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DEPARTMENT OF FORESTRY ECONOMICS AND MANAGEMENT

INTERGRATING INNOVATION AND DEVELOPMENT POLICIES FOR THE FOREST SECTOR

PhD THESIS

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“Just as energy is the basis of life itself and ideas the source of innovation, so is innovation the vital spark of all human change, improvement and progress.”

Theodore Levitt

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Thank you all.

I hereby declare that I wrote this Ph.D. thesis by myself using the quoted literature. This work among others reflects outputs of phase 1 of the COST Action E 51 “Integrating Innovation and Development Policies for the Forest Sector”.

Prague, 24th January 2011

CONTENTS

ANNEXES

ABBREVIATIONS

AIE CZ	Association of Innovative Entrepreneurship of the Czech Republic
CI	Czech Invest
COM	Commission Document
COST	European Co-operation in the Field of Science and Technical Research
CMGDB	Czech Moravian Guarantee an Development Bank
CZ	Czech Republic
EAFRD	European Agricultural Fund for Rural Development
EFI	European Forest Institute
EU	European Union
FRID	Radio Frequency Identification
FTP	European Forest - Based Sector Technology Platform
GPS	Global Positioning System
HRDP	Horizontal Rural Development Plan
ICT	Information and Communication Technology
I&E	Innovation and Entrepreneurship
INNOFORCE	Innovation and Entrepreneurship in Forestry in Central Europe
IT	Information Technology
MoA	Ministry of Agriculture
MoE	Ministry of the Environment
MEYS	Ministry of Education, Youth and Sport
MIT	Ministry of Industry and Trade
MRD	Ministry for Regional Development
NIP	National Innovation Policy
NFP	National Forest Programme
No.	Number
NOK	National Authority for Coordination
NR&DP	National Research and Development Policy
NSPRD	National Strategic Rural Development Plan of the Czech Republic
NUTS	Nomenclature of Territorial Statistical Units
NPRDI CZ	National policy for research, development and innovation of the CZ
OECD	Organization for Economic Co-operation and Development
OPs	Operational Programmes
OPRDMA	Operational Programme Rural Development and Multifunctional Agriculture
PCO	Payment and Certification Authority
R&D	Research and Development
RDC	Research and Development Council
S&T	Science and Technology
SMEs	Small and Medium-sized Enterprises
SPD	Single Programming Document; part of programmes financed from European Union Structural Funds
SRA	Strategic Research Agenda

1. Introduction

The economic and social development of our society is strongly influenced by the creation and implementation of innovations. At present, the European Union gives a high importance to this approach and is considered to be the engine of future of sustainable development. From this point of view the innovation is discussed in the context of increasing competitiveness of the European economy, creating economic sustainable growth, employment and the development of rural regions, in the European Union policy. It is related to the Lisbon Strategy for employment, economic reform and social cohesion and the Gothenburg Strategy for Sustainable Development. The European Union is attempting to improve its competitiveness vis-à-vis other players in the global economy by increasing the innovation activities of European enterprises (Rametsteiner, Weiss, Kubeczko 2005).

Not only the European Union but also the entire world is investing considerable resources to support innovation. The European Union has even declared year 2009 as "European Year of Creativity and Innovation". This encouraged the EU countries to meet the Lisbon objectives to which they are committed and thus promote economic sustainable growth and job creation. All this should contribute to reduce disparities and innovation potential between the EU and the USA together with Japan, therefore, between Europe and states that are leaders in the field of innovation.

For this reason, individual states have developed an innovation policy as a tool according to which they are to act in future years in a planned manner. There exists a common agreement that the issue of innovation should not be solved abstractly but it should penetrate into all sectarian policies, forestry politics included. Forestry in various European countries has been facing increased pressure because of the competition with imported wood and wood products. Also new technological innovations have conquered markets that have been important for forestry. It is clear that forestry is indeed no exemption in having the innovation strategies.

Forestry is in principle a very conservative sector, where any new practices are in comparison with other sectors, implemented with quite a large delay. However, forestry is a sector that is markedly adherent to planning and therefore it is possible

to presuppose that if the issue of innovation policy is suitably involved in forestry policies (as the essential planning document) there will be a greater development in this sector too. In addition to the issues mentioned above it would be good to look from the more general point of view also on countryside development, as forestry is a fundamental aspect of the rural area. For this reason, it is necessary to include innovation as well as forestry into the policies of regional and rural development.

Forestry, with its high percentage of land cover in the central Europe, has been influencing the quality of a paramount part of the cultural landscape. Reduced opportunities for employment, as one of the major problems in rural areas, have to be faced by various measures. As a general rule, product innovations tend to create or maintain employment, whereas process innovations tend to increase overall unemployment levels. Innovation is considered to potentially contribute to employment and generate economic growth (Rametsteiner, Weiss, Kubeczko 2005).

2. Objectives and Methodology

Objectives

The objective of the PhD thesis is to support forest development by integrating innovation into the forest sector (in compliance with the COST Action E51).

The main objectives were:

- Find a definition of a current state of integration of innovation into the forest sector in the Czech Republic.
- Analyze selected Czech policies associated with forestry and subsequently propose the implementation of innovation policies into the forest sector. The selected policies will be the same ones as in the COST Action E 51.
- Analyze current subvention possibilities for integrating innovation into the forest sector in the Czech Republic.
- Look at and summarise the current subvention possibilities which contribute toward implementation of innovation.

The main contribution of the thesis is to support forestry development as one of the key areas of rural development by intensification of innovation implementation. In relation with the COST Action E 51, the thesis supported the international research cooperation in the innovation area and also thorough published final papers which address and give stimulation to policy makers in the process of implementation of innovation.

Methodology

The work is divided in five individual parts which are finally summarized in conclusions.

Part 1 - Put forward and specify the definition of innovation from the general point of view

This part focuses on the analysis of the term “innovation”.

Part 2 – Forestry and Innovation problematic

Second part analyses fundamental programmes and political documents of the Czech Republic – summarization of the principal objectives of individual programmes and politics. Furthermore, evaluate their relation and contribution to integration innovation from the general perspective and especially from the perspective of forestry.

Part 3 – Analysis of the current state of play and development of the integration of innovation into Forestry

Third part represents enquiry among forest owners and stakeholders.

Part 4 – Analysis of economics tools that influence implementation of innovation into forestry

Evaluation of possible economic instruments from the perspective of their effect on integration of innovation into the forest sector.

Part 5 – Conclusions

3. Definition of Innovation

3.1 Historical Background

Innovation in general denotes successful introductions of novelties (Ramersteiner, Weiss 2006). The first important source for modern innovation theory is Josef Schumpeter. In his economics analysis, Schumpeter focuses on the enterprise and the role of the entrepreneur in the economic process. Schumpeter defines innovation broadly, as a discontinuously occurring implementation of new combinations of means of production (Kubeczko, Ramersteiner 2002).

The work of Joseph Schumpeter has greatly influenced theories of innovation. He argued that economic development is driven by innovation through a dynamic process in which new technologies replace the old, a process he labelled “creative destruction”. In Schumpeter’s view, “radical” innovations create major disruptive changes, whereas “incremental” innovations continuously advance the process of change. Schumpeter (1934) proposed a list of five types of innovation:

1. Introduction of new products.
2. Introduction of new methods of production.
3. Opening of new markets.
4. Development of new sources of supply for raw materials or other inputs.
5. Creation of new market structures in an industry.

Schumpeter perspective tends to emphasise innovation as market experiments and to look for large, sweeping changes that fundamentally restructure industries and markets. Mainstream or neoclassical economics views innovation in terms of asset creation as well as market experiments. In this view, innovation is an aspect of business strategy, or part of the set of investment decisions to create capacity for product development or to improve efficiency. Recent developments have centred on the idea of “sunk costs”, irrecoverable commitments of resources to enter new markets or to create competitive advantages by repositioning production or output in the value chain (Sutton 1998).

Nelson and Winter (1997) define technological innovation as a non-trivial change in products and processes where there are no previous experiences. Evolutionary economics research today can mainly be classified into “neo-Schupeterian” that attempts to use Schumpeter concepts to empirically analyses real world phenomena, and that more formal “evolutionary modelling” literature associated with Nelson and Winter (Fagerberg 2002).

3.2 Contemporary Perspective of Innovation

There is a fundamental difference between invention and innovation. An invention may be physical artefact (e.g. a prototype) or a disembodied idea (e.g. a theory), but it is not a good or service itself. An innovation is an invention subjected to validation by the dominant government structure, by it collective, hierarchy or market. An innovation is thus an invention put into practice to succeed or fail within the collective, hierarchy or market. The key point is that an invention is only potentially an innovation; becoming an innovation depends upon the invention’s successful introduction into dominant government structure (Pogue 2007).

Modern innovation literature distinguishes at least two main categories of innovation, i.e. product and process innovation. Product innovation is defined as changes in the output of an enterprise or organisation, in which can either be goods or services. Process innovation can either be technological innovations or innovations in the organisation of the enterprise or organisation (Rametsteiner, Weiss, Kubeczko 2005).

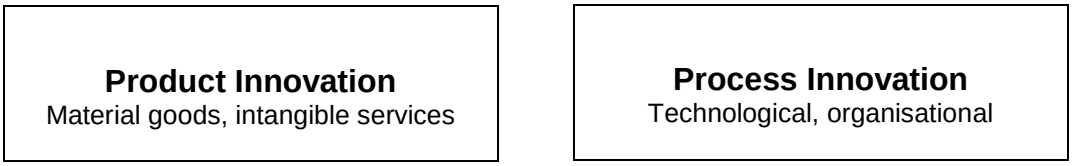


Figure 1: Categories of Innovation (Rametsteiner, Weiss, Kubeczko 2005)

The OECD (2005) defines innovation in its Oslo Manual as *„[…] the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations.“*

The minimum requirement for an innovation is that the product, process, marketing method or organisational method must be new (or significantly improved) to the firm. This includes products, processes and methods that firms are the first to develop and those that have been adopted from other firms or organisations (Kruss 2005). From the global point of view the novelty of innovation should be weighed also from the national and global perspective.

A common feature of an innovation is that it must have been *implemented*. A new or improved product is implemented when it is introduced on the market or when it is taken into use by customers. This also includes innovations in public goods that are not marketed goods and services. Further, it includes such goods and services that are offered by public entities, for example are used but are not paid for by consumers. For example mountain bike routes in some countries are paid for in others they are offered for free. New processes, marketing methods or organisational methods are implemented when they are brought into actual use in the firm's operations (Kruss 2005).

The ultimate reason why firms innovate is to improve firm performance, for example by increasing demand or reducing costs. A new product or process can be a source of market advantage for the innovator. In the case of productivity-enhancing process innovations, the firm gains a cost advantage over its competitors, allowing a higher mark-up at the prevailing market price or, depending on the elasticity of demand, the use of a combination of lower price and higher mark-up than its competitors to gain market share and increase profits. In the case of product innovation, the firm can gain a competitive advantage by introducing a new product, which allows it to increase demand and mark-ups (OECD 2005).

Firms can also increase demand through product differentiation, by targeting new markets and by influencing demand for existing products. Changes in organisational methods can improve the efficiency and quality of their operations, thereby increasing demand or reducing costs. Innovation can also improve performance by increasing the firm's ability to innovate. For example, improving the capabilities of production processes can make it possible to develop a new range of

products, and new organisational practices can improve the firm's ability to gain and create new knowledge that can be used to develop other innovations (OECD 2005).

Innovation can also improve performance by increasing the firm's ability to innovate. For example, improving the capabilities of production processes can make it possible to develop a new range of products, and new organisational practices can improve the firm's ability to gain and create new knowledge that can be used to develop other innovations. A firm's organisational structure can affect the efficiency of innovation activities, with some structures better suited to particular environments. For example, a greater degree of organisational integration may improve the co-ordination, planning and implementation of innovation strategies. Organisational integration can work particularly well in industries characterised by incremental changes in knowledge and technologies. A looser, more flexible form of organisation, which allows workers greater autonomy to make decisions and define their responsibilities, might be more effective in generating more radical innovations (OECD 2005).

One view of the process of adoption of "new to the market" innovations contrives this process as a more of less passive diffusion of the innovation in an economy. This concept is mainly based on a linear understanding of the innovation process that proceeds through different phases. Figure 2 shows the typical phases of innovation as seen from the point of view of a firm.

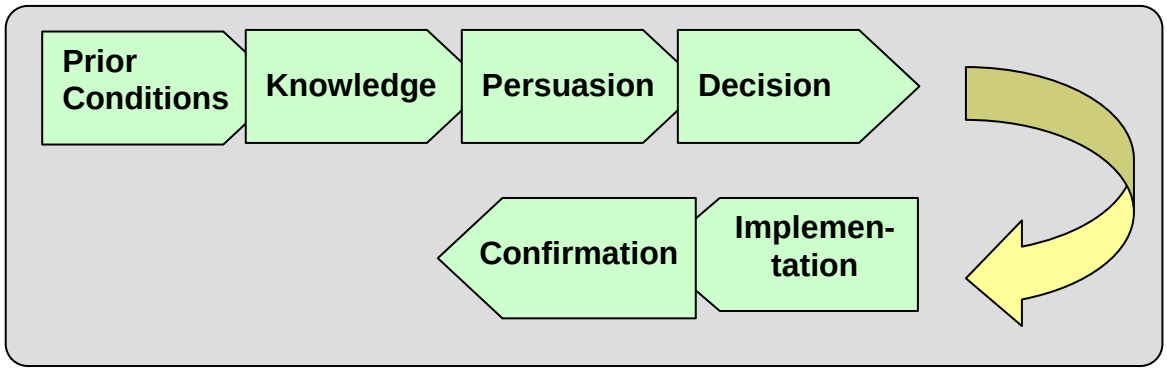


Figure 2: Phases of Innovation (Rogers 1995)

It is possible to divide the Innovation Process into two main parts – **the *invention part***, which is linked with creating an original thought, idea or concept. Second part of the innovation process is the **part of innovation**, where the invention

is constructed. This part is followed by implementation of the innovation on market. So the innovation is more than just an idea or thought, it is implementation, bringing the invention to life. Also it is not possible to interchange innovation with creativity. Strictly speaking, creativity is a skill, whereas innovation represents a process, which begins with an idea or concept and then follows different stages of development, which lead to the implementation itself. Without implementation of innovation on the market the process of implementation is not complete and there is not possible to consider innovation as effected (Pazour 2007 in TC AV ČR 2007).

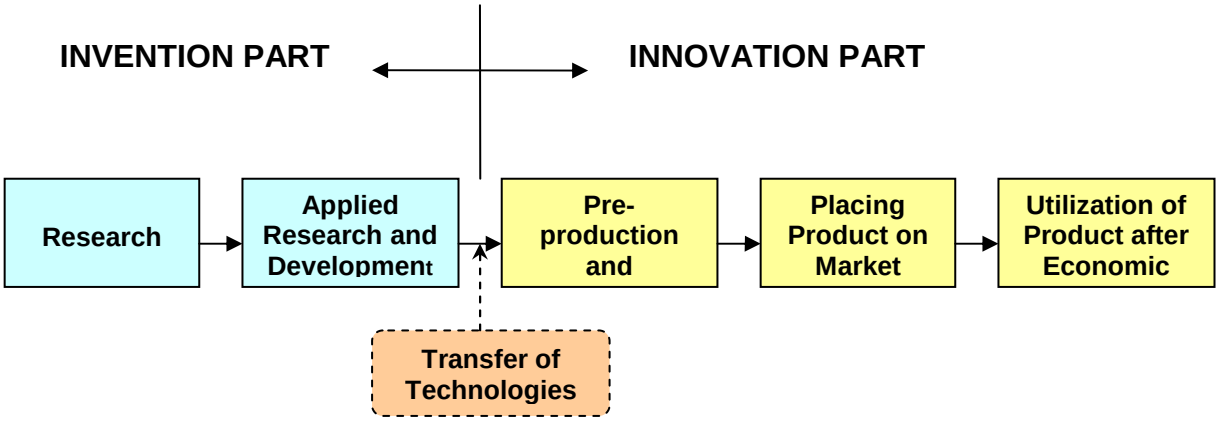


Figure 3: Innovation Process (Pazour 2007 in TC AV ČR 2007)

3.3 Types of Innovation

The Oslo Manual (OECD 2005) distinguishes four main types of innovation - product, process, marketing and organisational innovations – which are further below sub-divided:

1. Product Innovation

A product innovation is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics.

Product innovations can utilise new knowledge or technologies, or can be based on new uses or combinations of existing knowledge or technologies. The term “product” is used to cover both goods and services. Product innovations include both

the introduction of new goods and services and significant improvements in the functional or user characteristics of existing goods and services.

New products are goods and services that differ significantly in their characteristics or intended uses from products previously produced by the firm. The first microprocessors and digital cameras were examples of new products using new technologies. The first portable MP3 player, which combined existing software standards with miniaturised hard-drive technology, was a new product combining existing technologies.

The development of a new use for a product with only minor changes to its technical specifications is a product innovation. An example is the introduction of a new detergent using an existing chemical composition that was previously used as an intermediary for coating production only.

Significant improvements to existing products can occur through changes in materials, components and other characteristics that enhance performance. The introduction of ABS braking, GPS (Global Positioning System) navigational systems, or other subsystem improvements in cars is an example of a product innovation consisting of partial changes or additions to one of a number of integrated technical subsystems. The use of breathable fabrics in clothing is an example of a product innovation involving the use of new materials that improves the performance of the product.

Product innovations in services can include significant improvements in how they are provided (for example, in terms of their efficiency or speed), the addition of new functions or characteristics to existing services, or the introduction of entirely new services. Examples are significant improvements in Internet banking services, such as greatly improved speed and ease of use, or the addition of home pick-up and drop-off services that improve customer access for rental cars. Providing on-site rather than remote management contact points for outsourced services is an example of an improvement in service quality.

Design is an integral part of the development and implementation of product innovations. However, design changes that do not involve a significant change in a product's functional characteristics or intended uses are *not* product innovations. However, they can be marketing innovations, as discussed below. Routine upgrades or regular seasonal changes are also not product innovations.

2. Process Innovation

A process innovation is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software.

Process innovations can be intended to decrease unit costs of production or delivery, to increase quality, or to produce or deliver new or significantly improved products. Production methods involve the techniques, equipment and software used to produce goods or services. Examples of new production methods are the implementation of new automation equipment on a production line or the implementation of computer-assisted design for product development.

