for supporting of SME from the woodworking and furniture industry are offered by: Hebros Bank Programme 'PERSPECTIVES' Developed in conjunction with EBRD Raiffeisen Bank, AD jointly with Soros Economic Development Fund "Soros", Encouragement Bank, CRS Bulgaria, German Credit Institution KfW; National Network for Micro-funding; PHARE Programme; UNITED BULGARIAN BANK; CARESBACK–Bulgaria; Programs of the Dutch goverment – "PSO" и "PSO+"for economical development; Program of foundation "FAEL"; Program SAPARD and some others programs of Ministry of labour and social politic. A inquiry survey made by Branch chamber of woodworking and furniture industry shows that the businessmen are not acquaint and doesn't search actively information for the international projects and programs, aiming supporting the enterprises of the branch.

## 4. Non-Wood Forest Products and Services (NWFP&S)[18]

*Summary*

There are many definitions for NWFP&S. Here they are defined as non-wood products for direct use – nuts, fruits, resin, game; supporting services – grazing, bee-breeding, sport hunting, recreation; life-supporting conservation, climate regulation, game supporting, erosion control, soil fertility insurance, amenities supplying, etc.
The production and consumption of non-wood products plays an important role in Bulgarian traditions. The change of property rights over forests and forest areas did not affect significantly the collecting of non-wood products as species and quantity.

[18] *Assoc. Prof. Dr. Katinka Mihova, Tatiana Terzieva, PhD student, Kamen Bonev, PhD student – University of Forestry, e-mail:katinkabg@yahoo.com.*

One of the problems, which have arisen in the last decade, is poaching (timber harvesting, game huntering, plants, illegal grazing, etc.). It is assumed that mainly small firms (of family or other small communities) use to collect NWFP, and in some cases they are involved in the next processing like drying, packaging, etc. They are present in the further stage of processing, distribution and export, usually firms with more capitals, assets, contacts, etc.
It is concluded that innovation in the field is at a low level. Improvements made are connected with better built drying machines and better organized stock building with ventilation, better packaging with appraiser materials and correct information on purposes, dates of fitness, etc.
The main directions for improvement of production and consumption of NWFP&S are identified.

### *4.1. State of the Art and Historical Development*

Historically Bulgaria has traditions in using non-wood products. Resin from the conifers, lightwood, medical herbs were widely used for domestic and sale purposes, as well as mushrooms, forest fruits, hip (Rosa canina fruits), blackberries, raspberries, blueberries, lime flowers, and more recently Sambucus flowers and fruits.
Most of the mushrooms and forest fruits, as well as herbs, are collected for export. A lot of honey is produced in bee-gardens in forests.

Table 14

Collected Non-Wood Forest Products (NWFP) 1961-2000 (in *tons*)

| NWFPs | 1961 | 1965 | 1970 | 1996 | 1998 | 2000 |
|---|---|---|---|---|---|---|
| Herbs | 6835 | 8222 | 7285 | - | - | 624 |
| Blueberries | 213 | 454 | 274 | 182 | 51 | 126 |
| Raspberries | 525 | 1032 | 276 | - | 6 | 64 |
| Cornel-fruits | 1230 | 331 | 481 | 534 | 20 | 52 |
| Blackberries | 646 | 1432 | 355 | 182 | 39 | 360 |
| Mashrooms | 3329 | 1651 | 2651 | 422 | 2342 | 1288 |
| Resin | 1154 | 2945 | 2616 | - | - | - |
| Lightwood | 16844 | 11901 | 14843 | - | - | - |
| Hay | - | - | - | 1504 | 666 | 1395 |
| Lime flower | - | - | - | 703 | 239 | 1049 |

Source: Forestry Board and branches reports (Vachovski, Dimitrov, 2003).

Table 15

Collected Non-Wood Forest Products 2002-2003 (in *tons*)

| Resource | Measure | Volume 2002 | Volume 2003 |
|---|---|---|---|
| 1. Christmas trees | Numbers | 69 330 | 38 892 |
| 2. Fruits | | | |
| ✓ Shell nuts (walnuts, hazelnuts) | Tons | 10 303 | 12 653 |
| ✓ Mellow fruits | | | |
| 3. Rosa canina fruits | tons | 1 619 | 2 026 |
| 4. Lime blossoms | tons | 398 | 204 |
| 5. Herbs / dry | tons | 267 | 427 |
| 6. Wild mushrooms, incl.: | tons | 8 022 | 6 670 |
| ✓ Edible boletus | tons | 7 410 | 3 825 |
| ✓ Chanterelle | " | 4 325 | 187 |
| ✓ Agaric | " | 758 | 509 |
| | " | 947 | 495 |

Source: Stoyanov, D. 2003.

Tendencies in collecting non-wood forest products could be summarized as follow: nearly giving up collecting resin and lightwood, some fluctuations in harvesting mushrooms, herbs, forest fruits, depending on buying up.
After 2000 some positive tendencies in collecting NWFP have taken place. Some data about revenues demonstrate doubling in 2001 (2 013 060 BGN), compared to 2000 (1 071 084 BGN), and nearly four times more in 2002 (3 898 795 BGN) (Stoyanov, D., 2003).
Many herbs are used in traditional medicine. Some of them are for personal use, the others are exported. **The change of property rights** over forests and forest areas did not affect significantly the collecting of non-wood products as species and quantity. There were some years between 1990 and 1996 when the recreation use was reduced, but recently it has been increased again. Despite the restoration of private property rights over some forest areas, real ban on entering these forests exists in very few of them. Real strictness exists in some categories protected areas (natural or biosphere reserves). One of the problems, which have arisen in the last decade, is poaching (timber harvesting, game huntering, plants, illegal grazing, etc).

*NWFP&S Definition, Classification and Relevance in Rural Economies*

NWFP&S are defined as products from the forests for direct use, some of them for indirect use. The role of the forests has been recently assessed as life-supporting, defined before usually as surroundings (habitat) – forming function. NWFP&S could be classified in different ways:
A)
1. Resources and raw materials for “industrial processing”: resin yield out of coniferous tree species, tanning extract from bark and sumac, cork, needles and stumps.
2. Resources of wild berries, herbs and mushrooms; walnut yields (of walnut plantations), lime blossoms from forest stands and plantations, etc.
3. Fodder resources: a) herbaceous resources for pasture and hay harvesting; b) fodder yield of tree species, seeds, etc.; c) bee pastures.

And another classification:
B)
1. Non-wood products NWFP for direct use – nuts, fruits, resin, game.
2. Supporting services NWFP&S: grazing, bee-breeding, sport hunting, recreation.
3. Life-supporting functions of the forests’ NWFS – water-preserving, habitat-supporting, biodiversity conservation, climate regulation, game supporting, erosion control, soil fertility insurance, amenities supplying, etc.

Third classification divides NWFP&S depending on further use:
1. Collecting for industrial purposes – resin for production of colophony, bark.
2. Collecting for food and medical purposes – mushrooms, forest fruits, herbs.
3. For farm purposes – hay harvesting, grazing, bee-breeding.

The country has a significant number of plants – 741 plants of Bulgarian flora are used as sources for drugs; nearly 20 plants supply forest fruits; 10 species of mushrooms have industrial and trade importance. NWFP collected for personal needs are not paid. Collecting for production must be paid according to regulations and fees (illegal actions could be observed).

According to the regulatory legal framework (Forests Law, Forestry Code, etc.) the NWF resources are not included in the forestry management plan, unless explicitly demanded by the customer. Consequently, these resources are neither subjected to a detailed inventory nor are accounted for as the stands, which results in a gap in the scientific data in the Forest Fund reports. Some general and very oblique indicators account for their usage, as production utilized over a certain period of time. Such a report, however, is along very broad lines and is far from being precise. The present stage in the forestry development in Bulgaria calls for an entirely new approach to the inventory of these resources which should include:

- application of some scientific methods for the inventory of the non-wood forest resources. Teams of scientific researchers have already worked out such methods;
- total and deatailed inventory of the non-wood resources over a ten year period;
- setting-up a new regulatory framework for the utilization of non-wood forest resource.