Delivery methods concern the logistics of the firm and encompass equipment, software and techniques to source inputs, allocate supplies within the firm, or deliver final products. An example of a new delivery method is the introduction of a bar-coded or active RFID (Radio Frequency Identification) goods-tracking system.

Process innovations include new or significantly improved methods for the creation and provision of services. They can involve significant changes in the equipment and software used in services-oriented firms or in the procedures or techniques that are employed to deliver services. Examples are the introduction of GPS tracking devices for transport services, the implementation of a new reservation system in a travel agency, and the development of new techniques for managing projects in a consultancy firm.

Process innovations also cover new or significantly improved techniques, equipment and software in ancillary support activities, such as purchasing, accounting, computing and maintenance. The implementation of new or significantly improved information and communication technology (ICT) is a process innovation if it is intended to improve the efficiency and/or quality of an ancillary support activity.

3. Marketing Innovation

A marketing innovation is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing.

Marketing innovations are aimed at better addressing customer needs, opening up new markets, or newly positioning a firm’s product on the market, with the objective of increasing the firm’s sales.

The distinguishing feature of a marketing innovation compared to other changes in a firm's marketing instruments is the implementation of a marketing method not previously used by the firm. It must be part of a new marketing concept or strategy that represents a significant departure from the firm's existing marketing methods. The new marketing method can either be developed by the innovating firm or adopted from other firms or organisations. New marketing methods can be implemented for both new and existing products.

Marketing innovations include significant changes in *product design* that are part of a new marketing concept. Product design changes here refer to changes in product form and appearance that do not alter the product's functional or user characteristics. They also include changes in the packaging of products such as foods, beverages and detergents, where packaging is the main determinant of the product's appearance. An example of a marketing innovation in product design is the implementation of a significant change in the design of a furniture line to give it a new look and broaden its appeal. Innovations in product design can also include the introduction of significant changes in the form, appearance or taste of food or beverage products, such as the introduction of new flavours for a food product in order to target a new customer segment. An example of a marketing innovation in packaging is the use of a fundamentally new bottle design for a body lotion, which is intended to give the product a distinctive look and appeal to a new market segment.

New marketing methods in *product placement* primarily involve the introduction of new sales channels. Sales channels here refer to the methods used to sell goods and services to customers, and not logistics methods (transport, storing and handling of products) which deal mainly with efficiency. Examples of marketing innovations in product placement are the introduction for the first time of a franchising system, of direct selling or exclusive retailing, and of product licensing. Innovations in product placement can also involve the use of new concepts for the presentation of products. An example is the introduction of salesrooms for furniture that are redesigned according to themes, allowing customers to view products in fully decorated rooms.

New marketing methods in *product promotion* involve the use of new concepts for promoting a firm's goods and services. For example, the first use of a significantly different media or technique – such as product placement in movies or television programmes, or the use of celebrity endorsements – is a marketing innovation.

Another example is branding, such as the development and introduction of a fundamentally new brand symbol (as distinguished from a regular update of the brand's appearance) which is intended to position the firm's product on a new market or give the product a new image. The introduction of a personalised information system, *e.g.* obtained from loyalty cards, to tailor the presentation of products to the specific needs of individual customers can also be considered a marketing innovation. Innovations in *pricing* involve the use of new pricing strategies to market the firm's goods or services. Examples are the first use of a new method for varying the price of a good or service according to demand (*e.g.* when demand is low, the price is low) or the introduction of a new method which allows customers to choose desired product specifications on the firm's Web site and then see the price for the specified product. New pricing methods whose sole purpose is to differentiate prices by customer segments are not considered innovations.

Seasonal, regular and other routine changes in marketing instruments are generally *not* marketing innovations. For such changes to be marketing innovations, they must involve marketing methods not previously used by the firm. For example, a significant change in a product's design or packaging that is based on a marketing concept that has already been used by the firm for other products is not a marketing innovation, nor is the use of existing marketing methods to target a new geographical market or a new market segment (*e.g.* socio-demographic group of clients).

4. Organizational Innovation

An organisational innovation is the implementation of a new organisational method in the firm's business practices, workplace organisation or external relations. An organisational innovation is the result of strategic decisions taken by management.

Organisational innovations can be intended to increase a firm's performance by reducing administrative costs or transaction costs, improving workplace satisfaction (and thus labour productivity), gaining access to nontradable assets (such as non-codified external knowledge) or reducing costs of supplies.

The distinguishing features of an organisational innovation compared to other organisational changes in a firm is the implementation of an organisational method (in business practices, workplace organisation or external relations) that has not

been used before in the firm and is the result of strategic decisions taken by management.

Organisational innovations in *business practices* involve the implementation of new methods for organising routines and procedures for the conduct of work. These include, for example, the implementation of new practices to improve learning and knowledge sharing within the firm. An example is the first implementation of practices for codifying knowledge, *e.g.* establishing databases of best practices, lessons and other knowledge, so that they are more easily accessible to others. Another example is the first implementation of practices for employee development and improving worker retention, such as education and training systems. Other examples are the first introduction of management systems for general production or supply operations, such as supply chain management systems, business reengineering, lean production, and quality-management systems. Innovations in *workplace organisation* involve the implementation of new methods for distributing responsibilities and decision making among employees for the division of work within and between firm activities (and organisational units), as well as new concepts for the structuring of activities, such as the integration of different business activities. An example of an organisational innovation in workplace organisation is the first implementation of an organisational model that gives the firm's employees greater autonomy in decision making and encourages them to contribute their ideas. This may be achieved through the decentralisation of group activity and management control or the establishment of formal or informal work teams in which individual workers have more flexible job responsibilities.

However, organisational innovations may also involve the centralisation of activity and greater accountability for decision making. An example of organisational innovation in the structuring of business activities is the introduction for the first time of build-to-order production systems (integrating sales and production) or the integration of engineering and development with production.

New organisational methods in a firm's *external relations* involve the implementation of new ways of organising relations with other firms or public institutions, such as the establishment of new types of collaborations with research organisations or customers, new methods of integration with suppliers, and the outsourcing or subcontracting for the first time of business activities in production, procuring, distribution, recruiting and ancillary services.

Changes in business practices, workplace organisation or external relations that are based on organisational methods already in use in the firm are not organisational innovations. Nor is the formulation of managerial strategies in itself an innovation. However, organisational changes that are implemented in response to a new managerial strategy are an innovation if they represent the first implementation of a new organisational method in business practices, workplace organisation or external relations. For example, the introduction of a written strategy document to improve the efficient use of the firm's knowledge is not, by itself, an innovation. Innovation occurs when the strategy is implemented through the use of new software and practices for documenting information in order to encourage knowledge sharing among different divisions.

Mergers with, or the acquisition of, other firms are *not* considered organisational innovations, even if a firm merges with or acquires other firms for the first time. Mergers and acquisitions may involve organisational innovations, however, if the firm develops or adopts new organisation methods in the course of the merger or acquisition.

Organisational innovations in *business practices* involve the implementation of new methods for organising routines and procedures for the conduct of work. Innovations in *workplace organisation* involve the implementation of new methods for distributing responsibilities and decision making among employees for the division of work within and between firm activities (and organisational units), as well as new concepts for the structuring of activities, such as the integration of different business activities. New organisational methods in a firm's *external relations* involve the implementation of new ways of organising relations with other firms or public institutions, such as the establishment of new types of collaborations with research organisations or customers, new methods of integration with suppliers, and the outsourcing or subcontracting for the first time of business activities. As *business model innovation* is not an explicit category in the OECD definition and classification, it should be included under this category (Ramesteiner 2007).

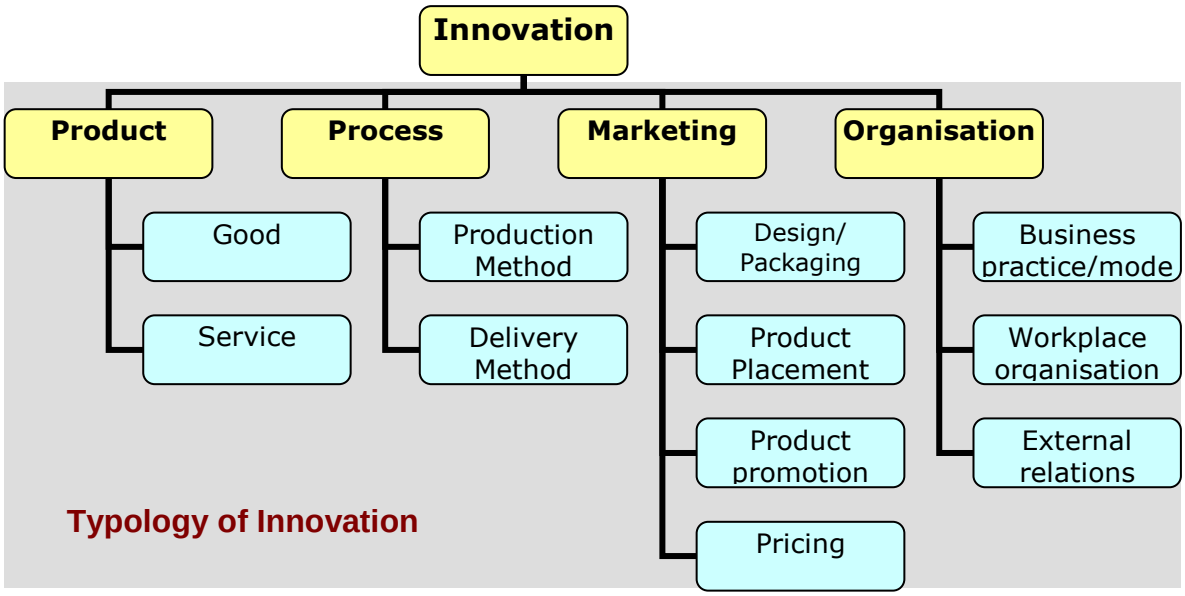


Figure 4: Typology of Innovation (Modified version from Ramesteiner 2007)

3.4 Systems of Innovation

In the academic discourse today there is a divergence in opinions on the importance of technological and organisational innovation versus product innovations. Nevertheless, there is a growing consensus in the innovation system literature that innovation is an institutional process (Lundvall et al. 2001, Edquist 2001, Moulaert and Sekia 2000 in Rametsteiner, Kubeczko, Weiss 2005).

The main components of the System of Innovation are considered to be the actors and the institutions:

- Actors are considered as 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).

Innovation systems are categorised in different ways, using territorial or sectoral delimitations. One way of using the innovation system approach is at the national level (national innovation system, NIS). Using territorial boundaries is justified by the common culture, language and legislation within national boundaries

and influencing innovation activity. Another possibility is to use the geographical boundaries of regions (regional innovation system, RIS), using tacit knowledge as the main justification for the importance of spatial proximity to innovation processes. A third way the innovation system approach is used refers to sectoral delimitation (sectoral innovation system, SIS). This is justified by the specificities of sectors in terms of knowledge, technological base, key interactions and complementarities (Malerba, 1999).

Actors and institutions are present and influential at different levels. This multilevel aspect is often covered by either making a distinction between micro- and macro-levels in the innovation system model (see Figure 5). The micro-level thereby constitutes the firm and its different economic exchange patterns while the macro level comprises actors and institutions within which the micro-level is embedded. Another approach to capture the multilevel dimension is by dividing a system into different levels. For example the personal level, the firm level, the business-to-business level (b2b) as well as “institution” level (Ramesteiner 2007).

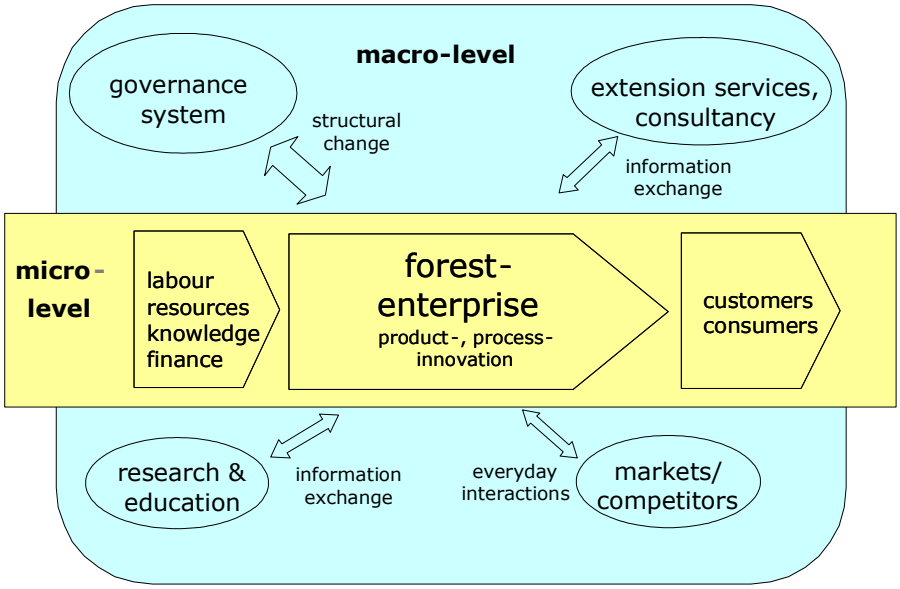


Figure 5: Sectoral Innovation System (Rametsteiner, Kubeczko, Weiss 2004)

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 into three categories (see Figure 6):

1. Reduction of uncertainness by providing information.
2. Management of conflicts and co-operation.
3. The provision of pecuniary and non-pecuniary incentives.

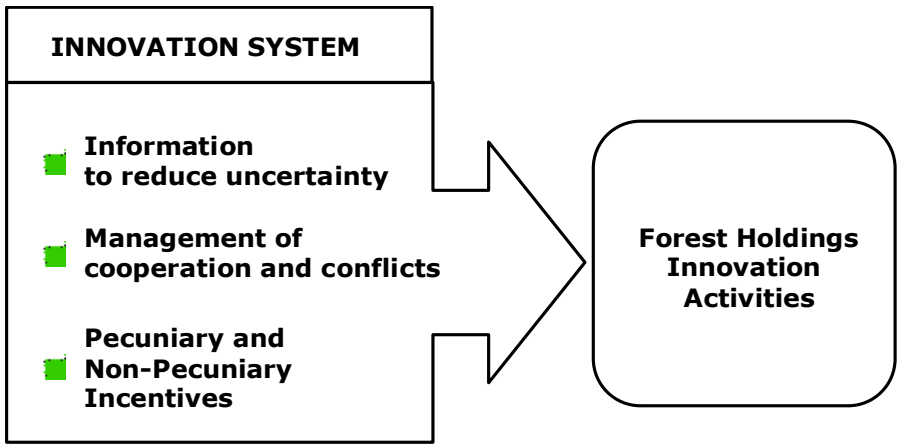


Figure 6: Functions to be provided by an innovation system to support innovation activities (Ramesteiner 2007)

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 primarily defined by the national boundaries, within which the interplay of actors on the national level are analysed. Here one can find a whole range of views on the role of institutions, the opposition between technological and organisational determinism and the social and political dimensions of learning. There is a growing consensus in the NIS literature that innovation is a socio-organisational process; but there remains divergence in opinion on the relationship between technological and organisational innovation.

Regional arrangements and sectoral innovation systems play different roles in the support of the development and diffusion of innovations in forestry. A specific role of non-forestry players and institutions is observed particularly in the development of product and service innovations (Kubeczko et al. 2006).

In the Czech Republic the innovation system is defined by boundary of the state for which financial supports are eligible via various programmes. The innovation

is mainly spilled in a top-down process where on the national level is created a policy which is further implemented via financial instruments – various operational programmes or other funding. The policy is thus implemented on the regional and local level. In forestry the system is slightly different because at the time where the forestry policy was created the Programme for Rural Developments which implements EAFRD was also under preparation therefore it does not reflect all needs of the policy.

While implementing the policy, from the horizontal perspective, it is highly recommended to company/entrepreneur cooperate with universities and public bodies/government. Such a model is called “Triple Helix” which can enhance better performance of each other as well as better technology transfer partnerships, see the Figure below.

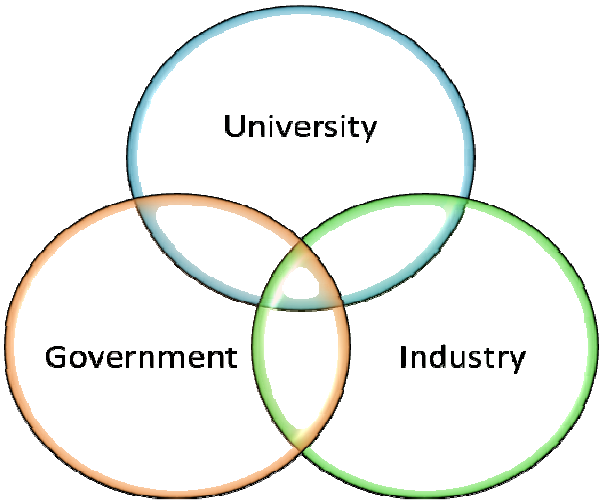


Figure 7: Triple Helix

If we look at the forest sector an example a good practice of the cooperation between university and private actor represents the “Moravian - Silesian Timber Cluster”. Members of the cluster actively cooperate in the implementation of joint projects in areas of innovation, education, research and promotion. The main objective is to innovate and develop the cluster of activities that improve conditions for doing business in a wood-processing industry and strengthen links between research, universities and businesses.

Clusters represent horizontal cooperation between different subjects in a geographic area. Clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, and associated institutions in a

particular field that are present in a nation or region. Clusters arise because they increase the productivity with which companies can compete. The development and upgrading of clusters is an important agenda for governments, companies, and other institutions. Cluster development initiatives are an important new direction in economic policy, building on earlier efforts in macroeconomic stabilization, privatization, market opening, and reducing the costs of doing business (URL 19).

4. Innovation Policy and Innovation Support

4.1 Innovation Policy Classification

The understanding of innovation policy has considerably changed over the last decades and varies from country to country. The two dominating approaches are the traditional Science and Technology policy approach as it was prevailing in most OECD countries in the post war period and the systemic innovation policy approach that has gained increasing importance (Ramesteiner 2006):

1. **Traditional S&T policy approach:** The traditional Science and Technology policy approach is ideal typically characterised by the following elements:
    - A basic understanding of innovation processes as being linear, starting with laboratory science and moving through successive stages until new knowledge is built into commercial applications that diffuse in economic systems.
    - Innovation is seen as the end of research and development processes (solely).
    - Policy focuses on fostering critical directions of scientific and technological advance, and enhancing the flow of knowledge down along the innovation chain (Lengrand et al. (2002)).
    - There is a distinct role for education/university ministries and economy/industry ministries dealing with innovation as a tool for encouraging investment and modernizing firms.
    - Main policy instruments include:
        - public financing of research in universities and public research institutions,
        - subsidies to industrial R&D, and
        - securing intellectual property rights through more embracing and enforceable patents.

The figure below shows the process of traditional S&T policy approach**.**

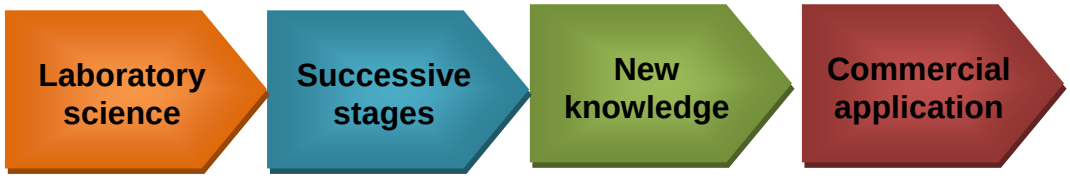


Figure 8: Traditional S&T policy approach (linear process)

2. **Systemic innovation policy approach** is ideal typically characterised by the following elements:
    - Understanding of innovation as a complex process, taking place in an environment of interacting actors and institutions (innovation system); having multiple sources (apart from research activities); and running through multiple feedback loops between the different stages.
    - Policy approaches the systemic environment in which innovation take place in ways that can better inform decisions about research, commercialisation, technology adoption and implementation, etc.
    - The role of policy is to solve problems that occur within innovation systems, e.g. by supporting the creation and development of institutions and organisations, supporting network development, facilitate transition and avoid lock-in (Edquist and Johnson 1997).
    - Policy instruments are not only directed to individual organisations (e.g. research and development subsidies, management support) or bilateral relations (e.g. knowledge transfer), but also to the innovation system as a whole (e.g. managing interfaces and organising learning platforms) (Goorden 2004).
    - The scope, scale and actors of innovation policy are widened. Innovation policy is no longer limited to the economic domain but is placed on the agenda of various policy domains, such as industrial policy, policies for science and technology, education, health, ICT and other sectoral policies.

The diagram below summarises the relations among instruments and actors within this approach.

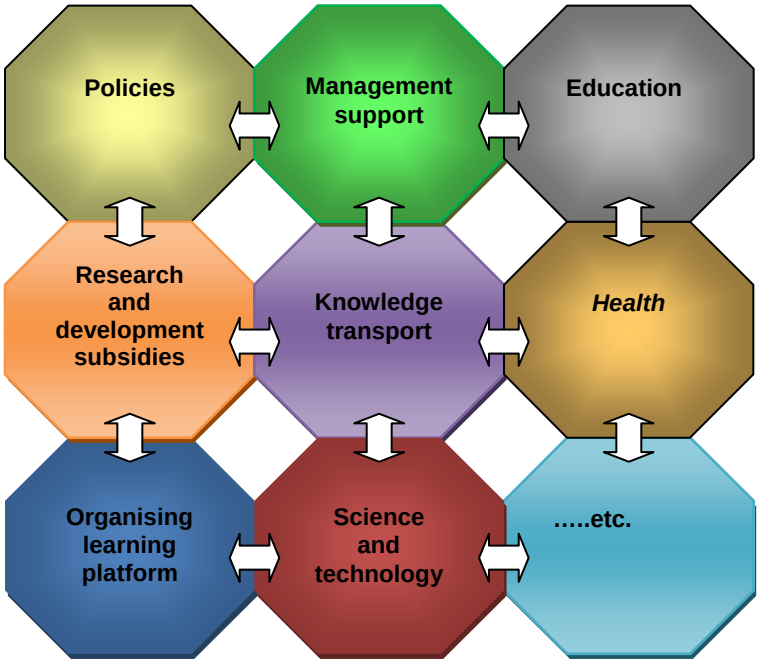


Figure 9: Systemic innovation policy approach

4.2 Innovation Support

Innovation support can take many forms, from direct funding of research and development activities to the support of the diffusion of innovations, to improving the knowledge base and interaction of actors, to adapting framework conditions. Some of these support measures are targeted directly at fostering concrete innovation activities, others are of structural character. These measures may be introduced without the explicit aim of fostering innovation. For the analysis of the documents, measures along the following six categories of 'innovation support' will be distinguished:

1. **Research and Development:** This includes innovation support in a narrower sense, i.e. financing of basic and applied research, development of new products or processes, pilot projects, demonstration projects and support for

the commercialization of innovations. Support for Research and Development generally aims at innovations new to the sector (forest sector), i.e. products, processes, marketing and organisational methods that have not been introduced to a particular sector in a particular country before. Throughout the document analysis, the following sub-categories of Research and Development will be applied:

- Enterprise research, i.e. support for applied research in the enterprise or in cooperation of enterprise and science organisations,
- Development of new products, processes, marketing methods. organisational models by enterprises.
- Pilot projects and demonstration projects.
- Commercialization of new products by enterprises.

2. **Diffusion of innovation:** This includes support for the early and broad adoption of named, already known goods, services and processes by enterprises in a sector in a specific country. It excludes support for standard managerial processes or late adoption (e.g. species diversity support or road building in forestry or standard IT in SMEs).
    - Diffusion of products (for example, subsidies for bio-energy installations; support of the introduction of recreational facilities).
    - Diffusion of processes (for example investment support for the acquisition of significantly new machinery/technology, including advanced information technology for production or logistics, etc.).
    - Diffusion of marketing methods (e.g. addressing new customer groups, market segments).
    - Diffusion of organisational models (e.g. financial or informational support for the establishment of cooperation).

3. **Strengthening the knowledge base:** The innovation capabilities of a firm, a sector or an economy strongly depend among others on the availability and quality of human capital, i.e. individual know-how, skills and motivation of entrepreneur and employers, and the level of qualification and competencies of employers. Furthermore, the access to innovation and exchange of

information and knowledge influences the innovation propensity as well. The following activities are examples of how to strengthen the knowledge base for innovation:

- Integrating innovation in education, e.g. new educational curricula.
- Strengthening further/vocational training.
- Addressing shortages of scientists and engineers in particular fields.
- Integrating innovation in extension services.
- Promoting mobility of high-skilled personnel.
- Promoting mobility between science and practice.

4. **Promoting interaction/managing interfaces:** Firms do not innovate in isolation. Rather a range of other actors/ organizations contribute in different ways to innovations, e.g. other firms/competitors, research organisations, extension services, interest groups, etc.. Policy may foster innovation by strengthening the interaction between different key actors in the forest sector, among others through:
    - Promoting horizontal co-operation – between forest holdings.
    - Promoting vertical co-operation – along the forestry wood chain.
    - Promoting public – private partnerships.
    - Promoting cooperation across sectors.
    - Promoting university/research institutions – enterprise cooperation.
    - Promoting interaction with users (customers and consumers).

5. **Public demand creation for innovation:** The demand side is crucially important for the promotion of innovations. Policy may not only promote innovations by supporting the input side but also by inducing demand for innovation. This is often applied in the case of environmental/sustainable innovations. The following activities may be implemented to strengthen the demand for innovation:
    - Reorientation of public procurement policy (creating consumer demand).
    - Support for lead users, or public agencies acting as lead user.
    - Clear demand expression through communication.

6. **Improving frame conditions:** General framework conditions including institutions such as laws, regulations, standards, taxes or access to financing have a crucial influence on firms' decisions to innovate. Changing framework conditions is often not in the responsibility of sectoral policies. The following list comprises a selection of policy activities to improve framework conditions for innovation:
    - Institutional reforms, e.g. change of forest law, property rights reform, support for the establishment of new organisations.
    - Adaptation of tax laws, e.g. corporate taxes.
    - Improving access to financing, e.g. by providing guarantees.
    - Adaptation of standards and norms, e.g. in the construction sector.

(Ramesteiner 2007)

5. Innovation in the Czech Republic

The main document in the field of innovation is the National Innovation Policy (NIP) for the years 2005 to 2010 in the Czech Republic. NIP respects the need for technological and non-technological innovation in the Czech economy, but in the same manner as innovation policies of the advanced countries it is mostly aimed at innovation of technical nature, where the measures of the state fostering the innovation activity of enterprises are feasible.

5.1 National Innovation Policy (NIP)

In the past, the Czech Republic had not produced its own innovation policy until 2005; the only relevant document since 1992 had been the **National Innovation Strategy** (adopted in the Government Resolution No. 270 of 24 March 2004). Nevertheless, it can't be overlooked that particularly in recent years, a number of measures have been coming up to support both innovation and innovators, mostly on the part of the **Ministry of Industry and Trade** (MIT) and the agency **CzechInvest,** an Investment and Business Development Agency established in 1992. Such individual measures, however, cannot take the place of a compact and coordinated innovation policy being vital from the view of a subsequent development. The agency contributes to attracting foreign investment and developing domestic companies through its services and development programmes. CzechInvest also promotes the Czech Republic abroad and acts as an intermediary between the EU and small and medium-sized enterprises in implementing structural funds in the Czech Republic (URL 1).

Demands for such policy are being dramatically heard also after the accession of the Czech Republic into the EU, where innovation is regarded as a priority under the conditions of the ever-growing competitive pressures of the global economy, with the innovation policy being more and more implemented as the true all-European task.

The National Innovation Policy (2005 to 2010) is based upon principles generally recognised within the EU, that innovation is first of all the matter of enterprises and that the state by its support measures can seriously influence neither the economic

competition, nor international trade. The measures taken by the state can remedy some market failures, when the market does not produce signals that are sufficient to drive enterprises to behave optimally. The EU rules allow to all states to intervene in cases when the response of enterprises to market signals is insufficient or completely absent. The corresponding activities for enterprises are connected with excessively high risks. Research, development, and innovation are considered to be such areas (MPO 2005).

In June 2009, the government of the Czech Republic approved the National Policy for Research, Development and Innovation of the CZ (NPRDI CZ) for years 2009 - 2015 that substitutes the current NPRDI CZ for 2004 - 2008 and the National policy of innovation for 2005 – 2010 (URL 7).

5.2 NIP and Links to EU Documents

Considering the EU membership of the Czech Republic, the preparation and elaboration of NIP respected corresponding links to applicable documents of EU authorities, primarily, the Presidency conclusions of the Brussels European Council (22 and 23 March 2005), which represent a long-term political framework. Here the European Council discussed *inter alia* the mid-term review of the Lisbon Strategy. It claimed that alongside undeniable progress, there are also shortcomings and obvious delays. Its main conclusion therefore is the requirement to revive the Lisbon Strategy and refocus priorities on growth and employment. Knowledge and innovation as engines of sustainable growth are the cornerstones of the Lisbon Strategy. The emphasis is placed on developing research and all forms of innovation insofar as they make it possible to turn knowledge into an added value, increase the competitive ability of enterprises and create more and better jobs. In doing so, a genuine partnership of the public and private sectors and its active work towards the knowledge-based society will be encouraged (MPO 2005).

The process of preparation and elaboration of the NIP of the Czech Republic was done in accordance with the European Council Presidency conclusions and the following documents:

- The Lisbon Strategy

- Kok, W.: Facing the Challenge. Brussels, November 2004
- Innovate for a Competitive Europe: A new Action plan for Innovation. Brussels 2004
- Report of a High-level Expert Panel chaired by Professor Ramon Marimon “Evaluation of the effectiveness of the New Instruments of Framework VI Questionnaire; June 2004
- European Competitiveness Report, SEC (2004) 1397, November 2004
- “Integrated Guidelines for Growth and Jobs (2005–2008)“, (COM(2005) 141, Brussels 12.4.2005)
- Draft European Parliament and Council Decision on 7th Framework Programme for
- Research, Technological Development and Demonstration Activities (2007–2013); COM(2005) 119 of 6 April 2005
- Draft European Parliament and Council Decision on Competitiveness and Innovation
- Framework Programme (2007–2013); COM (2005) 121 of 6 April 2005.
- The conclusions of this year’s Competitiveness Council of Ministers (7 March, 18 April and 10 May) were taken into account.

5.3 NIP and Links to National Documents

By its **Resolution No. 270** of 24 March 2004, the Czech Government adopted the cornerstone document for the field of innovation – the National Innovation Strategy. The national innovation policy is a part of the whole system of conceptual documents under the roof of the Economic Growth Strategy. This strategy is based on five pillars; Research, Development and Innovation; Institutional Environment, Sources of Funding, Infrastructure and Human Resources. Innovation is closely connected with the following two activities:

- Research and development, the results of which are realised in the form of the so called technological innovation.
- Business activity, preferably activity in the field of manufacturing, as well as services, where innovation is realised.

These principal characteristics also imply the links to documents from those two above mentioned areas. For the area of R&D, the National Research and Development Policy (NR&DP) was adopted by Resolution of the Government No. 5 of 7 January 2004, containing certain elements lying on the boundary line with NIP, particularly in Chapter II.4. As follows from below, the differences between NR&DP and NIP are relatively large and it will be necessary to harmonise them. The Ministry of Education, Youth and Sport (MEYS) in conjunction with the Research and Development Council (hereinafter referred to as "RDC"), has also worked out the document Approach of the Czech Republic to EU material "*Investing in research: an action plan for Europe"*. The Ministry of Industry and Trade (MIT) and the agency CzechInvest under its control have published several documents dealing with innovation or related topics. These were in particular the Concept of innovation for industry and enterprise for 2005 - 2008 and Strategy of CzechInvest for 2004 – 2008.

An important contribution directing R&D into the field of innovation is provided by some programmes of R&D support requiring close cooperation between the academic and stakeholders, e.g. the National Research Programme (I and II), Research Centres, announced and controlled by MEYS, and programmes Consortia and Tandem of MIT (MPO 2005). However at present, the new National policy for research, development and innovation of the CZ (NPRDI CZ) for years 2009 – 2015 has been approved. Another important document is the White Paper on Research, Development and Innovation in the Czech Republic. The White Paper was prepared by the Technology Centre of the Academy of Sciences of the Czech Republic in co-operation with an expert group, follows the Green Paper on Research, Development and Innovation in C. The White Paper draws upon the basic strategic documents aimed at the development of a knowledge-based society, such as the National Research and Development Policy of the Czech Republic 2004-2008, the National Innovation Policy of the Czech Republic 2005-2010, the Economic Growth Strategy for the Czech Republic 2005-2013, and the National Reform Programme of the Czech Republic 2005–2008. The White Paper also considers some key EU

documents focused on strategic development of a knowledge-based society such as the Lisbon Strategy, the Green Paper on the European Research Area, and the Community Framework for state aid for research, development and innovation (Klusáček et al. 2008).

The innovation process in the Czech Republic was influenced to a considerable extent by the accession of the Czech Republic to the European Union and resulting support from the EU Structural Funds and the Cohesion Fund. A key role was played by the 2004 National Development Plan that specified the areas of support from Structural Funds and respective operational programmes (OPs). Innovation was supported for the programming period 2004 – 2006 within Objective 1 by key **OP Industry and Enterprise** (programmes INNOVATION, PROSPERITY, CLUSTERS) and **OP Human Resources Development**. Also parts of the Joint Regional Programme of the Ministry for Regional Development (MRD) entitled Regional Support to Enterprise, Regional Development of Infrastructure and Development of Human Resources in Regions are of certain relevance. For the territory of Prague, which is not qualified for support under Objective 1, there were relevant documents for 2004-2006: Single Programming Document for Objective 2 and Objective 3 of NUTS II Capital City of Prague (MPO 2005).

The preparation of the structural funds for the planning period 2007 – 2013 were assisted by the study produced by the Ministry for Regional Development in 2005 entitled Barriers to Competitiveness. The National Development Plan for 2007 – 2013 was submitted in 2005. Beside this, there are many other documents at national level responding to the underlying papers from various levels of the European Union, the Competitiveness Council in particular. Also, there are a number of initiatives on the part of NGOs and professional associations (SPD, AIE CZ and others) in the Czech Republic dealing with these issues (MPO 2005). For the programming period 2007 – 2013 is a key OP Entrepreneurship and Innovation and OP Research and Development for Innovation. Innovation in agriculture and forestry is possible to co-finance from EU budget form EAFRD via Rural Development Programme.

5.4 Visions of NIP

NIP establishes conditions for attaining such a state of affairs, in which enterprises and other organisations in the Czech Republic actively innovate their products, technologies and services, as well as methods of organisation and management and ensure a steady growth of labour productivity and competitiveness on international markets, while maintaining high levels of employment. To this end the state:

- establishes favourable framework legal and institutional conditions
- eliminates barriers to innovation activities, in a flexible manner
- takes an active part in the creation of new EU tools and new EU legal regulations providing for research, development and innovation support and incorporates these regulations into the Czech legislation in a quick and adequate manner
- promotes selected activities of innovation processes by both direct and indirect tools in compliance with the EU legal regulations, with the assistance of the public funds of CZ and EU budget funds

This vision will be implemented through four strategic objectives (MPO 2005):

1. Strengthen research and development as a source of innovation.
2. Establish well-functioning public-private partnerships.
3. Guarantee human resources for innovation.
4. Make the performance of the state administration in research, development and innovation more effective.

The objectives of the National policy of research, development and innovation of the Czech Republic for 2009 — 2015 are the following:

1. Implement strategic management at all levels.
2. Focus public support on sustainable development.
3. Enhance efficiency of the system of public support for R&D.
4. Use R&D results in innovation and improves the cooperation of public and private sector in R&D.
5. Improve the participation of the Czech Republic in international cooperation in R&D&I.

6. Ensure quality human resources for R&D&I.
7. Create an environment stimulating R&D&I in the Czech Republic.
8. Ensure links to other policies.
9. Thoroughly evaluate R&D&I system (URL 7).

5.5 Role of Institutions in the Field of Innovation

The innovations in the Czech Republic are supported for the programming period 2007 – 2013 through the various EU funds either via Operational Programmes (OPs) or via Rural Development Plan in case of innovation in agriculture and forest sector.

The National Authority for Coordination (NOK) is an umbrella body for all operational programs in the Czech Republic financed by the Structural and Cohesion Funds. It operates within the Ministry for Regional Development, which was established as a methodology and central coordinating body of the economic and social cohesion in the period 2007- 2013.

The central methodological and coordinating role of NOK based on the following basic principles of effective management is:

- existence of a formal partner to the European Commission (EC) in terms of policy HSS;
- existence of a controller monitoring system;
- existence of a central authority in the field of methodical implementation environment, financial flows and control;
- existence of a central authority for the publicity and building absorptive capacity with well-functioning regional networks.