*Property Rights Regulation System (Access)*

As a result of political and economic changes in the country after 1989 Bulgarian forest branch underwent a stage of reforms from state property to market economy and restoration of private property. Very few of private forests are banned for access. The others – state, private, municipal – could be used under the regulations and follow the prescriptions of the professional project (arrangement of actions and activities). The situation is still unstable and it requires appropriate decision-making and policy.

*4.2. Case of Successful Marketing Strategies*

The firm BIOSTART Ltd, Velingrad, which works closely with the Agency for Regional Development, is an example for successful marketing strategy in Bulgaria. Its activities could be summarized as follow:
(a) Project “Mountain EcoKiss”, funded by UK Ministry of Environment, Food and Rural Affairs for wild-fruit production;
(b) Education for unemployed local people for environmentally friendly collecting of herbs and forest fruits under the Project JOBS – a joint initiative of the Bulgarian Ministry of Labour and Social Policy and the UNDP supporting job creation and small business development;
(c) Establishing of an Educational-Production Centre and initial production of jams from wild-grown fruits;
(d) Ecotourism in the Rhodopi region.
Results of the projects and the initiatives are: creation of the Soil Association Global Partnership *Certified Biostart Ltd, Velingrad for organic farming & production (22000 ha);* training of more than 60 women and children from socially weak position to work environmentally friendly. Realization of the production is in Germany and Italy; introduction of the initiative *Bulgarian HERBS* for small business development in herb sector in Bulgaria.
The another successful firm BARET is a kind of consulting one and it works mostly in natural areas. They had created an Eco Path Tran with the necessity for this establishment steps, small wooden bridges, indicative tables, etc.

*NWFP&S Definition, Area of Production, Harvesting Level, Technical Characteristics of Production*

NWFP for industrial purposes is an important activity, which could make a significant contribution to the economic development. But now such products are not collected in the country – a quite big harvesting nearly stopped between 1960s and 1980s of the 20th century.
NWFP could be a source as conifers and they grow in the mountains. They could be collected for food and medical purposes – mushrooms, forest fruits, herbs. These kinds of products are harvested for two main reasons: for domestic (family) use, and for sale – internal and external market.
NWFP could be collected for farm purposes. Here hay harvesting, grazing, bee breeding – traditional in fluctuation levels are among the better presented.
It might be summarized that the quality of all these groups of products is usually high (environmentally clean conditions, qualitative trees and forests). At the same time technologically most of the works are traditional and quite primitive.
Recently few relatively big companies and many small firms use NWFP in Bulgaria. For using natural resources they have to pay tariff fees (arranged by a law and an instruction of the Ministry of Agriculture and Forestry). The control of using natural resources is not enough effective and some damages on the habitats could be observed. The way of processing could be described in the following way: herbs are dried, some of them for use in the country (15-20% for local use) and more – for export. Mushrooms are manufactured – dried, salted and frozen mostly for export.

*"Product Chain" Organisation*

When collecting NWFP is for domestic purposes the amounts are small. The problem arises because more people and households harvest fruits and herbs for domestic purposes. There are no significant damages on trees, habitats, nature.
When NWFP collecting is for sale, some differences appear: (a) some people turn their "hobby" into "profession" – they collect more than they need and they sell the surplus. The way of collecting looks traditional – low amounts, good quality, less damages; (b) some individuals looking for a job and money harvest products and offer them to the purchaser; (c) in some cases registered firms, which have prior knowledge of the demand for some products, organize the work. They engage some people to collect the products for them. There are several ways of going to the consumers further: (a) these firms could "close the chain" with drying, making mixtures, conserving, packaging and supplying to sellers such small drugstores, etc. The whole process is under the regulation of sanitarian authorians, as well as permissions for product quality. Another way is (b) connecting with bigger firms which collect materials and produce the final product; and third (c) collecting NWFP for export: exporting companies are usually bigger; they work with many kind of products depending on demand and possibilities to export.
The first stage of harvesting, collecting, and in some cases drying, packaging, etc. is done by small firms (family or others). The further stage of processing and distribution export, if there, is by SMEs too, but usually firms with more capitals, assets, contacts, etc.

There is a tradition in exporting some NWFP – mushrooms, bee-honey, herbs. There are many foreigners visiting Bulgarian forests for recreation – winter and summer. Ecotourism, hunting-tourism is also form of indirect use (more detailed information further in the paper).

*Policy Framework*

The development of the sector of NWFP&S is regulated by the Decree of Council of Ministers No 93 & 94 – about approving tariffs for non-wood products charges – beginning from 29.05.2000, published State paper No 46 /06.06.2000.

*Characteristics of Technological and Organisational Innovation Behaviour in Non-Wood Production, Processing and Service Industries*

Innovation in the field is at a low level. Most of the methods used are close to traditional (which make them environmentally friendly, but sometimes risky). Available improvements are: drying machines better built and stock building organized with ventilation, better packaging with appropriate materials and correct informing for purposes, dates of fitness, etc.

*Conclusions*

The NWFP&S in Bulgaria have a big potential to develop in the future. There are possibilities for financial support from some EU and other Programs. More and more people know about that, but there is not enough knowledge on the application procedure, as well direct contacts with responsible experts. Entrepreneurship in the field is not very high. Despite low expenditure their return is not very high. There is very high interest in tourism as a business.

## 5. Forests and Ownership[19]

*Summary*

The forest resources and their ownership structure are important factors, affecting forestry production. Their main characteristics are summarized here and suggestions for overcoming the negative effects are identified.
The share of forest is 32.9% in total land area in Bulgaria. The share of exploitable forest area (forest which is available for wood supply) is 87.02%.
The forest ownership in Bulgaria is predominantly large scaled and public. The last years of economic transformation has affected the prevailing ownership relations in the forest sector. The structural and economic changes, directed to introduction of market economy, have defined new priorities in the forestry sector development connected with the restoration of the economic activities in the state-owned forests and comasation of the forests of small forest owners. As a result the forest industry overcame the state monopolism but went to the opposite extreme. The identified negative effects of the transformation in this period are: decreased production; insufficiency in quantity and quality raw material for the existing processing

[19] *Author: Assoc. Prof. Dr. Rossitsa Chobanova – Institute of Economics, Bulgarian Academy of Sciences, email r_chobanova@iki.bas.bg.*

capacities; lost markets for the production of the wood processing industry; problematic credit allowance.
It is concluded that to overcome the negative effects, the reform must be directed towards increasing competitiveness of Bulgarian forest related products and services and reaching a level of their annual growth and export by 10%.

### *5.1. State of the Art and Historical Development*

The forest and forest utilization is an important source for economic development. The challenges of recent changes in ownership have affected forest and forest utilization. They have raised new problems in addition to the existing ones. The last years of transformation were a period of structural and economic changes, directed to introduction of market economy, defining new priorities in the forestry sector development: restoration of the economic activities in the state-owned forests; comasation of the forests of small forest owners; interruption of experiments in the management of the forestry sector; attention to the Bulgarian experience and traditions in forestry. The forest industry in the transition to market economy after 1989 overcame the state monopolism but went to the opposite extreme. Now there are many improtant research questions on the country and regional level with no satisfied answer.

### *5.2. Forest Resources*

The wooded land, growing stock, average volume of forest per hectar, and exploitable forest area defines forest resources in the country. The land area in Bulgaria is 10 895 000 ha, of which 3 903 000 ha are wooded land and 3 590 000 ha are forests. The share of forest in total land area is 32.9%. The predominantly coniferous forest is 792 000 ha, predominantly broadleaved forest is 2 421 000 ha, and mixed forest is 376 000 ha. The growing stock is 467 345 (1000 $m^3$ o.b.), broadleaved forest – 193 531 (1000 $m^3$ o.b.), other wooded land and trees outside forest – 44 000 (1000 $m^3$ o.b.). The average volume per hectare of forest land is 130 ($m^3$/ha). The mean net increment per hectare ($m^3$/ha/a) is 3,34.
The share of exploitable forest area (forest which is available for wood supply) is 87.02%. The share of forest area affected by restrictions in harvesting (the share of forest which is not available for wood supply) in the country is as follow: 7.4% because of conservation/protection reasons and 5.5% because of economic reasons.

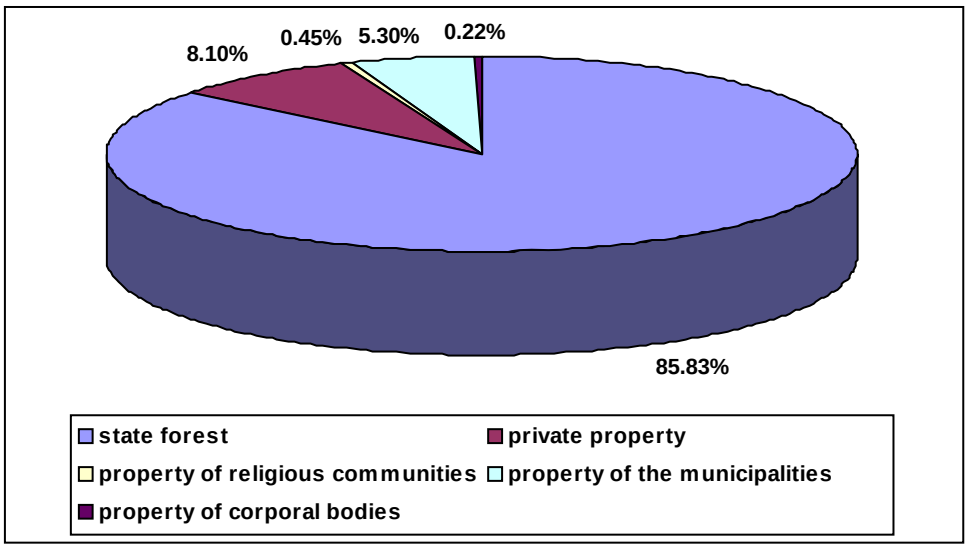
### *5.3. Forest Ownership*

The unfinished process of restitution is a barrier to provide enough clear picture of ownership of forest and other wooded land. But according to official information, the ownership is predominantly large and public.
The number of holdings of forest and other wooded land in public ownership is 3 903 000 ha. The distribution of numbers of holdings in public ownership in size classes show that there are only 2 size classes presented in the country. The prevailing size class is those of 1001 – 100 000 ha. It is performed by 91, 9 holdings in Bulgaria. 18,1 holdings belong to the size group 501 – 1 000 ha.

The share of forest ownership[20] is shown on figure 1.

Figure 1

Percentage Distribution of the Forest Fund of Bulgaria on Types of Ownership




The major part of the forest ownership is state one – 85,83%. The property of private persons is 8.1% of total. 5.3% is the share of municipalities, 0.45% – of religious communities and 0.22% – of other legal entities.

The trends of forest ownership depend on the processes of restitution and privatization. It is difficult to make any projections at this moment, because of the lack of clear political will and legislative base. The same reason is the right to collect and sell NWFP from public and private forest to be not enough well defined in the country, either.

*5.4. Main Problems and Research Questions in Forest Resources and Ownership for Enterprise Development in the Forest Sector*

The main problem and connected research questions for enterprise development in the forest in Bulgaria concern development of an effective National strategy towards forestry, wood processing and non-wood products and services. The lack of clear vision and of consensus in this respect defines a broad area of questions to be answered. Among them are what kinds of policy to be followed in the forest sector? Which model for innovation system in forestry to be chosen? What kind of institutional infrastructure for the forest sector development to be supported? Which is the effective strategy for further integration to EU forestry structures, what kind of effective marketing strategies for Bulgarian products to develop? What kind of instruments to be introduced in order to increase sources for purchasing modern forest machinery, building forest roads and forestation? What kind of incentives to be implemented in order to improve quality of local production and to protect industrial property rights? How to speed processes of standatrization and

[20] Annual Report of the National Forestry Board for 2002, “Gora”magazine, issue 6, 2003.

certification? What kind of model of training and education to be followed in order people to be able to solve the above problems?

*Conclusions*

The economic integration of urban consumers' demand and rural forestry production in Bulgaria is on low level. The main problem and connected research questions for enterprise development concern providing of an effective National strategy towards forestry, wood processing and non-wood products and services. The lack of clear vision and of consensus in this respect defines a broad area of questions to be answered. Among them are those of development of an effective innovation strategy for further integration to EU forestry structures, for promoting Bulgarian products and services. Integral part of this strategy are identification and application of instruments for increasing the sources for purchasing modern forest machinery, building forest roads and forestation, improvement of the quality of local production and protection of the industrial property rights, speeding the processes of standatrization and certification. Development of innovation networks and new ways of corporate governance seems to be the modern tools for new strategy implementation.

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*Alexi Danchev[1], Ebru Guven Solakoglu[2], Said Dagdas[3]*
*Mustafa Fehmi Turker[4], Bekir Kayacan[5]*

# SUPPLY AND DEMAND ASPECTS OF FORESTRY IN TURKEY: A GENERAL OVERVIEW

*The paper summarizes demand and supply aspects of Turkish forestry and its link with the other sectors of the national economy. Stressing out the importance of industrial forestry in Turkey, we suggest that the forestry is a sector of not high backward linkages, but the forward linkages of which are significant as it gives inputs to a lot of other sectors. Although it does not have high share in the overall production in national economy, the importance of environmental and ecological services of the forestry sector increases significantly. Forestry sector supplies products used as inputs and final consumption both for the domestic demand and to a very limited degree for foreign demand. Nevertheless the external factors play important role of the development of this sector. The paper also suggests policies followed by identification of some factors that affect the competitiveness of forest wood and non-wood products chain indicating their links with the international cooperation and in particular with the on-going process of accession to the EU.*
*JEL: E20, 013*

## Introduction

Forestry sector plays an important role in an economy as it supplies forest products to meet their increasing demand and is a source of significant positive externalities for the national economy. The supply of wood is based on natural and industrial forests with increasing importance of the latter. Indeed, supply of wood products for the national needs with the rising demand of wood on the national and international markets creates problems, as at present the wood production is not capable to compensate the rising demand for forest products.
Total forest area per capita in Turkey is not very high due to the increasing population when compared with the other countries total forest area per capita. Despite the big area of forests, it accounts for only 0.32 hectare per capita, while the same indicator is 1.13, 1.05, 0.92, 0.92, 0.40, for the USA, Kazakhstan, Turkmenistan, Greece, Bulgaria, respectively. The story becomes more dramatic when we compare per capita productive forests. For Turkey it is only 0.15 hectare

[1] *Alexi Danchev, Prof Dr., Fatih University, Economics Department, Istanbul, Turkey, Fatih University, Economics Dep., Buyukcekmece, Istanbul 34500, Turkey, Office: +90 212 889 0810 (ext.5029), E-mail: adanchev@fatih.edu.tr, Fax: +90 212 889 1162.*
[2] *Ebru Guven Solakoglu, Assist. Prof., Fatih University, Economics Department, Istanbul, Turkey, E-mail: egsolakoglu@fatih.edu.tr.*
[3] *Said Dagdas, Dr., Central Anatolia Forestry Research Institute, Ankara, Turkey, E-mail: saiddagdas@yahoo.com*
[4] *Mustafa Fehmi Turker, Prof Dr., Blacksea Technical University, Trabzon, Turkey, E-mail: mft@ktu.edu.tr*
[5] *Bekir Kayacan, Dr., Istanbul University, Faculty of Forestry, Istanbul, Turkey, E-mail: kayacan03@yahoo.com*

per capita, while for Finland, Russia, Brazil, New Zealand, Europe, and for the world as a whole it is 4.53, 4.2, 3.76, 2.21, 0.26, and 0.64, respectively. This signals the need of rise of national industrial forestry as one of the paramount tasks of the national economy.