Tool for a coordination of economic and social cohesion 2007- 2013 programming period is the Operational Programme Technical Assistance, which uses the Managing Authority for an horizontal implementation of operational programmes. Role of the Ministry for the Regional Development and NOK was approved by Government Resolution No 198/2006 CR of 22 February 2006 (URL 16)The two relevant OPs in terms of innovation are:

- OP Enterprise and Innovation
- OP Research and Development for Innovation

Each OP has its Managing Authority, which has overall responsibility for the programme. The Managing Authority may delegate part of its activities to Intermediary Body. Intermediate Body is primarily responsible for example for providing the necessary information services for applicants, organizing calls for proposals, receiving requests for support, assessment of completeness and procedural requirements of the applications submitted, organization and cooperation in their evaluation, etc.

The Monitoring Committee together with the Managing Authority ensures the quality of program implementation. The aim of the Monitoring Committee is to ensure efficiency and quality of aid in the efficient use of public funds. The Monitoring Committee duties and powers include, for example:

- approval criteria for project selection;
- evaluate progress towards achieving the specific targets of the operational program;
- approval of annual and final reports of OP before they are sent to the European Commission;
- proposing amendments to or revision of OP (URL 17).

As the Payment and Certification Authority (PCO) for structural and cohesion funds was entrusted the Department of National Fund of the Ministry of Finance. Its tasks include, for example:

- management of the Structural and Cohesion Funds in the accounts of the Czech National Bank;

- preparation and submission of applications for interim payments and final payments to the European Commission for all programs on the basis of statements of expenditure submitted by the Managing Authorities
- receiving payments from the European Commission;
- transfer to SF and CF on the revenue accounts of state budget chapters;
- implementation of on the spot control;
- returning unused funds to the European Commission (URL 17).

The Managing Authority of OP Enterprise and Innovation (OPEI) is the Ministry of Industry and Trade. The Intermediary Body for the OPEI is the CzechInvest (CI) and Czech Moravian Guarantee and Development Bank (CMGDB). From the perspective of the applicant and the beneficiary the intermediate body is the most important subjects, and which are through the regional branches of CI and CMGDB easily accessible, and with which the applicants are the most often in contact.

The Managing Authority for OP Research and Development for Innovation is the Ministry of Education, Youth and Sport. The Intermediate Body is the Czech Education and Research Agency, which is a detach department of the Ministry.

The Managing Authority for the Rural Development Programme is the Ministry of Agriculture. The realization subject is the State Agriculture Intervention Fund.

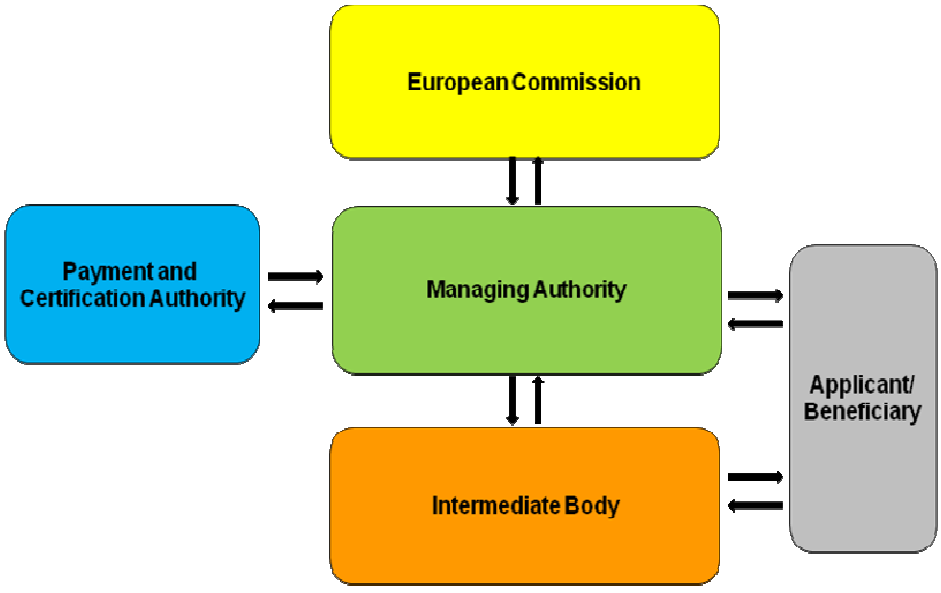


Figure 10: Role of institutions

The figure below shows a general institutional system in the Czech Republic from the vertical perspective. The innovation policy is created at the national level but is strongly influenced by EU.

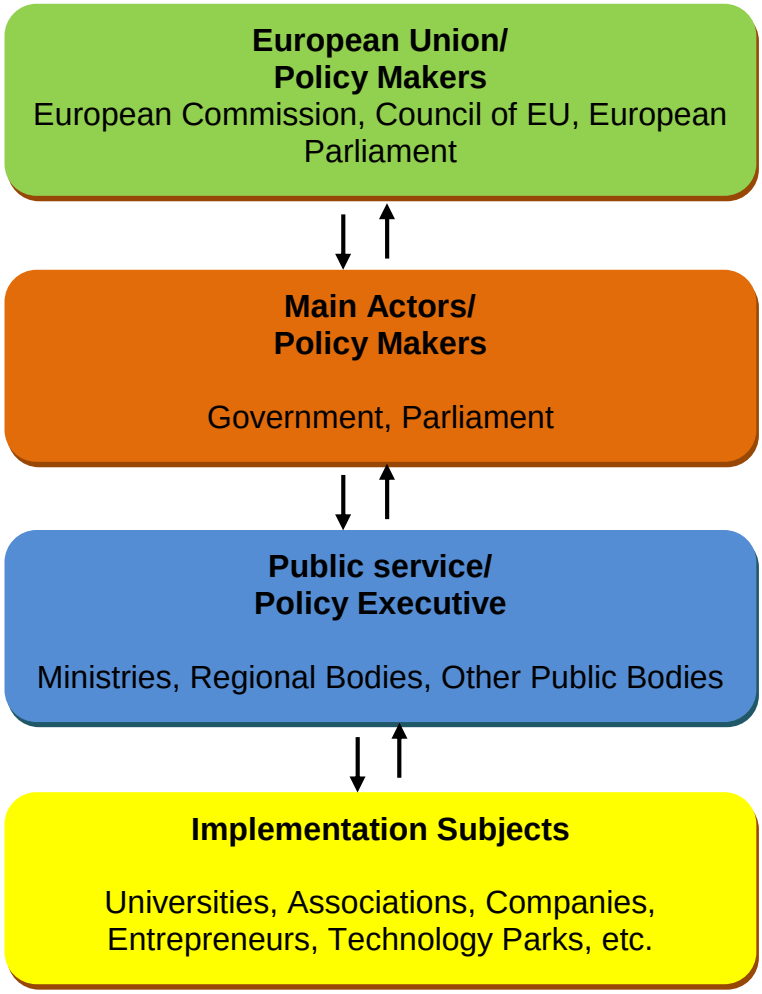


Figure 11: Vertical institutional system

The system goes either top down from creation of a policy via its implementation on the national or regional level up to its implementation in practice or it can also work in bottom up process when the policy is created on the basis of a need or demand. Another player is EU which influences policy creation and implementation process. In respect of the forest sector a common forest policy does not exist. Therefore the influence of EU is not so strong and majority of EU documents in forest sector have rather recommendation character.

6. The Forest Sector and Innovation

6.1 The Perspective of the European Union

A great diversity of natural forest types, forest covers and forest ownership structures exist in the EU. Forests are one of Europe's most important renewable resources and provide multiple benefits to society and the economy. They are also important for the conservation of European nature. Forests and other wooded land in the EU cover approximately 160 million ha (roughly 35% of the EU territory), of which 117 million ha are available for wood supply. As a result of afforestation programmes and due to natural regeneration on marginal lands, forest cover in the EU has increased over the past few decades (URL 2).

In the European Union (EU), forest policies are implemented by member states within a clearly defined framework of established ownership rights and with a long history of national and regional laws and regulations based on long-term planning. The forest based commercial activities fall within the open sector of the economy. Though forests per se are not dealt with at EU level, there is an increasingly complex array of EU legislation and policy initiatives within different EU sectoral policies which considerably influences the forest policies of the Member States (European Communities 2003).

6.1.1 Legislation Background

The key document for forestry in EU is the **EU Forest Action Plan**. On 15 December 1998, the European Council adopted a **Resolution on a Forestry Strategy for the European Union** (1999/C 56/01). The growing concern about the coherence between the forest policies of the Member States and forest-related activities at the EU level, as well as the rising profile of forests in international policy debates and initiatives on sustainable development, were the main driving forces behind the adoption of the EU Forestry Strategy.

The Council requested the Commission to report on the implementation of the EU Forestry Strategy within five years. In response to this request the Commission put forward a **Communication on the implementation of the Strategy** (COM(2005)

84 final). The **Commission Staff Working Document** (Annex to the COM(2005) 84 final), which accompanies the Communication, provides a detailed review of the activities implemented in the context of the EU Forestry Strategy in the period 1999-2004.

The implementation of the EU Forestry Strategy, as stated in the Council Resolution, is a dynamic process. The strategy encourages a participatory and transparent approach involving all stakeholders, while recognising the wide variety of ownership regimes within the Community and the important role of forest owners.To ensure a balanced representation of all important issues and to account for all relevant activities completed throughout the EU during the five years of the implementation of the EU Forestry Strategy, extensive consultations with the Member States and stakeholders took place in the relevant Commission committees and advisory groups in preparation of the Commission Staff Working Document. In order to complement this process, the Commission carried out an open internet-based stakeholder consultation on the Draft Commission Staff Working Document to give stakeholders an opportunity to provide their input. The **synthesis report** of this internet-based stakeholder consultation describes the process and the main results of the consultation.

In May 2005, the Agriculture and Fisheries Council adopted **Conclusions on an EU Forest Action Plan**, which support the following Commission proposals:

1. To develop an EU Forest Action Plan.
2. To review the existing Community means and practices to facilitate co-ordination. The Council Conclusions on the EU Forest Action Plan state that the Action Plan should serve as an instrument of coordination between different Community actions, as well as between Community actions and the forest policies of the member states.

The EU Forest Action Plan was adopted on 15 June 2006. It builds on the report on implementation of the EU Forestry Strategy and resulting conclusions by the Council.

The Communication on an EU Forest Action Plan was presented by Commissioner in charge of agriculture and rural development, in association with Vice-President responsible for enterprise and industry, Commissioner for

Environment, Commissioner for Energy, and Commissioner for Science and Research.

The Communication is accompanied by a detailed report on the context of forests and forestry and process of preparation of the **EU Forest Action Plan**. The Action Plan focuses on four main objectives:

1. To improve long-term competitiveness.
2. To improve and protect the environment.
3. To contribute to the quality of life.
4. To foster coordination and communication.

Eighteen key actions are proposed by the Commission to be jointly implemented with the Member States during a period of five years (2007–2011). (URL 3)

6.1.2 Innovation Orientation

Innovation policies are a key pillar of the EU "**Lisbon Strategy**", the economic development policy of the EU endorsed in March 2000. In a forest policy context, the **MCPFE** (Ministerial Conference on the Protection of Forests in Europe) has adopted the **Vienna Resolution** on the “Economic Viability of Sustainable Forest Management” calling for the strengthening of innovation and entrepreneurship in this sector (URL 4). At the moment each EU country use its own initiative and implement innovation related to innovation into its key documents, e.g. forest politics, follows the principles of the Lisbon Strategy and the Vienna Resolution.

The Lisbon Strategy was launched in 2000 as a response to the challenges of globalisation and ageing. The European Council defined the objective of the strategy for the EU "to become the most dynamic and competitive knowledge-based economy in the world by 2010 capable of sustainable economic growth with more and better jobs and greater social cohesion and respect for the environment". The original strategy gradually developed into an overly complex structure with multiple goals and actions and an unclear division of responsibilities and tasks, particularly between the EU and national levels. The European Commission launched a mid term evaluation of the Strategy in 2005 and then a final evaluation in 2010. The outcomes of the

findings are in overall that the Lisbon Strategy has had a positive impact on the EU even though its main targets (i.e. 70% employment rate, and 3% of GDP spent on R&D) will not be reached (EC 2010).

The European Commission have prepared the so-called "Europe *2020*" strategy which should take up the Lisbon Strategy. The Commission's proposal on a new strategy follows a public consultation that attracted some 1 500 comments. The strategy builds on what has been achieved and the lessons learned. The first priority is to hasten the exit from the crisis, but the strategy must also provide the building blocks for growth that will be sustainable in the future. Europe is recognised the world over for its high quality of life, underpinned by a unique social model. The strategy should ensure that these benefits are sustained and even further enhanced, while employment, productivity and social cohesion are optimised (URL 11).

Europe 2020 puts forward three mutually reinforcing priorities:

- Smart growth: developing an economy based on knowledge and innovation.
- Sustainable growth: promoting a more resource efficient, greener and more competitive economy.
- Inclusive growth: fostering a high-employment economy delivering social and territorial cohesion (EC 2010).

This policy will be a key policy which will influence different policies in various sectors, including forestry.

Important tool for supporting innovation in the forest sector is the **Council Regulation 1698/2005 EAFRD** (European Agricultural Fund for Rural Development), which is valid in EU countries for the period 2007 – 2013. The EU countries can obtain financial support from this fund through their adopted legislation in this area (e.g. In the Czech Republic via The National Strategic Rural Development Plan (NSPRD) for the period 2007-2013).

Another important player in the innovation field on the EU level is the **European Forest - Based Sector Technology Platform (FTP).** It plays a major role in mobilising Europe's research, technological development and innovation efforts. FTP brings together the key stakeholders, i.e. industry, national and European public authorities, the academic community, the financial community, consumers and users around a common vision for the development of the technologies concerned. The platforms have as primary objectives definition of Strategic Research Agendas for the medium to long-term and the establishment of the necessary, effective public-private

partnerships for implementation of these agendas (URL 5). The Czech Republic takes a part in the FTP as well.

In the FTP **Strategic Research Agenda for Innovation, Competitiveness and Quality** of Life contains the European forest-based sector visions for the period up to 2030. The aim is to drive the industry toward the continued sustainable development and innovation needed to nurture growth in the sector until 2030. The Strategic Research Agenda (SRA) is aimed to increase the competitiveness of Europe by developing innovative products and services. Competitiveness is the key objective of the platform, because without it there will be no capacity to deliver the economic, social and environmental goods and services for which the sector strives so hard. By contributing to all three pillars of sustainability, the sector goes hand in hand with the EU in reaching goals and strategies set out in Lisbon and Gothenburg.

Innovation occurs in the FTP Strategic Research Agenda in Strategic objective 1. *Development of innovative products for changing markets and customer needs, see* the table below, (FTP 2006).

	Forest-Based Value Chains				
Strategic Objectives	**Forestry**	**Wood Products**	**Pulp & Paper Products**	**Bio-energy**	**Specialities**
1. Development of innovative products for changing markets and customer needs	1-6: Commercialising soft forest values	1-1: *A new generation of functional packaging* 1-4: Living with wood 1-5: Building with wood 1-10: *New generation of composites*	1-1: *A new generation of functional packaging* 1-2: Paper as a partner in communication, education and learning 1-3: Advancing hygiene and health care 1-8: *Pulp, energy and chemicals from wood bio-refinery* 1-10: *New generation of composites*	1-7: Moving Europe with the help of bio-fuels 1-8: *Pulp, energy and chemicals from wood bio-refinery*	1-8: *Pulp, energy and chemicals from wood bio-refinery* 1-9: *"Green" specialty chemicals* 1-10: *New generation of composites*

Table 1: Strategic objective of FTP (FTP 2006)

Another important organisation on the European level in the field of innovation is EFI (European Forest Institute) which is the Regional Project Centre INNOFORCE (Innovation and Entrepreneurship in Forestry in Central Europe) Vienna.

EFI Project Centre INNOFORCE Vienna conducts research on innovation and entrepreneurship (I&E) in forestry in Europe. It is formed by 23 research organisations from 18 European countries, the Czech Republic included.

INNOFORCE's general objective was to further disseminate and exploit research results gained from 2001 - 2003 (first phase) and 2004 – 2008 (second phase). In addition, the initiative aims at further in-depth research on I&E (Innovation and Entrepreneurship) and related policies in both forestry and the forestry-wood chain in order to enhance the sustainability of the forest sector and contribute to rural development (URL 6).

The Czech Republic has been involved in many organizations and research activities which support innovation in the forest sector. For example the Czech Republic takes part in the European Forest - Based Sector Technology Platform, the European Forest Institute, EFI Project Centre INNOFORCE Vienna, Action E 51 *"Integrating Innovation and Development Policies for the Forest Sector",* and so on.

In 2002, under a framework of the Project of EFI-Regional Project Centre INNOFORCE Vienna – Innovation and Entrepreneurship (I&E) in Central Europe, the Czech University of Life Sciences in Prague, Department of Forestry Economics and Management, Faculty of Forestry conducted a survey of forest owners or subjects with a considerable influence over forestry to enhance sustainable forest management. The outcomes of the research of 2002 will be discussed later in the thesis.

In 2006, on the bases of an initiative of EFI Regional Project Centre INNOFORCE Vienna, under the auspices of **COST** (European Co-operation in the field of Science and Technical Research) **Action E 51 *"Integrating Innovation and Development Policies for the Forest Sector"*** was established. Since the beginning of Action E 51, I have been participating on this research on behalf of the Czech Republic in the Czech research team, led by Prof. Šišák. The Action E 51 is about to be completed till 2010.

The main objective of COST Action E51 is to develop knowledge that enables the integration of innovation and development policies in more effective and sustainable development of the forest sector.

The specific objectives are:

1. To collect/map/build a body of knowledge on existing EU as well as national strategies and programmes and their implementation mechanisms on innovation and entrepreneurship, rural development, regional development and sustainable development policies.

2. To make an appraisal of effects (outcome and impacts) of these programmes on forestry and forest sector enterprises in regard to their support of innovation, start-up activity, employment creation and competitiveness.
3. To identify and analyse key issues in strengthening cross-sectoral policy integration and co-ordination in those key development programmes relevant for forestry and forest sector enterprises s in rural areas in order to promote innovation:
    - for territory-based service provision (e.g. the provision of recreational forest services, nature conservation services, or protection against natural hazards)
    - in relation to cross-sectoral policy integration and co-ordination for vertical production chains (e.g. timber frame housing, bio-energy or other)
4. To develop approaches, options and recommendations for a more coherent implementation of these policies in forestry and the forest sector, with a view to reinforce the development of the sector, especially in rural areas (URL 3).