**Demand Aspects of Forestry in Turkey**

The demand of forestry products has long traditions in the Turkish history. Despite the fact that the sustainable use of the forests are not explicitly declared the national culture over the centuries, the modern visions of forestry extrapolate these traditions combining them with the up-to-date policy of sustainable development and its implementation for turning industrial forestry into an efficient and competitive sector. Thus, up-to-date consumption of forestry products is facing extended protection of forest reserves and creation of new ones, which strongly reduces unsustainable use of these resources.

An important feature is the increasing industrial plantation in non-productive land not suitable for other purposes. This is source of additional wood coming to meet the rising demand of wood and related products. However, systematic studies revealing the links within the technological chain wood-wood products are limited in number (Cakir 1986, Kayacan 2004).

Industrial forestry in Turkey introduced modern technology in cultivation and logging of trees, including genetic improvement of the structure of forestry. Therefore, although growth was slowed down in the sector, forestry as a whole increased in productivity in the state and private plantations. Moreover, active government policy for rational use of forests aimed at protecting natural forests and extending industrial forestry at the expense of extending plantations on new low productive lands with suitable provenances of species such as Turkish red pine (*Pinus brutia* Ten.), *Eucalyptus camaldulensis* D., *Pinus radiata* D. Don, *Pinus pinaster* Ait, *Pinus elderica* Med., etc. (Cengiz et al. 2002, Dağdaş 2002, Tulukçu et al. 1987, Tunçtaner et al. 1985).

Turkish forestry sector can be characterized as a sector that produces mainly intermediate goods and stimulate the rise of production of the sectors, requiring forestry product as input for providing outputs of the final demand. Although the share of forestry sector in the economy is not high, the input-output analysis indicates that it is strongly interrelated to a lot of the other sectors (Turker 2005).Thus, the forestry sector is a sector of not high backward linkages, but the forward linkages of which are significant as it gives inputs to a lot of other sectors. Consequently, despite its small share in the national economy the forestry sector can be defined as a sector with strategic importance (Geray 1993).

Turkish forests are also a source of a lot of non-forestry products (named also secondary forest products), which are substantial part of consumption of some households, especially for the local population.[6] The production of non-wood forest products in Turkey is realized in two ways: as planned and unplanned production (SPO 1995a, GDF 1995). The planned production has been realized according to the targets determined by the Five Years Development Plans, and depending on the demand of home and foreign markets. Its management and the preparation of

[6] These include medical shrubs, grass and herbs growing in forest and its open spaces, various crops obtained from their leaves, flowers, seeds, stems, roots, gum resins, etc.

the silvicultural plans in this area are based on the budget and the regulations related to logging, production and sale rules of secondary forests products.[7]

As a whole, the production of non-wood forest products in Turkey is strongly dependent on the home and foreign demands. As the production potential is, high tree products are used not only for home consumption, but also for export. Between 1990 and 1998, more than 300 million dollars value of forest products were exported. About 98 percent of total export revenues were obtained from the non-wood forest products, while the rest was received from round wood (Konukçu 1999, Turker 2005). Turkey also plays an important role in the aromatic and medical plants trade in the world. For instance, between 1990 and 1999 Turkey exported for 682.7 million dollar value of medicinal plants (Toksoy et.al. 2003, p.8).[8]

The analysis of the modern consumption of forestry products would be incomplete if we do not consider the non-use value of forestry. The non-use values are important source for estimation of demand of many forestry related goods as for example recreation in forestry. While most of the resorts are concentrated in the sea areas, the Turkish forests provide an excellent recitation capacity. This activity is highly developed in some areas but as a whole the usage of forest is far below its potential. Producing estimations of such non-use values as existence, bequest, etc. values can be used in planning the growth of recreation in forestry areas.

These kinds of estimations should also be included as a part of analysis of consumption of forestry products as they create long-run effect on consumption. Producing estimations of non-use value of forestry gives a powerful instrument to the decision-makers to assess the benefits (real and potential consumption) of such activities in the forestry sector as creating recreation zones, protected areas, national parks and reserves, tourist zones, etc.[9]

Evidently, there is sufficient evidence that the shadow consumption of forestry products is not small. Taking into account the features of national consumption especially in rural population we expect high shadow consumption of non-wood forestry products. This is very symptomatic for the whole region, where the collection of forestry products as mushrooms, medical herbs, etc. is a tradition from old times. Besides, the forest products are, as a rule, an object of shadow consumption especially in countries where the control over the property rights is slack. The shadow consumption of forestry products may increase, however, due to inefficient defining of property rights. Then, it results in consumption of forestry

[7] In particular, this is related to such products as resin, storax, laurel leaf, box-tree, garden stake, fat pine, etc. On the other hand, other non-wood forest products, which have high potential of exporting and which are cultivated in the forest areas such as pine nuts, chestnut, sage, mushrooms, sumac, lime etc. are supplied mainly without any plan and independently from the market demands.

[8] Another technological chain of primary and secondary products of forestry areas is animal breeding, which constitutes serious part of local consumption. The primary animal breeding results in secondary goods (milk, meat, wool, leather, manure, etc.) all of them part of the local consumption. Although we can expect that the animal breeding in the forests is big in the rural populated mountainous areas, there is not available information about its dimensions. No official statistics could be found for the quantities produced and the prices per unit. The collection of such information can be realized by means of a survey carried out in the villages adjacent to the forests.

[9] Our preliminary observations indicate that forestry sector in Turkey is a source of important non-use values, which are substantial part of the benefits from forestry and are closely related to potential consumption of benefits coming from forestry. Non-use value of forests in Turkey account for about 61.5% of the total benefits of forests in Turkey according to Bann and Clements (2001, p.55-56). Other estimates also indicate that the non-use values of forestry products per hectare exceed the total per hectare benefits (Toksoy et.al. 2003, p. 8).

products outside the existing in the economy price system, which includes consumption of forestry and non-forestry products freely collected from the forestry areas, illegal logging, consumption of non-forestry goods self-produced in forestry areas, etc.[10]

**Supply Aspects of Forestry in Turkey**

The supply of wood is based on natural and industrial forests with increasing importance of the latter. The basic cultures of industrial forestry are pine species with increasing share of poplar and eucalyptus plantations. The share of poplar increases very rapidly due to its high productivity and demand, making it attractable for the private sector due to its good profitability.

The supply of forest products depends strongly on the structure of forestry production, its efficiency and links with the other sectors of economy. Its role is multifarious: forestry production is a source not only of inputs for the other sectors, it also creates additional jobs especially in areas with high unemployment – a fact additionally increasing the economic importance of this sector. According to Özyurt (1982), the employment multiplier of forestry sector is 0.291, which puts it at 17$^{th}$ position with regard to the employment effect in 64 sectors in the Trabzon Sub-Region economy. This high ranking is results of the application of labor-intensive technologies in forestry sector.[11]

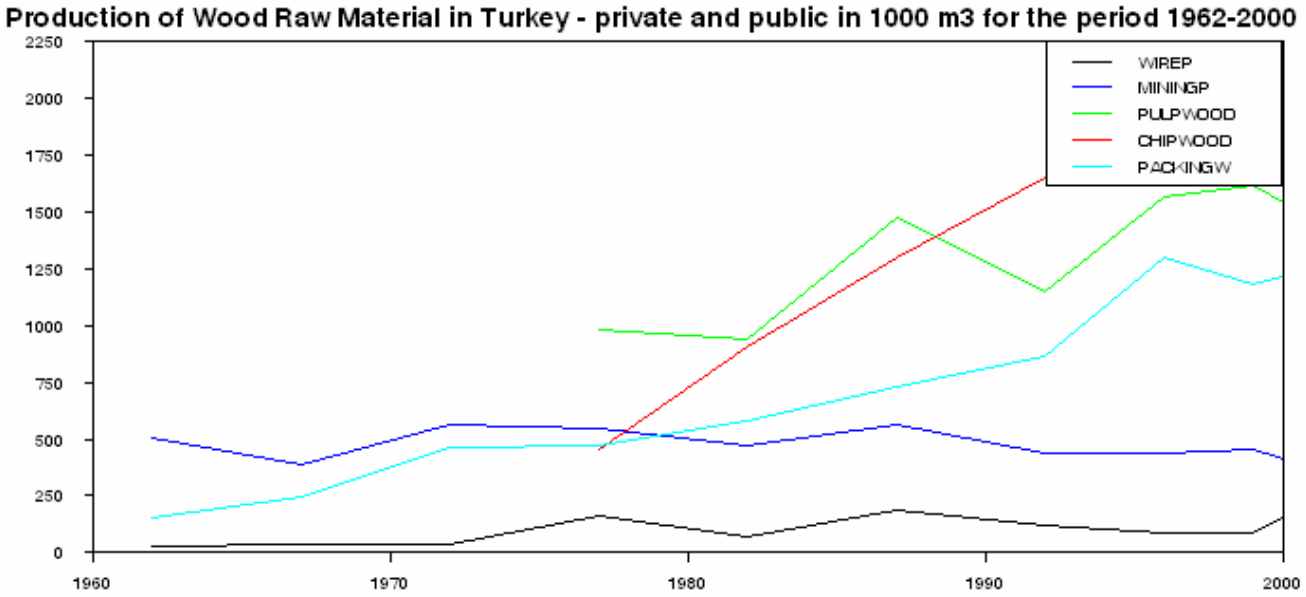
Belonging traditionally to the low-technology sectors forestry is not high profitable segment of national economy and the government support is of paramount importance for its growth and development. The production multiplier of forestry sector accounts for 1.222, the income multiplier is 1.377 in the 97 sectors input-output matrix of national economy. This puts the importance of forestry sector in the ranking of all the sectors on the 93$^{rd}$ place in production ranking, and on the 89$^{th}$ place in income ranking (Türker, 2005). From this point of view, the analysis of supply of forestry products requires to shed lights on many other problems influencing the further growth of forestry.

Despite its low place in the ranking due to its forward and backward linkages, this sector plays very important role in the national economy. Forestry sector was in a process of progressive structural changes during the last decades. The dynamics of production was increasing during the second half of the 20$^{th}$ century reaching its maximum in 1970s with slight fluctuation during the next decades around 4,800,000 m$^3$ (see Figure 1 for production of industrial wood types in Turkey from 1962 to 2000). In structural aspect the changes were toward increasing the share of goods based on modern for these sector technologies.

[10] Illegal loggings accounts for big part of the whole forestry in Turkey. The level of illegal cutting (7200 thous m$^3$) that is comparable with the production in the private sector is very high. However, the study of shadow consumption requires a lot of specific information as a rule not available in the traditional statistical sources. That is why we can express only some intuitive considerations on the subject.

[11] As employment is not included in the Inter-industries Treatments Tables prepared by Turkish Prime Ministry State Institute of Statistics (SIS) for the year 1996, the employment multiplier of the sectors related to the forestry could not be calculated.

Figure 1




Note: 1) About 80 % of the total industrial roundwood comes from coniferous species.
http://aks.iujp.dot

The investments in forestry sector were also dynamic during the last decades reaching its peak in 1977 and 1987 and although slowing down for the next decades as a whole they exceeded the investments in the previous decades. For the present decade, we can say they are relatively stable with expectations to rise due to the need of modernization of this sector. The basic sources for investment were the budget and after 1986 the Afforestation fund, which share in the total investment increased (Ormanlar, p. 85-86).

Since 1950`s there is a rise of plantations and forestry experiments carried out by various government institutions. At present the government policy in forestry sector includes a complicated institutional structure with great influence on decision-making in macro and micro levels. It directly and indirectly affects the supply of forestry products. The ownership in forestry is mainly public, but it changes from state to private in terms of increasing the role of private sector in industrial forestry. This rise was impressive during 1990s to reach the total amount of 28,476 hectares by 2000. To stimulate the modernization of the structure of forestry sector, the government is encouraging private initiatives within the publicly owned forestry land. By ownership, the private plantations are distributed as about the half belonging to the village legal entities and about a quarter to the real persons and others.

The institutional and legislative base of regulation supply of forestry products is in process of improvement and better codification aimed at facilitating the unification with the European standards and implementation of the basic aims of the policy of sustainable development. Afforestation Regulations and Afforestation Fund Regulations (1994) are example of such improvement. The National Reafforestation Mobilization Law (1995) although removed by 2004 nevertheless was assessed as “the most significant legal and financial arrangement, securing sustainable flow of sufficient amount of financial resources into the Afforestation Fund”. The government policy in forestry is improved also by further extending of forestry legislation, stimulating private plantations development, providing financial support to industrial forestry, etc.

The direct instruments of regulation are expressed mainly in the government initiatives of industrial forestry development. It starts with including this activity in the nation-wide planning process since 1956 as well as in supporting various initiatives of non-government institutions. It is facilitated by the fact that most of the forestry is public property.

Public investments in this sector are high and the ambitions are to further increase them. It is reflected in the Five-Years Development Plan (2001 – 2005) of the State Planning Organization aimed at increasing annual average growth of industrial forestry to 56,000 hectares for the planning period. The public planning is regarded as “the basic and the most important planning tool in Turkish forestry” (CP2002, p.32). On the other hand the dynamic of public investment (the basic source of productive investment) is uneven and not highly correlated with the revenues in this sector[12].

[12] The simple least squares estimation indicates that revenue = 240.1700 + 2.322786 investment.
(20.44228) (0.406221) $R^2 = 0.632$
The application of autoregressive conditional heteroskedasticity method reveals low convergence even after 100 iterations.

It is an indication of multifarious influences on the link between investment and revenues. Indeed, the results of the simple regression (linear and non-linear) are not sufficient for more profound conclusions; besides, this link has definite lag, which is rather long in forestry sector. However, the rise of revenues means higher logging and the need of higher investment for afforestation. The revenue movement in this sector demonstrates more fluctuations in comparison with production, and the difference between revenue and production is slowing down over time which can be regarded as some drop of profitability in forestry sector (Ormanlar, p. 93). To reveal better mechanism between revenue and investment, we need to analyze the structure of sales revenue that has been changing seriously during the last decades. We observe the share of general management cost in the total sale's revenue increasing from 10.6% to 35.4%, and investment share decreasing from 14.9% in 1985 to 4% in 2000. Similarly, we can see a slight rise of production costs from 27.0% in 1985 to 33.5% in 2000. The share of maintenance cost actually remains the same during the period – from 20% in 1985 to 19.4% in 2000 (Ormanlik, p. 94).

The economic instruments of the government policy include a broad spectrum of measures aimed at stimulating the private sector to participate in industrial forestry in sustainable manner. Among them we can indicate various grants, subsidies, favorable tax regimes, assistance for providing grants and low interest credits for private forestry plantation growth, guarantying risk, reshaping property rights to enhance industrial forestry, etc. Some authors (Diner and Koçar, 1999) recommend external funding of plantations, zero coupon bonds, mortgage certificates and annuity charge bonds as the most suitable financial instruments for the long term. Financing institutions involved in this process are various insurance companies, pension funds and development and investment banks

The stimulation of the private sector participation in the new plantations establishment is of a great significance as it helps not only to increase production of timber but also to create new jobs. It is especially important for the mountainous areas where unemployment is high. The government keeps on giving free allocation of the low productive lands for reforestation of the private sector. Among the other measures we can indicate also technical assistance, free access to a lot of information concerning reforestation, free seedlings. Good examples are the family run poplar plantations providing timber not only to the wood industry but also for other sectors and local needs.