The outcomes of the COST Action E were summarised in two books. The first book was published in 2010 under a title “Cost Action E 51 Policy Integration and Coordination: the Case of Innovation and the Forest Sector in Europe”. The book among the main outcomes of the “core” research summarises also results of subgroups, which were created to tackle better the specific areas of research within the Action E 51.The second book is prepared to be published at the beginning of 2011.

6.2 The Perspective of the Czech Republic

6.2.1 Legislative Background

In the Czech Republic, the main document in the forest area is the **National Forest Programme** (NFP). In general the National Forest Programmes are considered as a part of the state forest policy and at the same time the Forest

strategy for the European Union is implemented through them. Another important document is the **Forest Act.** Other documents relevant to the forest sector in the narrow sense of the word are the **Conception of the Forest Policy for the Period before Accession of the Czech Republic to the European Union** and the **Basic Principles of the State Forest Policy**. These two documents give rather supplemental information about historical and "current" view on forestry, restitution situation in the Czech Republic until 2004 and summarize basic principles of the National Forest Politics of the Czech Republic.

National Forest Programme

The National Forest Programme was adopted by the Czech Government by the decree No. 1221 on 1st October 2008 and is valid **until 2013**. It amends the previous National Programme that was approved by the Government by a Decree No. 53 of 13 January 2003. At the same time it respects the international treaties, agreements, directives, etc.

The key objective of the NFP expresses the motto of the document: *"Powerful industrial effectiveness has to go hand in hand with the sustainable use of natural resources".*

The main objective of the NFP is to cultivate forests in a sustainable manner, together with a reduction in the administrative burden of the state to a minimum level and together with the motivational impact of the national forest policy to support the common interests and with increasing the responsibility of forest owners for their estates.

From the European Union perspective, forestry is consider as a part of the rural development and landscape utilization with its three pillars (areas of functions of forest). There are economic, ecologic and social functions, which are fulfilled on the basis of the principle of sustainable development.

The strategic objectives for these three functions are as follows:

- long term improvement of competitiveness of the forest sector and increasement in utilization of forest products, goods and services

- maintaining and improving biological diversity, integrity, health and resilience of forest ecosystems in a local scale with respect to possible scenario of global and landscape changes
- contribute to quality of life through maintaining and improving social and cultural dimension of forests and forestry

The priorities of the NFP are:

- improving long term competitiveness
- improving and protect environment
- improving quality of life
- strengthening coordination and communication

For each of these priorities, a resulting measure and a key action will be crested in a special document. The working groups which tackle the individual measures of NFP were created by the Ministry of Agriculture together in cooperation with the Ministry of the Environment. The first outcomes of the working groups are planned to be published by the end of 2010.

The Forest Act No. 289 of 1995

Act No. 298 of 1995 – the Forest Act came into force on 1st January 1996. The aim of this Act was to lay down the conditions for forest conservation, forest management and reproduction of the forest as national wealth, being an irreplaceable component of the environment, for fulfilment of all its functions and for the support of its sustainable management.

In the Forest Act are three obligatory instructions:

1. The maximal amount of fellings (m^3).
2. The minimal share of the reinforcing broadleaved forest tree species in reforestation for soil improvement.
3. The minimal area of thinnings in forest stands until they are 40 years old (only in state and municipal forests).

The main principles of the Forest Act are:

- sustainable management
- equality of all forms of forest ownership
- special protection of forest land
- keeping the right of common forest use

In the broad sense of the word, forestry also touches other areas which can be represented by the following policy, national documents: the Rural Development Programme of the CZ, Regional Development Strategy of the CZ, National Environmental Policy of the CZ and State Energetic Conception of the CZ.

6.2.2 Innovation Orientation

The Czech Republic as a member of the EU do not stay apart in the process of implementation of innovation into the national policies, the forestry policy included. The figure below shows involvement of various stakeholders in the process of implementation of innovation in forest sector from the level of a creation of policy (ministries) via its influencing (universities, research, etc.) until its implementation (forest owners, entrepreneurs, forest businesses, etc.).

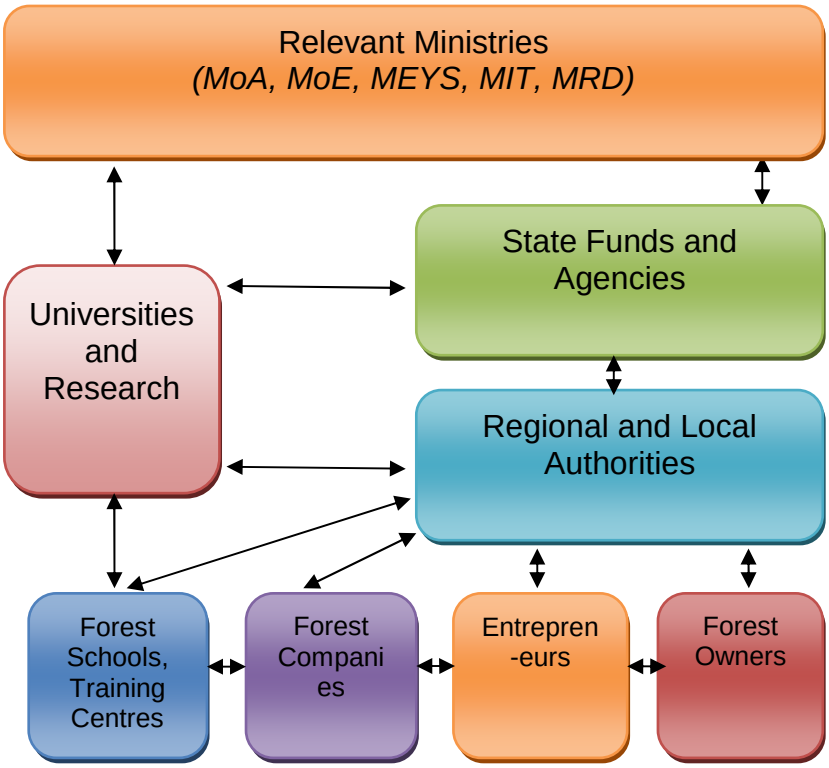


Figure 12: Vertical institutional system in forest sector

The innovation orientation of relevant policies, forestry policy included, is discusses in the following chapter.

7. Analysis of Fundamental Programmes and Policies Related with Forest Sector

7.1 General Information

The analyses done in this chapter are in line with the first phase of the COST Action E51 “Integrating Innovation and Development Policies for the Forest Sector” as the thesis stems from the COST Action E51. The main aim of the first phase was to develop knowledge that enables the integration of innovation and development policies for a more effective and sustainable development of the forest sector.

The main task was to carry an analysis of existing strategies and programmes and to study the integration of innovation in different policy areas and their effects on innovation in the forest sector. For the analysis tables of the COST Action E 51 were taken as a background material, see Annex I.

The work was divided into 2 parts – A and B where for each part a questioner was needed to fill in, see Annex II of the thesis. Part A gives an overall description of the concerned policy documents. Part B is focused on the policy documents were analysed along with the questions how innovation, forestry or the forest sector is integrated and how cross-sectoral coordination occur in the documents. The Figure below shows schematically the work in particular phases.

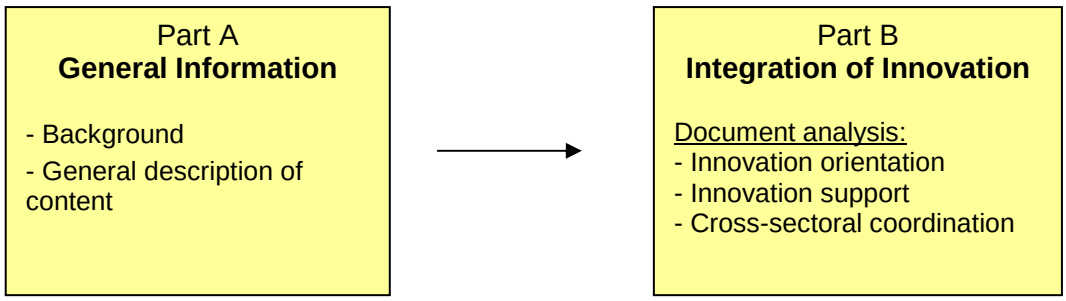


Figure 13: Scheme of orientation of questioners
(Modified version from Ramesteiner 2006)

Altogether 6 policy areas were analysed:

1. Forestry Policy
2. Innovation Policy
3. Rural Development Policy
4. Regional Development Policy
5. Environmental Policy
6. Renewable Energy Policy

After the respective documents in the policy areas were analysed in sense of the above mentioned methodology, the results of the singular policy areas were compared among each other. The results were put into a general table which is divided into following four parts. The letters A, B, C,… represent columns in the table.

- **Overall innovation orientation**

  (A) – the frequency of occurrence of the more generic terms 'innovation' or synonyms

  (B) – frequency of occurrence of the forest sector 'innovation frontier'

  (C) – frequency of occurrence of the terms that are related to innovation

  Evaluation is made in following categories: *never – sometimes – frequently*

- **Relevance of innovation** *(D)*

  If innovation represents an important issue in certain *policy*

  Evaluation is made in following categories: *No relevance at all - Marginal issue - One issue among others - Important issue - Central issue*

- **Degree of specification** *(E)*

  If the problematic is tackle only on the general level or concretely

  Evaluation is made in following categories: *very general - rather general - rather specific - very specific*

- **Understanding of innovation policy** *(F)*

  If under innovation is mend: Predominately traditional science and technology policy, Traditional S&T policy with systemic elements, Systemic innovation policy with S&T policy elements or Predominantly systemic innovation policy

7.2 Analysis of Relevant Policies in the Czech Republic

7.2.1 Innovation areas in forestry in the Czech Republic

Forestry in the Czech Republic has a long-standing tradition and is on a good level. However, from the historical standpoint it is one of the most conservative sectors in which the changes and innovations are promoted very slowly. The specialty of the last few years may be the development of the commodity exchange and the changes in trade relationship between Forests of the Czech Republic (a state enterprise) and organisations offering forest services. In the table below, you can see in generic terms the innovation areas in forestry in the Czech Republic (Pudivítrová et al. 2007).

Area / Type	Territory based services	Value added chain
Product	● Recreational services ● Outdoor activities, e.g. adventure trips, Mountain Bike Routes, Paths for horses, hiking	● Bio-energy – biogas / bio fuel / biomass ● Wood composites (wood prefabricated houses) ● Wood-based product for energy
Process	● Harvesting	● Harvester technology
Marketing method	● Introduction of social functions to the market ● Internet platforms for marketing services ● Hunting tourism	● Horizontal cooperation of forest owners, ● Vertical cooperation, ● Constitution and development of Commodity exchange with wood ● Certification
Organisational model	● Regional cooperation	● Horizontal cooperation of forest owners

Table 2: Innovation Areas in the Forest Sector (Pudivítrová et al. 2007)

Generally it is possible to see that the national documents which are closely related to the forest sector (see the chapter 5.2 - Legislation Background) are in general quite wary of the use of term „innovation“. The occurrence of the term “innovation” depends on the year when the document came into effect. It is possible to say that “younger” documents are more proactive in terms of innovation.

At present, innovation in the forest sector is a very popular topic that is discussed on different levels from European to regional level. From the NFP, it is possible to see that a sufficient progress in innovation in the forest sector has been made. The NFP is very proactive in implementation of innovation into the forest sector. This document contains mainly the process type of innovation. Innovation mostly occurs in the measures related to objective No. I. Improve long term competitiveness, in key action 1 and 2 and farther in objective No. III. Improve quality of life. In the whole document are many terms that are closely related to innovation such as competitiveness, economic growth, etc. From the innovation point of view emphasis is put the most on technical development, research and education.

7.2.2 Forest Policy – National Forest Programme

7.2.2.1 General information

The forest policy is represented by the National Forest Programme in the Czech Republic.

General document information

The National Forest Programme was adopted by government of the Czech Republic on 1 October 2008 and is valid until year 2013. The implementation of the document is formally monitored by the Ministry of Agriculture and Ministry of the Environment. Closely related document to the National Forest Programme is the National Environmental policy. There is formulated a position of forests and forestry. Among other supplemental documents of the current Forestry policy belong The Basic Principles of the State Forest Policy, Conception of the Forest Policy for the Period before Accession of the Czech Republic to the European Union. From the Geographic perspective the document applies to national level.

From the budgetary perspective there is no any concrete programme for realization of this document. Due to the fact that the National Forest Programme is a basic document, the existing national and also European supports, oriented to forestry and service are used for realization of measures of National Forest Programme. However the most significant resource is the Rural Development Programme (financed from EAFRD). However the situation in the Czech Republic is

specific as these two documents – the Nation Forest Programme and the Rural Development Programme were created at the same time. Therefore measures in the Rural Development Programme not fully correspond to the measures of the National Forest Program.

The Table below summarise a contents of the National Forest Programme.

General description of contents as written in document	
Objective of the document	The key objective of the NFP expresses the motto of the document: *"Powerful industrial effectiveness has to go hand in hand with the sustainable use of natural resources".* The main objective of the NFP is to cultivate forests in a sustainable manner, together with a reduction in the administrative burden of the state to a minimum level and together with the motivational impact of the national forest policy to support the common interests and with increasing the responsibility of forest owners for their estates
Priorities	- improvement of long term competitiveness - improvement and protection of environment - improvement of quality of life - strengthening coordination and communication
Structure	The document is divided into seven chapters. The chapters are focused on: - international treaties, agreements, pacts and EU directives - external effects on current Czech forest policy - current state of play of forests and forestry of the Czech Republic - the most important terms and principles of NFP - SWOT analysis - goals, key actions and measures - management, monitoring and implementation of NFP till 2013
Measure Areas	To each priority is assigned a key action and to key action several measures. Therefore the measure areas correspond to the priority areas. Altogether in the Programme are set 17 key actions.

Table 3: General description of contents as written in document

7.2.2.2 Integration of innovation

Overall Innovation Orientation

More generic terms related with innovation are described in NFP frequently as well as the innovative terms which are linked with forest sector. Terms that are closely related to innovation occur frequently e.g. competitiveness, development, implementation of innovation, etc. In general, it is possible to say that terms related to the innovation occur frequently in the document and NFP has a pro-innovative

character. The innovations which are present in the document are very specific and are developed into particular measures within the key action, mainly the priority “Improvement of Long Term Competitiveness”. Overall understanding of innovation policy reflected in the programme is as predominantly systemic innovation policy. With regards to innovation as such the implementation of NFP into regional policies of the Czech Republic could be considered as a main goal of the policy. The relevance of innovation can be considered as a central issue.

Innovation Support Measures

Innovation support measures in the field of Research and Development would be for example a measure in key action no. 2 of NFP:

- Establish economics, eventually legislative conditions for more intensive co-operation among research, companies and 3rd parties during the implementation of innovation and development of new products, methods, technologies and effective markets.

Regarding the diffusion of innovation, the innovative support measure mentioned in NFP is for example:

- Establish technology platform for forestry and forest based industries with an aim to support innovation and technology development in forest sector, through the platform support involvement of domestic forest subjects in European forest and wood technology platform, within 7th Research Framework Programme and in other international research activities.

Among the measures which strengthening the knowledge base belong for example:

- Elaborate and implement system of vocation training for purpose of increase of qualification of employees, forest owners in scope of forestry and forest owners in cooperation with the Ministry for Regional Development.

In general it is possible to say that the innovation measures predominantly occur within the priority I “Improvement of Long Term Competitiveness” and priority

III “Improvement of Quality of Life”. The document without doubts is innovation oriented.

Cross-sectoral coordination

The document is co-ordinated from the administrative point of view between the Ministry of Agriculture and the Ministry of the Environment. Both institutions supervise the implementation of the document. However the Ministry of the Environment is predominantly concerned in respect of forests under protection. Another responsible actor in this area is The Forests of the Czech Republic, state enterprise, which carry on the implementation of the Forest Policy in practice.

7. 2. 3 Innovation Policy – National Innovation Policy

By Resolution No. 270 of 24 March 2004 the Government adopted the cornerstone document for the field of innovation – the National Innovation Policy. The national innovation policy is a part of the whole system of conceptual documents under the roof of the Economic Growth Strategy. The NIP is based upon principles being generally recognised within EU, that innovation is first of all the matter of enterprises and that state by its support measures can seriously influence neither the economic competition, nor international trade. The measures taken by the state can remedy some market failures, when the market does not produce signals that are sufficient to drive enterprises to behave optimally.

7.2.3.1 General information

The National Innovation Policy of the CZ (NIP) was adopted on 29the July 2005 by the government of the Czech Republic for the period 2005 to 2010.

The implementation of the document is formally made by Ministry of Industry and Trade and CzechInvest.

As the most relevant document related with NIP form the EU perspective is the Lisbon Strategy. From the geography scope NIP applies to national level. The implementation of NIP is ensured via the Operational Programme of Enterprise and Innovation and the Operational Programme of Research and Development for innovations above all. The table below describes the document in general way.

General description of contents as written in document	
Objective of the document	The document stimulate creating an environment for achieving of the state where enterprises and other organisations in the CR actively innovating their products, technologies, and also services and methods of the organization and management. Then NIP ensuring sustainable growth of labour productivity and competitiveness on the international market.
Priorities	- Intensify research and development as a source of innovations. - Create functional partnership between private and public sector. - Ensure human resources for innovation. - Encourage the achievement of civil service in research and innovation development field.
Structure	The document is structure into following main chapters: Introduction Preferences and deficiencies of innovation processes in the CZ Link of the National Innovation Policy to appropriate documents The visions of the National Innovation Policy Objectives, tasks, tools and steps of the National Innovation Policy Summary
Measure Areas	Single measures are described in very detail way. Formally is possible to divide them into areas which are related to the priorities of the document (Intensify research and development as a source of innovations; Create functional partnership between private and public sector; Ensure human resources for innovation; Make output of civil service in research and innovation development more effective).

Table 4: General description of contents as written in the document

7.2.3.2 Integration of innovation

Overall Innovation Orientation

If we look at the overall innovation orientation of NIP we can see that more generic terms related with innovation are described frequently however the innovative terms which are linked with forest sector don't occur in the document at all. Terms that are closely related to innovation occur frequently e.g. competitiveness, qualification, research, etc. In general, it is possible to say that terms related to the innovation occur frequently in the document. The innovations which are present in the document are very specific. The main goal of the document is to implement the innovation as well as support innovation mainly on the level of research and development. Farther encourage the achievement of civil service in research and

innovation development field and also ensure the human resources for innovation. The relevance of innovation can be considered as a central issue.