**Factors Affecting the Competitiveness of Forest Wood/Non-Wood Products Chain**

The demand for forestry products is currently increasing faster than their supply, which widens the gap between supply and demand of wood in the country. It is expected that this tendency will increase during the present decade.

The comparative analysis of the consumption of industrial wood indicates that Turkey consumed 0.185 $m^3$ per capita industrial wood by 2000, while the world consumed 0.263 $m^3$ per capita, where as the amount is 1,293 per capita for North and Central America, 0.832 per capita for Oceania, and 0.541 per capita for Europe. On the other hand, capita fire-wood consumption per capita in Turkey is relatively high when compared with the other industrial countries. It accounts for 0.273 m3, while the same indicator is 0.693 m3, 0.595 m3, 0.473 m3 and 0.417 m3

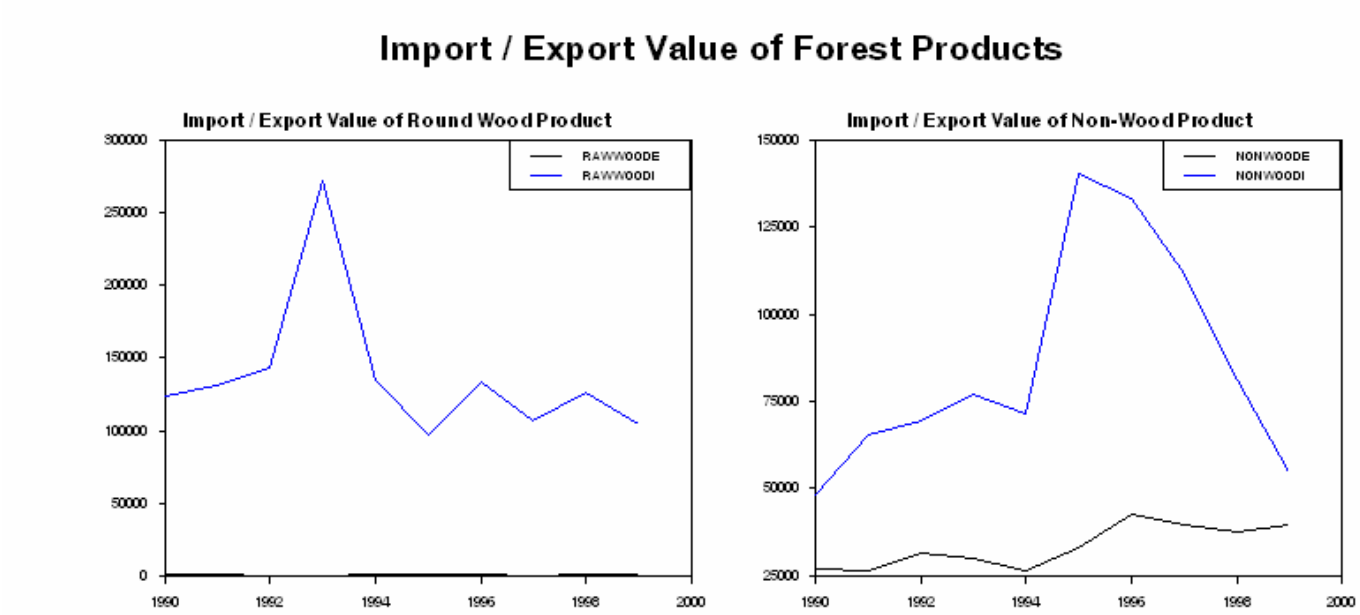
for Africa, North America, Sweden and the world as a whole, respectively (Ormancilik, 2001, p 175). Relatively high per capita consumption of fire wood can be explained with the high share of population living in mountainous areas and the high use of chalk wood for preparing a lot of national foods.

Turkey participates actively in the international trade of wood and non-wood forestry products. The export of forest wood and non-wood products is somewhat increasing, especially for non wood products as can be seen in Figure 2.[13] The import of forest product is more diversified than export. If we exclude import from Russia (35.2% of the total import) all the other country's import is rather small with exception for African states as Gabon (8.2%), Cameron (5.9%), and Liberia (3.1%). The total import of forest product form the EU countries by 1999 accounted for 14.9% of the total import of forestry products. The import of forestry product from Bulgaria accounts for 2.4% and from Romania 2.7%. Turkey imports forestry products even from the USA (0.6% from the total forestry import). (Konukcu 2001, p.133).

The application of input-output analysis to the national economy including export and import of forestry allows to shed light on the links between exporting/importing capacity of the country. While the export/import rate of 97 sectors in the national economy is 88 %, the export/import rate of forestry sector is 3 %. Similarly, the shares of forestry sector's export and import in the total export and import of the national economy are respectively 0.01 % and 0.3 % (Turker, 2005). According to Geray (1986), the fact that the sector's production is mostly devoted to home consumption, the export opportunities are very limited and this characteristics of the sector might be only changed in a long period. In other words, the products obtained from Turkish forests can not meet the home demand and this problem is expected to exist for a long period. For these reasons the supply needs are compensated by means of importing. Although forestry products exchange with the rest of the world is dynamic in comparison with the other sectors, forestry can not be included into the list of basic international trade sectors of Turkey (Geray, 1993). Extending bilateral agreements between Turkish forestry sectors and similar sectors in other countries, especially countries with developed forestry sector, result in extended exchange of scientists, ideas and other forms of knowledge from joint projects. Turkish-Finnish Forestry Project is a good example of successful bilateral cooperation. Intensive links are carried out with New Zealand and Chile, regarded as leaders in industrial plantations and providing experience indicative in many aspects to the other countries.

[13] The geographical orientation of the export is to Holland (24.6% of the total export of forestry products by 1999), Germany (23.1%) and England 912.9%). Totally the countries of the EU occupy 77.5% of the total export of forest products (Ormanlik, p. 133).

Figure 2




RAWWOODE stands for round wood products exported, RAWWOODI stands for round wood products imported, NONWOODE stands for non wood products exported, NONWOODI stands for non wood products imported. All the values are in thousands.
RAWWOODE does not appear in the table due it's low values. For instance, the highest export on raw wood products happens in 2000 and the value is 1305 thousand dollars.
Source: Forest Products Export in FOB prices (Ormanlik p.132, htpp://aks.iujp.dot); Forest Products Import in current prices (Konukcu, p.132, htpp://aks.iujp.dot)

Turkey creates a good base for international cooperation by signing and adopting important international documents as the resolutions taken at Strasbourg, Helsinki and Lisbon Ministerial Conferences on the Protection of Forests in Europe, and establishing a National Follow-up Committee consisting of experts responsible for technical coordination of each resolution (CP2002, p.37), which directly affects industrial forestry sector.
One of the biggest challenges to Turkish forestry is the on-going process of accession to the European Union (EU), which actually started since the membership application of Turkey to the EU in 1987. Since then there is a process of harmonization of Turkish with EU forestry legislation.[14] It is expected to influence industrial forestry in terms of improved competitiveness and more efficient cooperation with the industrial forestry sectors of the other European countries.

**Conclusion**

Our analysis clearly indicates that the present industrial forestry in Turkey is facing many challenges. The biggest challenge for the forests - the ever-increasing world demand of wood facing shrinking supply of timber - is a tendency, which affects also Turkey. With forests reserves and biodiversity close and in some aspects richer than the European ones, Turkey tries to give adequate responses to these challenges. Industrial forests in Turkey are growing to meet the modern economic and social challenges.
The rising industrial forestry and import try to complement the gap between demand and supply of wood for the industries and the local population. The most important challenges Turkey faces today are effective restoration of forests after logging, creation of new high productive forests and improvement of existing wood producing cultures. Significant research is carried out in direction of extending high productive forestry cultures including adapting of new forestry monocultures[15].
The need to foster further the structural improvement of industrial forestry is obvious. It started already with the genetic improvement of existing forests. According to the forestry experts to meet the challenges of the present and future industrial forestry there is a need to create a structure, which is close to the natural forests. This task can be solved by means of plantations formation combining the local and exported sorts of forests, which could adjust to the local climate allowing rapidly growing forests with reduced rotation period. This task is facilitated by the climate conditions of the country permitting to adapt high productive trees from the adjacent or more remote territories. It will require modernization of the technical base with introducing new methods of transportation of logged wood in a way, which will minimize the disturbance of biodiversity.