The document understands the innovation as a complex process. It puts an emphasis on science, research and development but on the other hand encourages the innovation in practical way by supporting establishment of clusters. Overall understanding of innovation policy is reflected in the document as a systemic innovation policy with science and technology policy elements.

Goals which are formulated in relation to innovation in the document are the same ones as the main priorities of the document (Intensify research and development as a source of innovations, Ensure human resources for innovation, Encourage the achievement of civil service in research and innovation development field).

Main problems are related with financial sector: e.g. need of simplification of legislation in terms of getting financial support from the National and EU Funds, problem of means allocation, etc..

Innovation Support Measures

One of the main priorities of the document is to encourage **research and development** as a source of innovation, for example:

- Every year increase a public spending for education and research by 20 – 25% until 2010 and so reach the public spending in the level of 1% of GDP.
- Set the relevant priorities for research and development.
- Regularly evaluate the results of research and development, strength the value of commercial exploitation of results.

Regarding diffusion of innovation the document contains few measures which encourage it, for example:

- Advertise a special programme which would support the establishment of “spin-off” companies.
- Preserve or enlarge the structural programmes for a period of 2007-2013 which support establishment and running of centres for technology transfer, incubators and science – technical parks as Universities.

Not many measures that would strengthen the knowledge base occur in the document. Between measures that would belong to this field are:

- Encourage managers in education, financial and consulting field that is focused on business and management in innovation process, then modern methods of management, development of manager thinking and skills.

Measures which strengthening interaction are mainly in legislative field. In respect of improving the frame conditions, most of measures have their own time schedule with dead lines of the latest fulfilment. In general is possible to say that the document supports the innovation through particular measures.

To sum up the priorities of the NIP, undoubtedly the main priority is research and development. This topic is discussed in depth in the document and also many measures are related to the research and development too. The document is high related to the innovation – it is the National Innovation Policy. The main priorities including sub priorities and measures are described very well and in detail. For example, many measures have their own time schedule for fulfilment. The relevance of innovation within the document is high and also the document is relevant for the policy area. Individual objectives of the document in the innovation area are described in detail.

Cross-sectoral coordination

The document is co-ordinated from the administrative point of view among ministries and other public organizations: the Ministry of Industry and Trade; the CzechInvest; the Ministry of Education, Youth and Sports and the Ministry for Regional Development, local authorities, banks, agencies, associations, foundations, etc. The main role plays the Ministry of Industry and Trade which is a coordinator of NIP.

The Ministry of Industry and Trade together with the CzechInvest and with the help of the above mentioned institutions (section administrative coordination) implement the objectives of the document via different programmes.

7.2.4 Rural Development Policy – Rural Development Programme

The Rural Development Programme of CZ stems from the main strategic priorities for the years 2007 – 2013 with an emphasis on increasing economic growth, creating new job opportunities and sustainable economic development. The conclusions of the summits in Lisbon and Göteborg are also reflected in appropriate extent.

The Rural Development Programme ensures the ties between the general aims of European Rural Development (expressed in Council Regulation 1698/2005 EAFRD) and the aims for rural development in CZ, with the corresponding "European Strategic Guidelines", the three strategic development axes (competitiveness, nature, environmental and landscape protection and the development and diversification of rural life). The Rural Development Programme also ensures cooperation and coordination with the other policy tools (structural policy, the cohesion policy, environmental and natural resources protection and the fisheries policy) with the aim of preventing overlapping in the use of these tools and their effective use in creating synergistic effects.

7.2.4.1 General information

The Rural development programme of the Czech Republic was adopted in June 2007 by the Government of the Czech Republic. The document is valid for the period 2007 to 2013 and will be formally monitor by the Ministry of Agriculture, the Ministry for regional development, the Ministry of the Environment, the Ministry of Industry and Trade, the Ministry of Finance, the Ministry of Labour and Social Affairs and Ministry of Culture together with delegates from the regions of the CZ.

From the geographic scope the Rural Development Programme applies to a national level. The document will be supported from the European Agricultural Fund for Rural Development (EAFRD) focused on the whole area of CZ except Prague.

Supplemental funds are:

- European Regional Development Fund Cohesion Fund
- European Social Fund
- Life+
- European Fisheries Fund

The table below describes the document from the general perspective.

General description of contents as written in document	
Objective of the document	**1.** pillar – Improving the competitiveness of the agricultural and forestry sectors **2.** pillar – Improving the environment and the countryside **3.** pillar - Improving the quality of life in rural areas and encouraging diversification **4.** pillar – LEADER
Priorities	- modernizing, innovation and quality - knowledge transmission - biodiversity, conservation and development of agricultural and forest systems with high added value and tradition agricultural landscape - water and soil preservation - climate changes moderation - creation of working opportunities - conditions of growth and quality of life on the countryside - education and local partnership
Structure	The document is structured into the following main parts: - SWOT analysis of the different pillars of the documents - Rationalisation of chosen priorities with regard to Strategic instruction of European Community and National strategic plan of rural development of the CZ - Information about pillars of the document and their provision - Financial plan, relation with other tools of the Common Agriculture Policy
Measure Areas	Each pillar has its Measure areas: 1. pillar - Measures aimed at destructuralization and development of material capital and support of innovation - Measure which are temporary for the Czech Republic and other Member countries of the EU - Measures aimed at encouraging knowledge and perfecting of manpower 2. pillar - Measures aimed at sustainable exploitation of agricultural land - Measures aimed at sustainable exploitation of forest land 3. pillar - Measures aimed at of diversification in rural areas - Measures aimed at improving quality of life in rural areas - Measures aimed at educating and inform of agricultural subjects working in areas which are related to pillar 3 - Measures aimed at inquiring of skills and propagation for purpose of preparation and fulfilling the strategies of the regional development 4. pillar

Table 5: General description of contents as written in the document

7.2.4.2 Integration of innovation

From the overall innovation orientation of the Rural Development Programme it is possible to see that more generic terms related with innovation are described sometimes as well as innovative terms which are linked with forest sector. Terms that are closely related to innovation occur also sometimes e.g. competitiveness, entrepreneurship, new technology, etc. In general, terms related to innovation occur in the document quite often. Innovation is mentioned mainly in chapters on Pillar I and III.

It is possible to say that innovation plays an important role in the document. The Innovation is relevant, it is one of the main priorities. The innovation is addressed by the document in very specific way. Innovation is among one of the priorities of the document (within Pillar I).

Form the EU perspective the Rural Development Programme contributes to fulfilment of the Lisbon strategy and the Göteborsk aims by improving competitiveness of agriculture and forestry. From the geography scope the Rural Development Programme applies to national level. Few problems that are related to innovation are identified in the document, e.g. modernisation of agricultural farms can lead to decrease of employment, marked support of energy from the renewable sources does not have to have a positive effect on price competitiveness of fuels, etc.

Innovation Support Measures

Innovation that support research and development are mainly linked with the Pillar I, for example:

- Modernisation of agricultural enterprises (Support is aimed at investment that improves overall efficiency of agricultural enterprise under improving its competitiveness.)

The most innovation support measures in the diffusion field are related to the Pillar I and III, for example:

- Investment in Forestry (The measure should improve the competitiveness of forestry by focusing on support of development of dynamic entrepreneurial

activities in forestry, higher efficiency of forest enterprises, restructuring of forest sector and improving conservation in Forestry. …)

- Cooperation in development of new products, processes, technologies (innovation) in food industry (Increasing in competitiveness,…)
- Diversification of activities related to agriculture

Among measures which strengthening innovation within the programme would belong, for example:

- Realization of projects of co-operation (The sense of this measure is to apply the best examples of practical experience to encourage the innovation practices and transfer of knowledge).

In general the innovation support measures are mainly described in the chapters linked with the Pillar I and III. Between long-term measures belong the measures of investment character as modernisation of agriculture and forestry, support of processing and exploitation of biomass.

In respect with the priorities of the document which are mentioned above the programme contributes to fulfilment of the Lisbon strategy and the Göteborsk aims by improving competitiveness of agriculture and forestry. The examples of measures listed above confirm this main goal. On the basis of above mentioned facts the document can be considered as pro-innovative.

Cross-sectoral coordination

From the administrative perspective, the Programme is co-ordinated among ministries and other public organizations: the Ministry of Agriculture, the Ministry of the Environment, the Ministry of Industry and Trade, the Ministry for Regional Development, the State Agriculture Intervention Fund. The man actor is the Ministry of Agriculture that co-operate with other above mentioned organisations and is a managing authority for the Programme.

The main actor is The Ministry of Agriculture as a managing authority that is responsible for implementation of the Programme. The programme is implementing through The State Agricultural Intervention Fund which closely co-operate with the Ministry of Agriculture.

7.2.5 Regional Development Policy - Regional Development Strategy

The Ministry for Regional Development of CZ is a central body of public service in the meter of regional policy and other branches. The primary document of the regional policy on the national level is the Strategy of the Regional Development. The Ministry for Regional Development is responsible for its implementation.

With regard to forestry policy, some regions in CZ have created (under the rules of National Forest Programme) their own regional forestry policies within the frame of their regional policy or they segregate regional forestry policy but a value of the segregate forestry policy it is on the same level as the regional policy. Below it is possible to find a list of the regions in CZ which have created their own regional document related to the forest sector:

Jihomoravský district:

Document: District Development Programme *(Program rozvoje kraje)*
Publication Date: 4th January 2007
Document: Strategy of Economy Development for the Jihomoravsky District *(Strategie rozvoje hospodarstvi JMK)*
Publication Date: 28th December 2006
Document: Regional Innovation Strategy for the Jihomoravsky District *(Regionální inovační strategie JMK)*
Publication Date: 21st December 2006

Karlovarský district:

Document: District Economy on the State Forest Land (Hospodařeni kraje na státní lesní pude)
Publication Date: December 2002

Královohradecký district:

Document: District Development Programme *(Program rozvoje kraje)*
Publication Date: February 2006

Liberecký district:

Document: District Forest Programme for Liberecky District (Krajsky lesnicky program Libereckého kraje)

Publication Date: November 2005

Olomoucký district:

Document: District Development Programme for the Area of Olomoucky District (Program rozvoje územního obvodu Olomouckého kraje)

Publication Date: February 2006

Pardubický district:

Document: Regional Development Programme of Forestry for the Area of Pardubicky District (Regionální program rozvoje lesního hospodářství Pardubického kraje)

Publication Date: unknown

Document: Development Programme for Pardubicky District (Program rozvoje Pardubického kraje)

Publication Date: October 2006

Ústecký district:

Document: Programme for Subsidies Administration for Forestry in the Period of 2007 – 2009 (Programu poskytování podpor na hospodařeni v lesích na období 2007 -2009)

Publication Date: November 2006

Vysočina district:

Document: Development Programme for Vysocina District (Program rozvoje kraje Vysocina)

Publication Date: December 2005

Document: Administration of Subsidies for Forestry (Poskytováni finančních příspěvků na hospodařeni v lesích)

Publication Date: June 2005

Zlínský district:

Document: Forestry Paper in the Area of Zlinsky District (Studie o lesním hospodářství na území Zlínského kraje)

Publication Date: 2002

7.2.5.1 General information

General document information

The Regional Development Strategy of the Czech Republic was adopted by the Government on 17the May 2006. The validity period of the Strategy is from 2007 till 2013. The document stem from the Sustainable Development Strategy of CZ and from the Economic Growth Strategy in economic field. From the geographic perspective, the Strategy applies on the national level. Financial means will be use of the Structural Funds and the Cohesion Fund. The practical realization will be held through the Regional Operational Programme (in total were established 7 according to the regions NUTS II).

The following table describes the contents of the Strategy in a general way.

General description of contents as written in document	
Objective of the document	A global objective of the document, which designates a fundamental focus of long-term development of the Czech Republic, is: - **Balanced, harmonised and sustainable development that will guide to the increase of a life quality level.** This global objective consists of three strategic objectives: - **Development - focused objective** (enhancement of economic and environmental potential, competitiveness and social level of the Czech regions to the comparable level with the forward Europe regions), - **Disparity - focused objective** (stop the growth and detrimental disparagement of inadequate regional disparity and exploited the area specifics), - **Instrumental objective** (institutional and financial provision of the strategy).
Priorities	The document has eight priority areas: - European and national-economic strategic frame - Economic of the regions - People and habitation - Infrastructure - Countryside, landscape and environment - Tourist trade - Culture - Problematic areas
Structure	The document is structured into these main parts: - Introduction - CZ and EU (position of the CZ and national-economic development) - Socio-economic analysis - Regional development - Evaluation of the implementation impact of the current development programmes of structural funds - Strategy of the document for the period 2007 – 2013 - Operational programmes - Economic and Social Sustainability Policy and the EAFRD - Macroeconomic model - Management and coordination - Evaluation
Measure Areas	To each key priority (which are mentioned above in the Priorities section) is the way of implementation described in detail. In the individual measure areas are mostly described the possibilities of financing the implementation of priorities.

Table 6: General description of contents as written in document

7.2.5.2 Integration of innovation

Overall Innovation Orientation

In respect of the overall innovation orientation of the Regional Development Strategy more generic terms occur in the documents sometimes. However innovative terms which would be related with forest sector do not occur at all. As regards to the frequency of occurrence of terms that are related to innovation - terms like entrepreneurship development, competitiveness, technical development, research and development, etc. occur frequently in the document.

Generally we can say that document is proactive in terms of innovation nevertheless innovation related to the forest sector not occur. To sum it up from the document is evident that innovation is an important issue.

The innovations that are present in the document are very specific. In the Strategy is quit in depth described the way of reaching the objectives. The innovation is mentioned among the priorities of the Strategy. In respect of the understanding of innovation, the innovation is considered as Traditional Science and Technology Policy with systemic elements. The greatest emphasis is put on research and development area.

The main goals of the strategy are that innovation should support sustainable development of towns and regions, for example by transferring innovation into indifferent developed regions. However innovation is mentioned in the strategy in very general way. The key goals are mainly used but they are not further developed which could be considered as a potential problem.

Among the innovation areas belongs innovation in:

- human resources field
- informative and communication field
- support an increase of competitiveness of middle and small entrepreneurship (by creating entrepreneurship centres with incubators)
- the document puts an emphasis on science and research

To sum it up terms that are related to innovation are very well described but the innovation link with forest sector is not mentioned at all in the document. Nevertheless a big emphasis is put on research and development.

Innovation Support Measures

In respect of innovation support measures on research and development it is possible to find the whole chapter discussing Research, Development and Innovation in relation with economy in the document. The examples of these measures are listed below:

- create regional centres of development in regional towns
- better exploitation of opportunities in development of micro-regional centres and establish scientific and technical parks
- establish functional partnership between public and private sector for risk capital
- put an emphasis on education and consulting and their suitable aim that must become convincing priority of the regional development

The diffusion of innovation measures are for example:

- support the increase of competitiveness of middle and small entrepreneurship (e.g. by creating entrepreneurship centres with incubators)
- support the interest in establishing so-called clusters as an optimal form that shorten the way from research over development and innovation towards their exploitation and diffusion
- Integration of scientific, educational and productive capacity for increasing innovating activity, especially by identification and clusters support form

Measures related with strengthening the knowledge base are for example:

- Development of common innovation services (scientific and technical parks, innovation centres, incubators) and appropriate consulting services.
- Support of entrepreneur projects for development of knowledge of economically – industrial character toward product with higher added value.

Usually the measures are very broad in the document so the interaction between the key actors (ministries) is crucial. However innovation measures are described in the document but mainly in a generic way. The main priority from the innovative perspective is research and development.

The innovation is in some way supported in the document but innovation support measures are quite general and occur only in few fields. The innovation is promoting mainly in the key objectives of the document but is not farther specify in the measures.

Cross-sectoral coordination

The Strategy is closely co-ordinated mainly with the Strategy of Sustainable Development of the Czech Republic and National Development Plan of the Czech Republic. From the administrative point of view the Strategy is co-ordinated among different ministries: the Ministry for Regional Development, the Ministry of Agriculture, the Ministry of Environment, the Ministry of Health, the Ministry of Industry and Trade, the Ministry of Transport, the Ministry for Education, the Youth and Sports; the Ministry of Labour and Social Affairs, etc. We can say that the strategy is very broad and interfere into different fields. Central co-ordinated body is the Ministry for Regional Development which it is co-operating with other ministries mentioned above.

7.2.6 National Environmental Policy

It is apparent that protection of the environment is closely connected with most sectoral policies and, from this point of view, National Environmental Policy is a cross-sectional policy, which must be both coordinated with the other sectoral policies and integrated into them. This requires cooperation at all levels of the public administration, where dozens of strategic and conceptual documents are prepared within central, sectoral and regional competence. National Environmental Policy plays an important role from the standpoint of assessment of the environmental impact of these plans and conceptions according to the prepared amendment to Act No. 100/2001 Coll., on environmental impact assessment, extending the obligation of assessing conceptions and plans to further sectors. Simultaneously, it is necessary that the framework of regular reports to the Government of CZ on carrying out of strategic tasks include evaluation in relation to the environment and the aspect of sustainable development. In this connection, it is necessary to emphasise the role of

National Environmental Policy as a reference document for the other sectoral and regional policies.

7.2.6.1 General information

General document information

The National Environmental Policy of the Czech Republic was adopted by the government of the Czech Republic on 17the March 2004. Related sector policies are: Energetic, Mining of the mineral sources, Industry, Trade, Transport, Agriculture and Forestry, Water Protection and Water Management, Environment and Health, Regional Development and Restoring of the Rural Areas and Tourism.

The Policy is financed through the European Community Funds, International Financial Institutions (e.g. EIB –European Investment Bank, EBRD – European Bank for Rural Development, etc.), State Budget, State Fund of the Environment of the CZ, National Property and Territorial Budget Fund. The document is financing through the whole period but every year the amount of financial means is different.

In the following table is described a content of the National Environmental Policy in general way.