[14] For instance, The National Program for Adaptation to European Union Legislation and Regulations (2001) includes revision of Forest Law 6831, harmonization of legislation on manufactured forest products, establishment of adequate land cadastral information system, completing forests cadastral works, development of rural development strategies in harmony with EU policy, and development of institutional structures for this purpose, establishment of Farmer's registration system including forest villagers, etc.
[15] Among the whole lot of example we could indicate the Program of Improvement of Poplar Plantation carried out by the Poplar and Fast Growing Forest Tree Research Institute in Izmit. It includes tree selection, hybridization, commercial cloning, provenance selection, etc. The aim is to create cultures suitable for the concrete climatic conditions of the country starting with irrigated areas and ending up with the dry regions.

There are problems concerning the implementation deficit in providing government policy of stimulating the structural changes in forestry. Among the basic reasons reducing efficiency of the government policy we can indicate high share of low productive long period rotation of industrial forestry plantations. Additionally, increasing migration out of the mountainous areas reduces supply of adequate labor force for forestry. Moreover, support of private initiatives of forestry plantation extension does not take place since there is insufficient confidence between state and private sectors.

The first thing needed for the successful completion of such a collection is to organize dynamic accounting of the natural resources (wood and non-wood resources creating actual and potential consumption) of the forests. It means to organize systematic collection of information of the volume of natural resources of the forests and their change over time. This accounting can be implemented by the local forest administration, although the methodology and the start up of the initial data base collection are to be steered by a competent research institution. Needless to say it has to be computer processed and accessible to the society.

The basic information that does not exist to estimate more precisely the consumption of forestry wood and non-wood products is the representative data of the demand of these goods. Nevertheless, a big part of the information necessary to estimate the supply aspects of forestry products (cost, prices, revenues) is not accessible. Some information which is privately owned is not provided for public access and its collection requires an explicit permission by the owners. Most of the private forestry industry firms prefer to hide high part of this information to avoid taxation. There are cases when such firms even export medicine herbs and other forestry wood and non-wood products without presenting information about the volume of their export.

The presented hitherto analysis is the first step in summarizing the experience and preparing practical surveys for the need of the decision makers both in demand and supply sectors of forestry products. It was indicated that although the forestry sector does not have high share in the overall production in national economy, the environmental and ecological services of the forestry sector increase significantly its importance. Forestry sector supplies products used as inputs and final consumption both for the domestic demand and to a very limited degree for foreign demand. A significant part of the forestry sector's total output goes into intermediate demand, which means that forestry supplies inputs to other industries. Meanwhile, particularly the foreword linkages of the forestry sector underline its strategic importance for the national economy.

Despite a number of studies on various aspects of the growth and development of forestry sector, its real effect on the national economy still remains hidden. There are many reasons for it, including the difficulties due to lack of understanding, information and suitable methodology to expose its real potential in national economic records. According to some studies only 42% of the values of wood forest products are reflected into forestry sector and national balance sheets. For the non-wood forest products it accounts for 8%, for hunting 3.4% and for recreation 0.2%. In other words, the values of the such components of total economic values of forestry sector in Turkey as grazing (21%), carbon storage (14.8%), pharmaceuticals (10.5%) and biodiversity conservation (0.1%) are not transferred into the sectoral and national balance sheets (Türker et.al. (2002).

In short, while only 53.46% of forestry sector outputs can be calculated as positive externalities in national balance sheets, the rest of the positive externalities with a share of 46.4 % are not included. These figures, albeit arguable, indicate that the share of forestry sector in national economy indicated in the official statistics is lower than its real value. If the real effects of forestry sector can be calculated and reflected into national economic sheets, it is clear that all of the figures of forestry sector related to production, income, employment, sectoral linkages, etc. would be higher.

Such a revision of the general vision of the importance of forestry sector would allow to outline its real share and to demonstrate its vital role as supplier of a lot of valuable natural resources for the national and international economies. Producing more precise monetary valuation of the role of forestry sector would support the need for more intensive investments allocated in forestry sector. It would allow including in an adequate way the demand and supply of forestry products in the national strategy and policy of sustainable development of the country.

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## *SUMMARIES*

*András Inotai*

### EXPERIENCE WITH AND LESSONS FROM THE FIRST YEARS OF EU MEMBERSHIP – THE HUNGARIAN CASE

The accession of ten new countries to the European Union in May 2004 did not produce any major problem in the everyday functioning of the integration. At the same time, in the new members, no wonder happened either.
Most of the negative expectations linked to accession proved unjustified or mainly due to deficiencies in the preparation for membership. The article analysis the impact of accession on growth, inflation, employment, small- and medium-sized companies, regional development, budget and political sovereignty. The main conclusion is that eventual negative developments cannot be linked to EU accession but to home-made economic policy failures in the previous years. Of course, it is always easier to blame external factors, including now Brussels for own mistakes. In other areas, where membership created a new situation, the expected impacts could be identified well in advance (e.g. sovereignty).
A separate chapter deals with the two-year balance of accession. Trade with the new member countries shows a dramatic growth, particularly in exports. As a result, the traditional trade deficit turned to a substantial surplus within a period of two years, indicating the (regional) competitiveness of the Hungarian economy. The success of adjustment can be proved by the smooth transposition of EU directives and guidelines related to the internal market. Less promising were Hungarian developments concerning the main objectives of the renewed Lisbon agenda. In turn, Hungarians were successful in applying for higher positions in different EU institutions. Also, level and structure of utilizing EU funds can be considered satisfactory, excepting the delayed direct payments to farmers.
With membership, Hungary became a policy-shaper of EU decisions and politics. In the first years, however, this manouevring room has not been adequately used, since the traditional, historically rooted unilateral policy-taker behaviour and mentality could not yet be overcome. Another important problem is the deeply divided Hungarian society between two basic political parties and strategies that does not only appear in the different approach to global and European developments but seriously hinders the identification and implementation of Hungarian strategic interests in the enlarged European Union.
JEL: F15

*Garabed Minassian*

### BULGARIA IN THE EU: THE CURRENT ECONOMIC STATE AND SHORT-TERM OUTLOOK

The confidence crash in the major financial institutions, the disastrous consequences of the discretionary monetary policies of the BNB, as well as the dramatic depreciation of the national currency created the preconditions for the search and the enforcement of a radical solution – namely, the adoption of the currency board arrangement (CBA). The outcome of CBA is connected with the appreciation in the real effective exchange rate. The only economic adjustment implies that the production should look for ways to keep and increase its competitiveness mainly along the line of higher efficiency and better quality.
Bulgaria's current account has been negative for almost all the period since 1990 (more than 11% in 2005). The good news is that the international foreign exchange reserves of the country have been steadily going up. Bulgaria has managed to keep remarkable budget discipline after the adoption of the CBA. Recently, in search of incentives for economic growth there were some experiments with various tax structures.