General description of contents as written in document	
Objective of the document	- improve the quality of environment not only as a whole but also its parts - put the principles of sustainability into effect and support the continuing integration of environmental point of view into the sector politics - support the economic efficiency and social acceptability of environmental programmes, projects and activities
Priorities	- nature conservation, landscape conservation and biodiversity - sustainable use of nature resources; waste management - environment and a quality of life - protection of climatic system of the Earth and restriction of long distance air contaminations
Structure	The document is structured into following main chapters: - Introduction - Background - Objectives of the updated National Environmental policy of the CZ in the priority areas - Sector politics - Tools of implementation of the National Environmental policy of the CZ - Cost and efficiency of proposed objectives - Environmental indicators - Appendixes
Measure Areas	**In the document the measure areas are related with the main priorities:** **Priority No. 1 - nature conservation, landscape conservation and biodiversity** **Measure:** - declaration of NATURA 2000 areas, built up network of Civil Service and management for NATURA 2000 areas, ensure the management of biotopes for specially protected plant and animal species, accept principles of sustainable economy in landscape, … **Priority No. 2 - sustainable use of nature resources; waste management** **Measure:** - Build up and restore sewerage plants and sewer systems in accordance with implementation plan Council direction 91/271/EHS, propose plan of catchments area, protect land against contaminated dangerous substances, …. **Priority No. 3 - environment and a quality of life** **Measure:** - update the CZ legislation in terms of new Chemist politics of the EU which is prepared at the moment, access landscape due to building field paths, paths for bicycles, nature trails, encourage small businessman in eco-tourism and agri-tourism, … **Priority No. 4 - protection of climatic system of the Earth and restriction of long distance air contaminations** **Measure:** - Encourage and implement measure leading to the production decrease of emission of green house gasses; encourage the substitution of local sources that using the solid fuels (e.g. by renewable sources of energy, energy savings); implement the strategy of elimination of CFC and HCFC matters, … In general in the document to each main priority are given several sectional priorities with measure. In the above several measures to each main priority are mentioned.

Table 7: General description of contents as written in document

The National Environmental Policy is a crucial document that to a certain extent covers all the areas with which the policy deals. In connection with the NEP are step by step implemented follow-up measures both in the legislative and economic areas (by using various types of economic tools, which are more detailed analyzed in sectional politics).

7.2.6.2 Integration of innovation

Overall Innovation Orientation

From the overall innovation orientation of the national Environmental Policy we can see that more generic terms related with innovation are described sometimes. Terms in innovation area which are linked with forest sector don't occur in the document at all. Terms that are closely related to innovation occur also sometimes e.g. use of new techniques, competitiveness, free market economy, etc.

In general, it is possible to say that an overall innovation orientation of the Policy is quite poor. Innovation is mentioned in the documents only in general parts. In respect of relevance of innovation, the innovation is considered as one issue among others.

The Innovation Policy is understood by the document as predominately traditional science and technology policy. However in the document it is possible to find for example technological innovation as BAT- Best Available Techniques (recycling, energy saving, etc.) also support of research and development in the terms of using new technologies.

The main objectives of the document are following:

- Using new programmes (technologies).
- Simplification of legislation.
- Participation of publicity.
- Research and development.
- International cooperation.

In general, from innovation point of view the document is written very general. The way of achieving the innovation is mostly not specified. Only the main target is

specified. Innovation is mentioned in the main goals of the document but only in very general way.

Innovation Support Measures

Innovation support measures for research and development would belong, for example:

- Active participation on the realization of the 6the Environmental Action Programme and 6the Framing Programme of the EU for science and research
- Create information system for research and development
- Support research with a view to create effective tools for nature conservation and, especially economics ones

The measures are set in too general way that is impossible to describe their diffusion. Nearly no strength of the knowledge base for innovation occurs in the document. Only in section Research and Development is in very general way mentioned that “New technologies mean a high potential for improving environment, nature conservation and sustainable development”. To sum it up it is possible to say that innovation support measures are very poor or not occur in the Policy at all.

Cross-sectoral coordination

The Environmental policy is a very broad document that affects other sectoral policies as mentioned above. The main actor is the Ministry of Environment of CZ that supervises the entire roles. Other actors are the ministries that are related to sectoral policies – the Ministry of Agriculture, the Ministry of Rural Development, Ministry of Transport, the Ministry of Industry and Trade, the Ministry of Health.

7.2.7 Renewable Energy Policy - State Energetic Conception

Renewable energy is only one of the problems solved by the State Energetic Conception. The State Energy Policy is one of the basic components of the economic policy of the Czech Republic. It is a reflection of the state’s responsibility for creating conditions for reliable and permanently safe supplies of energy at acceptable prices and for creating conditions for its efficient use that will not threaten the environment and will comply with the principles of sustainable development. The state fulfils this

legal responsibility by establishing the legislative framework and rules for the operation and development of energy sector.

The State Energy Conception's vision specifies the state's priorities and determines the objectives that the state wants to achieve in influencing the development of energy sector in the horizon of the next 30 years in the conditions of a market oriented economy.

7.2.7.1 General information

General document information

The State Energetic Conception of the Czech Republic was adopted by the Government of the Czech Republic on 10th March 2004. The validity period of the document is from 2004 till 2030. From the geographic scope the conception applies on the national level.

The conception is financed via the National and EU Programmes, for example:

- Economy Use of Energy and Its Renewable and Subsidiary Sources of Energy National Programme – for a period of 2006 – 2009
- Research and Development Programme
- Limitation of Emissions of Certain Pollutants into the Air from Large Combustion Plants National Programme
- 6th Environmental Action Programme, etc.

In the table below is in general way describe the document as such.

General description of contents as written in document	
Objective of the document	There are four main objectives in the document: - maximal energetic effectiveness - assuring efficient high and structure of consumption of primary energetic sources - assuring maximum considerate to environment - finish the transformation and liberalization of energetic economy The objectives of the document have mainly long term character until 2030 but the document include also the middle term objectives until 2010 and short term objectives until 2005.
Priorities	There are three main priorities in the document: - independence - safety - sustainability
Structure	The document is structured into three parts: - visions, objectives and tool of the State energetic conception - summarisation of current and new tools of State energetic conception - complex energetic scenario of the State energetic conception
Measure Areas	Different tools will be used to reach the priorities are described in the document. Most of the tools which are mentioned in the document have legislative character (mainly is concern of amendments of current acts which deal with energetic).

Table 8: General description of contents as written in the document

7.2.7.2 Integration of innovation

Overall Innovation Orientation

In respect of the overall innovation orientation of the State Energy Conception it is possible to see that more generic terms related with innovation are described sometimes. Terms in innovation area which are linked with the forest sector don't occur in the document at all. Terms that are closely related to innovation occur also sometimes e.g. competitiveness, etc.

Regarding the Forest Sector the innovation is used only in general way, without concrete measures and proposals for its implementation. The concept of overall understanding of innovation policy is as predominately traditional science and technology policy. In spite of the fact that the document is the basic strategy for energetic policy in the Czech Republic, the innovation is mentioned very seldom, the word „innovation" is not included. The relationship to other sectors, especially to forest sector, is missing. It is important to analyse an impact of the new energetic

conception on the forestry in order to propose measures which would help to increase innovation in forest sector, especially innovation for use of wood for energetic purposes. To sum it up the document has no relevance to innovation

Innovation Support Measures

Innovation support measures are in general no defined. However in the Conception is a direct reference to possibility of use of the EU´s Framework Programme and National support programme for research and development. In general, the document supports the use of renewable resources of energy, independence etc., however measures supporting innovation was not possible to find. It is not either possible to determinate the priorities, because there are not mentioned concrete support measures for innovation. Only in area of research and development there is an effort to increase relationship between research and reality.

Cross-sectoral coordination

The document is formally co-ordinate with the Environmental Policy and international pact in the environmental and energetic fields where the Czech Republic take part of. The central co-ordination body is the Ministry of Industry and Trade of the Czech Republic that supervises the implementation and evaluation of the document. The Ministry of Industry and Trade of the CZ formally co-operate with mainly The Ministry of Environment of the Czech Republic and also with other touched ministries – e.g. the Ministry of Environment, Ministry of Health, etc.

The financing of the document is through the EU programmes and National Programmes.

7.2.8 Comparison of Individual policies from Innovation Perspective

The table below summarises the results of analyses of documents in the individual policy areas. The meaning of the codes/letters is described in the chapter 7.1.

Document	A	B	C	D	E	F
National Forest Programme	frequently	frequently	frequently	important issue	very specific	Systemic innovation policy with S&T policy elements
National Innovation Policy	frequently	never	frequently	central issue	very specific	Systemic innovation policy with S&T policy elements
Rural Development Programme	sometimes	sometimes	sometimes	important issue	very specific	Systemic innovation policy with S&T policy elements
Regional Development Strategy	sometimes	never	frequently	important issue	very specific	Traditional S&T policy with systemic elements
National Environmental Policy	sometimes	never	sometimes	one issue among others	very general	Predominately traditional science and technology policy
State Energetic Conception	sometimes	never	sometimes	no relevance at all	very general	Predominately traditional science and technology policy

Table 9: Policies analysis

It is possible to see that in most of the cases the more generic terms ‘innovation’ or synonyms occur sometimes (A). However forest sector ‘innovation frontier’ (B) in most cases don’t occur at all, only in the National Forest Programme occur frequently and in the Rural Development Programme occur sometimes. Terms that are related to innovation (C) occur in the document frequently or sometimes. Regarding the relevance of innovation (D), innovation represents an important issue in 3 policies, in one policy (National Innovation Policy) is it a central issue and in one policy (State Energetic Conception) this issue is not relevant at all.

In regard of degree of specification (E), in all analysed policies the problematic of innovation is tackle concretely. If we focus on understanding of innovation as such in the policies, in 3 cases under innovation is meant a systemic innovation policy with S&T policy elements, in 1 case (Regional Development Strategy) traditional S&T policy with systemic elements and in 1 case (State Energetic Conception) predominately traditional science and technology policy.

In summary, in all analysed documents innovation occur in some parts. Nevertheless innovation related with the forest sector in most cases does not occur and we can say that integration of such innovation into the policies is very poor. The

only exception is the National Forest Programme which has been valid since 2009 and which incorporated innovation related with the forest sector. From the presence of such innovation in the policy we can assume that integration of innovation in this area will be more supported in the future.

In general we can say from the presence of terms that are related to innovation that all documents are more or less innovation oriented. All documents where the innovation is an important or central issue, the measures are very specific. Under the innovation policy is understand systemic innovation policy with S&T policy elements which indicate maturity of the respected documents in terms of innovation.

From the analysis above is possible to see that the documents represent a good start for the innovation implementation however there is still a potential for further implementation of innovation into the policies especially in the light of integration of cross-sectoral innovation as for example the innovation in the forest sector.

7.3 Analysis of Relevant Policies in Some European Countries

This chapter summarises analyses of policies related with the forest sector from the innovation perspective in some European countries. The represented countries are countries that participated in the COST Action E51 „Integrating Innovation and Development Policies for the Forest Sector“. In order to target the most suitable documents for the individual policy areas the documents were selected by the representatives of the particular country. Also due to a fact that not all of the selected documents are available in English, the analyses within part A and B were carried out by the representatives of the particular countries.

The Table below summarises overview of analysed policies in particular countries. Altogether there were analysed policies in 13 selected countries. There are various countries with different historical background. An empty field means that a relevant document is not available in particular policy field (Cyprus, Austria, Switzerland) or exists but has was not analysed. As regards to Sustainable Development Policy, mainly this policy was assesses in the countries below, nevertheless in the Czech Republic this policy was represented only by the National Environmental Policy.

Country	Forestry Policy	Innovation Policy	Rural Development Policy	Regional Development Policy	Sustainable Development Policy	Renewable Energy Policy
Bulgaria	+	+	+	+	+	+
Finland	+	+	+	+	+	+
France	+	+	+	+		+
Croatia	+	+	+	+	+	+
Italy	+	+	+			
Cyprus	+	+	+	+		+
Lithuania	+	+	+	+	+	+
Norway	+	+	+	+	+	+
Austria	+	+	+	+	+	+
Romania	+				+	
Slovakia	+	+	+	+	+	+
Sweden	+	+	+	+	+	+
Switzerland	+	+	+	+	+	+

Table 10: Overview of the evaluated policies

7.3.1 Forestry Policy

Forestry policy as a main document was as the only one analysed in all the countries. The table below shows the overview of all analysed documents. From the geographic perspective it is possible to see that all policies apply to the national level.

Country	Name of the document	Approved	Validity	Geograf. level
Bulgaria	National Strategy for the Sustainable Development of Forest Sector in Bulgaria	2006	2006-2015	National
Finland	Finland´s National Forest Programme 2010	1999	2000-2010	National
France	National Forest Programme	2006	2006-	National
Croatia	National Forest policy and Strategy	2003	2003-	National
Italy	Guide Lines for forest sector planning	2005	2005-	National
Cyprus	National Forest Programme of Cyprus	2000	2000-2009	National
Lithuania	Lithuanian Forest Policy and its implementation Strategy	2002	2003-	National
Norway	Value-Added and biodiversity. New possibilities in the forest sector.	1998	1999-	National
Austria	Austrian Forest Programme	2005	2006-	National
Romania	National Forest Programme	2005	2005-	National
Slovakia	National Forest Programme of the Slovak Republic	2007	2007-2020	National
Sweden	Evaluation of the Forest Policy	2003	2003-	National
Switzerland	Swiss National Forest Programme	2005	2004-2015	National

Table 11: *Forestry policy – classification*

The table below shows that the oldest and still valid policy is the Norwegian and the Finish policy in contrary with the majority of analysed policies which are relatively “new”.

Country	A	B	C	D	E	F
Bulgaria	sometimes	sometimes	sometimes	One issue among others	rather general	Traditional S&T policy with systemic elements
Finland	sometimes	sometimes	n/a	One issue among others	rather general	Predominately traditional science and technology policy
France	frequently	never	frequently	Important issue	rather general	Traditional S&T policy with systemic elements
Croatia	sometimes	sometimes	sometimes	Marginal issue	rather specific	Systemic innovation policy with S&T policy elements
Italy	sometimes	sometimes	sometimes	One issue among others	very general	Predominately traditional science and technology policy
Cyprus	never	never	sometimes	No relevance at all	n/a	n/a
Lithuania	sometimes	sometimes	sometimes	One issue among others	n/a	n/a
Norway	sometimes	sometimes	sometimes	One issue among others	rather general	Traditional S&T policy with systemic elements
Austria	sometimes	sometimes	sometimes	Marginal issue	rather general	Traditional S&T policy with systemic elements
Romania	sometimes	sometimes	sometimes	Marginal issue	very general	Predominately traditional science and technology policy
Slovakia	sometimes	never	frequently	Important issue	rather general	Traditional S&T policy with systemic elements
Sweden	never	sometimes	sometimes	No relevance at all	very general	Predominately traditional science and technology policy
Switzerland	frequently	frequently	sometimes	Important issue	very specific	Predominantly systemic innovation policy

Table 12: Overview of the forestry policies in the selected countries

From the Table 13 is evident that issue of innovation in forestry policies occur in most of the countries (A) however not very often (B). The exceptions are France, Switzerland and partially Slovakia. In these countries the policies are relatively “new”. In contrary with the policies of Cyprus and Sweden where there is no mention of innovation (both documents are older than 5 years).

7.3.2 Innovation Policy

The following table shows overview of the innovation policies in the selected countries. The innovation policy was analysed in all countries except Romania. Respected policies have term “innovation” very often directly in a title. From geographic perspective all documents apply to the national level.

Country	Name of the document	Approved	Validity	Geograf. level
Bulgaria	Innovation Strategy of Republic Bulgaria and Measures for its Implementation	2004	2004-	National
Finland	Science, Technology and Innovation	2006	2007-2011	National
France	Innovation and technology research	2006	2006-2007	National
Croatia	Science&Technology Policy of the Republic of Croatia	2006	2006-2010	National
Italy	Plan for Innovation, Growth and Employment. Italian Plan for the implementation of the Lisbon European Strategy	2005	2005-2008	National
Cyprus	National Reform Programme of the Republic of Cyprus	2005	2004-2013	National
Lithuania	The National Lisbon Strategy implementation programme of Lithuania	2005	2005-2008	National
Norway	The EU Lisbon Strategy - A Norwegian Perspective	2007	2007-	National
Austria	Austrian Reform Programme fpr Growth and Employment	2005	2005-2008	National
Romania	n/a			National
Slovakia	National reform programme of the Slovak republic	2005	2006-2008	National
Sweden	The Swedish Reform Programme for Growth and Jobs	2006	2006-2008	National
Switzerland	Message on the Promotion of Education, Research and Innovation for the period 2008-2011	2007	2008-2011	National

Table 13: Overview of the innovation policies in the selected countries

From the table below is evident that all analysed policies are full of terms related with innovation. Nevertheless the relation between innovation and forestry, where not tackle in most cases at all, the exception is only France. Rather surprising is that in same number of documents implementation of innovation is contained on

general as well as specific level. Even though all analysed documents are very updated the systemic understanding of innovation does not dominate.

Country	A	B	C	D	E	F
Bulgaria	frequently	sometimes	frequently	Central issue	very general	Predominately traditional science and technology policy
Finland	frequently	sometimes	n/a	Central issue	rather specific	Predominately traditional science and technology policy
France	frequently	frequently	frequently	Central issue	rather specific	Systemic innovation policy with S&T policy elements
Croatia	frequently	never	frequently	Important issue	rather specific	Systemic innovation policy with S&T policy elements
Italy	frequently	never	frequently	Central issue	rather general	Predominantly systemic innovation policy
Cyprus	sometimes	never	sometimes	One issue among others	rather general	n/a
Lithuania	frequently	sometimes	frequently	Important issue	rather specific	Traditional S&T policy with systemic elements
Norway	frequently	never	frequently	Important issue	rather general	Systemic innovation policy with S&T policy elements
Austria	frequently	never	frequently	Important issue	rather specific	Traditional S&T policy with systemic elements
Slovakia	frequently	never	frequently	Important issue	rather general	Systemic innovation policy with S&T policy elements
Sweden	sometimes	sometimes	sometimes	Important issue	rather general	Traditional S&T policy with systemic elements
Switzerland	frequently	never	frequently	Central issue	very specific	Traditional S&T policy with systemic elements

Table 14: Innovation policy – classification

7.3.3 Rural Development Policy

The following table shows overview of the Rural Development Policies in the selected countries. The policies were analysed in all countries except from Romania. The focus of the policies is on national level apart of Italy where the document applies to regional level.

Country	Name of the document	Approved	Validity	Geograf. level
Bulgaria	National Strategic Plan for Rural development	2006	2007-2013	National
Finland	National Rural Policy Programme	2004	2005-2008	National
France	National Rural Development Plan	2006	2007-2013	National
Croatia	SAPARD programme - Agriculture and rural development plan	2005	2005-2006	National
Italy	Rural development Plan	2007	2007-2013	Regional
Cyprus	Rural development Plan	2006	2007-2013	National
Lithuania	The National Strategy of Rural Development	2007	2007-2013	National
Norway	The Rural and Regional Policy of the Norwegian Government	2005	2006-2010	National
Austria	Austrian Program for Rural Development	2000	2000-2006	National
Slovakia	Rural development programme of the Slovak Republic	2007	2007-2013	National
Sweden	Revised proposal to Rural development program for Sweden	2006	2007-2013	National
Switzerland	Message of the Federal Council on Agricultural Policy	2006	2006-2011	National

Table 15: Overview of Rural Development Policies in the selected countries

Influence of EU funds and length of the programming period is significantly visible, at 7 member states of the European Union the length of the validity of the documents correspond to the length of the programming period (8th example would be Austria where was analysed a document from the previous programming period but at present this document is replaced by a document for period 2007 to 2013). The only counties with different programming period are countries out of EU and Finland. However, Finland is the only country which analysed “policy document” and no programming document.

Country	A	B	C	D	E	F
Bulgaria	frequently	sometimes	sometimes	One issue among others	rather general	Traditional S&T policy with systemic elements
Finland	frequently	sometimes	frequently	Important issue	rather general	Traditional S&T policy with systemic elements
France	frequently	frequently	frequently	Important issue	rather specific	Traditional S&T policy with systemic elements
Croatia	sometimes	never	sometimes	One issue among others	rather general	Traditional S&T policy with systemic elements
Italy	frequently	sometimes	frequently	Important issue	rather general	Predominately traditional science and technology policy
Cyprus	sometimes	never	sometimes	Marginal issue	very general	n/a
Lithuania	frequently	frequently	frequently	Important issue	rather general	Traditional S&T policy with systemic elements
Norway	frequently	sometimes	never	Central issue	rather general	Systemic innovation policy with S&T policy elements
Austria	sometimes	sometimes	sometimes	Marginal issue	rather specific	Traditional S&T policy with systemic elements
Slovakia	frequently	never	frequently	Important issue	rather general	Traditional S&T policy with systemic elements
Sweden	sometimes	never	sometimes	n/a	very general	n/a
Switzerland	sometimes	never	sometimes	Important issue	rather general	Systemic innovation policy with S&T policy elements

Table 16: Rural development policy – classification

From the following table is evident that innovation as a term is included in all documents, and relatively frequently. Innovation related to forestry is mentioned less often nearly in half of the documents. Nonetheless as it was mentioned above it is possible to say that implementation and support of innovation is considered as

important issue but measures are rather general. The Table 17 confirms natural conservativeness of rural sector because innovation is predominantly understood in traditional manner.

7.3.4 Regional Development Policy

It is very difficult evaluate this policy because as it results from the title of the policy tackle development of regions in a country or in EU. From this perspective particular policies are very diverse. The general national policy was chosen at some countries, at other countries the practical policy of concrete regions. The analysis was not done in Austria and Italy. The table below summarizes overview of Regional Development Policies in the selected countries.

Country	Name of the document	Approved	Validity	Geograf. level
Bulgaria	National Regional Development Strategy for the Republic of Bulgaria	2005	2005-2015	n/a
Finland	Regional Strategic Programme	2003	2003-2007	Regional
France	Inter-professional contract for forest and wood sector in Burgundy	2005	2006-	Regional
Croatia	Strategy of Capacity Building for Regional Development	2002	2002-	National
Cyprus	Strategic Development Plan	2003	2004-2006	National
Lithuania	The Regional Policy Strategy of Lithuania	2002	2003-2013	National
Norway	The Rural and Regional Policy of the Norwegian Government	2005	2006-2010	National
Austria	National Strategic Reference Framework	2006	2007-2013	National
Slovakia	Regional Operational Programme	2006	2007-2013	National
Sweden	Swedish national Regional Development policy	2006	2007-2013	National
Switzerland	Message by the Federal Council on the New Regional Policy	2005	2006-	National

Table 18: Overview of Regional Development Policies in the selected countries

In practice, the issue of rural development and regional development is often solve together, in Norway exists even one common policy document (therefore the data for Norway are the same at both policies).

Country	A	B	C	D	E	F
Bulgaria	frequently	sometimes	frequently	Important issue	rather general	Predominately traditional science and technology policy
Finland	sometimes	sometimes	sometimes	One issue among others	rather general	n/a
France	frequently	sometimes	frequently	Important issue	rather general	Traditional S&T policy with systemic elements
Croatia	never	sometimes	sometimes	No relevance at all	rather specific	Predominantly systemic innovation policy
Cyprus	sometimes	never	sometimes	One issue among others	rather general	Traditional S&T policy with systemic elements
Lithuania	sometimes	sometimes	frequently	One issue among others	very general	Traditional S&T policy with systemic elements
Norway	frequently	sometimes	never	Central issue	rather general	Systemic innovation policy with S&T policy elements
Austria	frequently	sometimes	frequently	Central issue	rather specific	Predominantly systemic innovation policy
Slovakia	sometimes	never	sometimes	Marginal issue	very general	n/a
Sweden	frequently	never	frequently	Important issue	rather general	Predominantly systemic innovation policy
Switzerland	frequently	never	frequently	Central issue	rather specific	Systemic innovation policy with S&T policy elements

Table 19*:* Regional development policy –classification

The basic elements of innovation theory are mentioned frequently or at least sometimes in the policies (except Croatia because in this case was analysed a relatively old document where in a framework of SAPARD was not put an emphasis on innovation, and Norway). Innovations that are related with forestry are mentioned only sometimes. Nonetheless the innovation is understood as important issue the measures are rather general like in the Rural Development Policy.

7.3.5 Sustainable Development Policy

At three countries: Italy, France and Cyprus (where the policy does not exist) analysis was not done. Italy. The table below shows *Overview of Sustainable Development Policies in the selected countries*.

Country	Name of the document	Approved	Validity	Geograf. level
Bulgaria	Operational Programme "Environment"	2007	2007-2013	National
Finland	The National Strategy for Sustainable Development	2006	2006-	National
Croatia	Strategy and National Environmental Action Plan	2002	2002-2012	National
Lithuania	National Strategy for Sustainable Development	2003	2003-	National
Norway	National Agenda 21.National Action Plan for Sustainable Development	2004	2004-	National
Austria	Austrian Strategy for Sustainable development	2002	2002-	National
Romania	National Development Plan	2007	2007-2013	National
Slovakia	National Strategy for Sustainable Development for the Slovak Republic	2001	2002-	National
Sweden	Strategic Challenges - A further elaboration of the Swedish Strategy for Sustainable development	2006	2006-	National
Switzerland	Sustainable Development Strategy	2002	2002-2007	National

Table 20: Overview of Sustainable Development Policies in the selected countries

In most of the cases the analysed documents are an “umbrella” policy documents, only for Bulgaria was chosen implementation operational programme. To this correspond also a fact that in most cases the documents do not have limited validity by certain year.

In all the documents the innovations are mentioned but only sometimes. Regarding the innovation related with forest sector the innovation is mentioned sometimes or not at all.

Country	A	B	C	D	E	F
Bulgaria	sometimes	sometimes	sometimes	One issue among others	rather general	Traditional S&T policy with systemic elements
Finland	sometimes	never	sometimes	Important issue	rather general	Systemic innovation policy with S&T policy elements
Croatia	sometimes	sometimes	sometimes	Marginal issue	very general	Systemic innovation policy with S&T policy elements
Lithuania	sometimes	sometimes	frequently	Marginal issue	very general	Traditional S&T policy with systemic elements
Norway	sometimes	never	sometimes	One issue among others	very general	Systemic innovation policy with S&T policy elements
Austria	sometimes	never	sometimes	One issue among others	rather general	Systemic innovation policy with S&T policy elements
Romania	sometimes	sometimes	sometimes	Central issue	very specific	Traditional S&T policy with systemic elements
Slovakia	sometimes	sometimes	frequently	One issue among others	very general	Predominately traditional science and technology policy
Sweden	sometimes	sometimes	sometimes	Important issue	rather general	Traditional S&T policy with systemic elements
Switzerland	sometimes	sometimes	sometimes	One issue among others	rather general	Systemic innovation policy with S&T policy elements

Table 21: Sustainable development policy – classification

From the table above results that issue of innovation is in most of the cases only one of many targets how reach sustainability that complies with “umbrella” character of the policy. A little surprising is a fact that measures related with innovation are quite general in this policy.

7.3.6 Renewable Energy Policy

For the analysis various documents related with Energy Policy and conceptions of certain country were submitted. The table below summarizes an overview of the Renewable Energy Policies in the selected countries.

Country	Name of the document	Approved	Validity	Geograf. level
Bulgaria	National Long-term Program for Encouragement of the Renewable energy sources	2005	2005-2015	National
Finland	Outline of the Energy and Climate Policy for the near Future - National Strategy to implement the Kyoto Protocol	2005	2005-	National
France	Wood energy national Programme	1999	2000-2006	National
Croatia	Energy Sector Development Strategy of the Republic of Croatia	2002	2002-2012	National
Cyprus	Renewable energy policy of Cyprus	2002	2002-2010	National
Lithuania	The National Energy Strategy	2007	2007-2025	National
Norway	National Budget 2007	2007	2007	National
Austria	Nationaler Biomasseaktionsplan für Österreich	2006	2006-2010	National
Slovakia	Energy Policy of the Slovak Republic	2006	2006-2030	National
Sweden	National Climate Policy in global cooperation	2006	2006-2012	National
Switzerland	Energy Perspectives 2035 - Vol.1 Synthesis	2007	2007-2035	National

Table 22: Overview of the Renewable Energy Policies in the selected countries

The only not analysed were policies of Italy and Romania. From the overview above is evident that validity of policies in some case is long (20 – 30 years) which is at such policies logic.

Country	A	B	C	D	E	F
Bulgaria	sometimes	sometimes	sometimes	One issue among others	rather general	Traditional S&T policy with systemic elements
Finland	sometimes	sometimes	n/a	One issue among others	rather general	Predominately traditional science and technology policy
France	sometimes	never	sometimes	Marginal issue	very general	Traditional S&T policy with systemic elements
Croatia	sometimes	sometimes	sometimes	Marginal issue	rather general	Traditional S&T policy with systemic elements
Cyprus	never	never	never	No relevance at all	n/a	n/a
Lithuania	sometimes	sometimes	sometimes	One issue among others	rather general	Traditional S&T policy with systemic elements
Norway	sometimes	sometimes	sometimes	Marginal issue	very general	Predominately traditional science and technology policy
Austria	sometimes	never	never	Marginal issue	very general	Traditional S&T policy with systemic elements
Slovakia	sometimes	sometimes	sometimes	Marginal issue	very general	Predominately traditional science and technology policy
Sweden	sometimes	never	never	Marginal issue	very general	Predominately traditional science and technology policy
Switzerland	sometimes	sometimes	sometimes	Important issue	rather general	Traditional S&T policy with systemic elements

Table 23: Renewable energy policy – classification

From the table above is possible to see that innovation is implemented in all documents however not very frequently. An exception is Cyprus where innovation is not mentioned at all which is very likely due to special conditions of the island. The similar situation is with the innovation related with forestry where above all innovation is not mentioned in 4 policies (France, Cyprus, Austria and Sweden) which is

surprising finding regards the possibilities of utilization timber as a source of renewable energy. The innovation measures are in particular policies very general but this could result from the long-term perspective of the policies (Jarský, Pudivítrová, Ventrubová 2010).

From the policies analyzed in the selected countries is evident that in respect of the innovation the situation is rather similar to the one in the Czech Republic. The innovation occurs in most of the documents however the presence of innovation related with the forest sector is still rather weak. Therefore more effort will have to be invested into farther implementation of innovation in this area.

The table below summarises degree of innovation specification in various countries in analysed documents relevant for each policy area.

Country	Programme					
	Forestry Policy	Innovation Policy	Rural Development Policy	Regional Development Policy	Sustainable/ Environmental Policy	Renewable Energy Policy
AT	rather general	rather specific	rather specific	rather specific	rather general	very general
BG	rather general	very general	rather general	rather general	rather general	rather general
CH	very specific	very specific	rather general	rather specific	rather general	rather general
CY	missing	rather general	very general	rather general	missing	missing
CZ	very general	very specific	very specific	very specific	very general	very general
FI	rather general	rather specific	very general	rather specific	rather general	rather general
FR	rather general	rather specific	rather specific	rather general	missing	very general
IT	very general	rather general	rather general	rather specific	missing	very general
LIT	rather general	very specific	rather general	very general	very general	rather general
NO	rather general	rather general	rather general	rather general	very general	very general
RO	very general	missing	missing	missing	missing	missing
SK	rather general	rather general	rather general	very general	very general	very general
SWE	very general	rather specific	very general	rather general	rather general	very general

Legend				
missing	very general	rather general	rather specific	very specific

Graph 1: Degree of innovation specification in policies

From the Graph 1 is evident that in most of the countries the innovation occurs in the analysed policies mainly in the scale from missing to rather general. The worst situation was recognised in Romania where implementation of innovation is missing in most of the analysed policies. On the other hand in Austria, France, the Czech Republic and Croatia the innovation is present in the analysed policies in the scale

from rather genera to very specific. Nonetheless if we look at the innovation from the perspective of its relevance to forestry it occurs only sometimes.

8. Analysis of Implementation of Innovation into Forestry and Innovation Potential

8.1 Outcomes of 2009/2010 Survey

The research was carried out since November 2009 till April 2010 and aimed to indicate how the innovation is implemented at forest sector as well as establish innovative potential in forestry in the Czech Republic over the past three years. The target group for the research was non-state forest owners who were asked to fill in a questioner which you can find in the annex of the thesis. The questioner consists of 6 parts which have following themes:

1.1 Forest ownership
2.2 Innovation
3.3 Positive and Negative Factors
4.4 Establishment of a company/business
5.5 Personal opinion of forest owners on development of certain markets and forestry in general
6.6 Personal data identification respectively company data

The non-state forest owners were either interviewed (represents 113 questioners) or a questioner was sent to them by an email. The questioner was sent to 456 non-state forest owners but only 19 questioners were received back. Altogether the research worked with 132 filled in questions.

The outcomes of 2009/2010 survey are also compared with a similar survey of 2002 which is described later on in the thesis. Therefore the results of the carried survey of 2009/2010 should not only show implementation of innovation in forestry at present but also it should be possible to compare the development in foresters' thinking towards innovation and their willingness to implement them.

Forest ownership

All together 132 respondents filled in the questioner. From those the highest percentage constitute the community forests 33% the second largest group were personal and family co-owned forests both 30%.

Owner	Responses (%)
Myself – personal ownership	30
Community	33
Family co-ownership	30
Co-owned forest	3
Others	4

Table 24: Forest ownership

If we have a look on the spectrum of responses from the forest area perspective, the 45% of respondents own forests on the area smallest than 50 ha That actually confirms a trend in the Czech Republic where most of private owners own land of area smaller than 50 ha. It is also possible to see that more than a half of respondents own forest of the area of less than 200 ha (67%).

Area (ha)	Responses (%)
< 50	45
51 - 200	22
201 - 500	11
501 - 1000	8
1001 - 5000	13
5001 - 10000	1

Table 25: Forest area

The table below combines the responses from the view of area and ownership and shows the respondent ownership breakdown. Personal ownership (1 person) and family co-ownership prevail in up to 50 ha category, community does in 51 - 200 ha category followed by 1001– 5000 ha and co-owned forest prevail in 1001 – 5000 ha category.

Owner	Area (ha)	% of responses
Myself	< 50	72
	51 - 200	20
	201 - 500	8
	of Total	**30**
Family co-ownership	< 50	70
	51 - 200	10
	201 - 500	7,5
	501 - 1000	5
	1001 - 5000	7,5
	of Total	**30**
Co-owned forest	201 - 500	25
	501 - 1000	25
	1001 - 5000	50
	of Total	**3**
Community	< 50	5
	51 - 200	35
	201 - 500	16
	501 - 1000	16
	1001 - 5000	26
	5001 - 10000	2
	of Total	33
Others	51 - 200	40
	201 - 500	20
	501 - 1000	20
	1001 - 5000	20
	of Total	4

Table 26: Respondent ownership breakdown

The table below shows breakdown of targets of forest owners in respect of area of their ownership in percentage. It is possible to see that the small forests owners mostly responded (44%) that want hold they property or capital at current standard. However forest owners of area from 51 to 1000 ha in majority responded that their target is to make larger profits. The biggest forest owners who own forest property from 1001 to 10000 ha responded that their target is to increase value of forest land. The distribution of responses for certain group reflects also their financial possibilities and staff recourses for looking after they property. It is possible to presume that larger the property is bigger resources are available for the forest management. Therefore the forest owners have opportunities to invest into their property as they already are able to generate profit which allows it to them. On the other hand the small forest owners (less than 50 ha) do not have either staff not financial resources for forest land management and therefore in most cases try to

maintain the property. Interesting is that the second most frequent respond in respect of small forest owners targets was to increase the value of their forest land. From that answer we can assume that small forest owners have very positive relationship towards their forest property mostly probably due to a fact that the property is in their family for long time and therefore their target is to at least maintain the current state or increase its value. Their forest management is not profit oriented and they want to maintain the property for the next generation (only 2% of responses want to close the business).

	Area / responses (%)					
Target	< 50 ha	51 - 200 ha	201 - 500 ha	501 - 1000 ha	1001 - 5000 ha	5001 - 10000 ha
Make larger profits	12	**41**	**53**	**55**	29	0
Increase value of forest land	41	28	33	36	**41**	**100**
Hold the property or capital at current standard	**44**	31	7	9	29	0
Close the business	2	0	0	0	0	0
Other	2	0	7	0	0	0

Table 27: Target and area breakdown

The table below summarises an overview of targets of all respondents in percentage. It is possible to see that in general answers are very balanced among the first three targets. However the highest score in responses got a target “increase value of forest land”, which was answered in 37 % of all respondents. From that result is possible to see a positive influence of the Forest Policy of the Czech Republic on foresters as this target is in line with the main targets of the policy.

Target	Responses (%)
Make larger profits	29
Increase value of forest land	37
Hold the property or capital at current standard	32
Close the business	1
Other	2

Table 28: Target breakdown

If we have a look closely on the targets, the following table shows how the forest owners want to reach them. In order to make larger profit, the 22 % of respondents who want to reach this target will rationalize their business, 18 % of them want to support their own products on the market.

In order to increase value of forest land the forest owners will maintain the current state (24%) and rationalized (18 