In the conditions of Bulgarian economy the importance of the institutional factors for social and economic progress outweighs the others. The macroeconomic forecasts provide conditional projections – as a consequence from adopting one or another line of macroeconomic policy, or a given exogenous influence (for instance the dynamics of the domestic energy prices, of the major foreign exchange rates etc.), i.e. they study problems of the type “what – if”. The employed simulation model is used within the framework of the LINK project.
JEL: E61; E63

*Tamás Szemlér*

## MID-TERM ECONOMIC PROGRAMMES AND THE USE OF EU FUNDS IN HUNGARY

The paper provides an overview of the three main mid-term economic programmes of Hungary: the National Strategic Reference Framework (NSRF), designed for identifying the main development objectives and for the efficient use of (EU and domestic) financial resources, the Convergence Programme (CP), the fulfilment of which is crucial for getting closer to the introduction of the euro, and the National (Lisbon) Reform Programme (NRP) having macroeconomic, microeconomic and employment objectives to reach in order to modernise the economy and the society. The paper shows the most important linkages, contradictions and overlaps between the three programmes, stressing the need for permanent coordination. Ibudget corrections are in the foreground right now, but is crucial that they should be followed by real reforms: the CP foresees such reforms, and some of them are already designed and will be introduced as soon as in 2007. In the design of such reforms, the NSRF and the NRP have a very important role. Hungary should not handle any of the above programmes as just « homeworks », which can be solved by the creation of a certain amount of official papers, because the implementation of these programmes is of crucial importance for the economic and social development of Hungary in the coming years.
JEL: E65

*Judit Szilágyi*

## THE FEASIBILITY OF THE HUNGARIAN CONVERGENCE PROGRAMME

The paper provides on overview of the Hungarian Convergence Programme (CP) that envisages the path to restore macroeconomic equilibrium during the next three years. The spiralling budget deficit in 2006 made an update of the previous CP inevitable. In the September 2006 version the government shows strong commitment to face up to the fiscal imbalances and structural problems, yet several aspects question the feasibility of the Programme. The paper focuses on the evaluation of the major objectives and elements of the CP as well as on significant technical assumptions and external factors that may constitute a downside risk for the implementation. Besides introducing a corrective fiscal package the Convergence Program draws the outlines of several, long-awaited reforms of almost the entire sphere of the social welfare systems. As the primary focus is on the feasibility of the budgetary consolidation strategy, the paper deals with these reforms only in the context of the long-term sustainability of public finances.
JEL: E63

*András Székely-Doby*

## FOREIGN INVESTMENTS AND ECONOMIC CATCHING UP: THE CASE OF HUNGARY

The paper

JEL:

*Andrea Szalavetz*

## CHANGING NATIONAL INNOVATION SYSTEMS IN ADVANCED ECONOMIES – LESSONS FOR CATCHING-UP FOLLOWER COUNTRIES

This paper presents the results of a research project undertaken at the Institute for World Economics that focused on changes and institutional innovations in advanced economies' National Innovation Systems. These changes were provoked either by emerging new technologies or by changes in the outside environment that made the reform and the transformation of the institutional system necessary. We tried to identify the factors that provoked changes in the system, as well as the direction of these changes (whether different countries have carried out identical or similar changes). We also investigated the methods, the changes have been accomplished.
The three topics surveyed are the following: institutional centralization; innovation financing; and demand-oriented innovation policy as a complement to the usual supply oriented analyses.
JEL: O31; O32

*Rossitsa Chobanova*

## INNOVATION PERFORMANCE AND CHALLENGES TO THE BULGARIAN INNOVATION POLICY

Innovation is the main driver of knowledge based growth of modern economy. That is why the improvement of innovation performance becomes a core of economic policy.
On the base of benchmarking innovation performance of the Bulgarian economy using the European innovation scoreboard data the paper identifies main challenges to the national innovation policy. Among them are: to foster the overall R&D funding base; to initiate a recovery of R&D in the business enterprise sector; to strengthen the human resource base; to enhance the interactions between the actors of the science, technology and innovation system. In this respect the following questions, concerning innovation policy mix are discussed: What are the main objectives and priorities of R&D policy in the country? Is there

a gap between the challenges and the main objectives and priorities? Which policy instruments are in place today aiming at affecting R&D activities in the private and in the public sector? What are the instruments outside the R&D domain which are of particular relevance to R&D activities and the development of R&D expenditures? Is there a gap between the main policy objectives and priorities, and the instruments in place? What are the most important policy instruments that affect R&D expenditures? How does the governance of the system of R&D policy instruments take place, and is there a form of co-ordination between R&D policy and policy instruments from outside the R&D domain? Is there any evidence for interactions among the policy instruments in place with respect to affect R&D expenditure?
JEL: 025, 038,052

*Gábor Túry*

## REGIONAL DISPARITIES DURING THE TRANSITION: THE NEW SPATIAL STRUCTURE IN HUNGARY

If not in the regional differentiation process of the last one-and-a-half decades then definitely in the area of decisive processes can we can talk about a change. This change generated a new spatial structure, which also indicates a new economic and social spatial structure and a regional restructuring of settlements.
Individual regional development paths determining the new spatial structure display a high degree of regional differentiation in terms of development indicators in individual regions. Growth and decline at macro level determined by economic cycles diverge regionally to a substantial degree, and in some cases these divergences are extreme. Certain regions react more promptly than others to circumstances changed by economic cycles. This is not just due to the different regional dynamics but also to the 'inherited' sectoral structure and the government's development policies. Based on experience in the 1970s and 1980s we come to the conclusion that the mono-cultural production structure shaped by a mono-sectoral development policy implies several risks at regional level, as does supporting investments taking no heed of the amounts or nature of the assistance.
JEL: P25

*Nikola Vulchev*

## QUALITATIVE EVALUATION OF THE AGRICUTURAL ENTERPRISES' MANAGERS IN BULGARIA

The paper discusses the state of the development of the labor resources in the agriculture of Bulgaria. Main tendencies are drawn for it, outlining that the changes after 1989 provoke substantial changes in their quantitative and qualitative dimensions. The focus is on the qualitative characteristics of the agricultural enterprises' managers – of private and corporate type. On one hand, the sustainable decrease of the absolute number of the employed in the branch, the worse age reproduction structure of the agricultural population, the unfavorable educational structure and the unfavorable business environment for development of the agricultural activity influence adversely. On the other hand, the registered positive results in the economies with size over 100 decares used agricultural land give reason to draw the optimal conclusion that the large enterprises, producing for the market, possessing agricultural equipments and employed agricultural workers, are managed by considerably young managers with suitable agricultural education.
JEL: Q13

*Tamás Novák*

## DEVELOPMENT OF SMALL AND MEDIUM-SIZED ENTERPRISES IN HUNGARY

This paper aims at giving a snapshot on the major trends of SME development in Hungary. After a brief historical background, the focus is put on the current changes taking place in the Hungarian enterprise policy. A major transformation is underway in the SME financing as a result of the substantially increasing EU funds available for enterprise development. This process is also supported by the favourable competition policy rules applicable for the SME sector in the EU. These changes are also supported by the increasing competition between commercial banks for financing possibilities, the target group of which policy is the SME sector. Besides, the concentration of the SME support system with the aim of increasing effectiveness of state subsidy for SME sector is also carried out.
JEL:

*Plamen D. Tchipev*

## MOULDING CORPORATE BOARDS: A KEY CHALLENGE OF BULGARIAN CORPORATE GOVERNANCE?

The modern corporate governance structure in any country includes as its key factor the structure and functionality of the corporate boards. Currently, the boards experience a more or less radical change of their traditional activities and structure, acquiring new features and diversifying the old ones in order to answer of the raised demand before them by the business and social communities. The paper is revealing the status of the problem in Bulgarian companies within the immediate pre-accession period; it is based on a companies' survey selected from the main economic sectors. And, the main findings show an inclination of the current boards toward more traditional functionality and conservative structuring, i.e. the boards concentrate more in terms of time and quality to the traditional functions as overall governance and/or operational management and adopt appropriate structures. This also means that the surveyed boards are more reluctant of dealing with the functions like resolving of conflicts of interests and more flexible structuring as creating specialized committees, especially when things come to the nomination and compensation of the board members. Hopefully, the recent amendments of the legal framework in the field will provoke a restructuring and diversification of board functionality toward the highest present-day standards.
JEL: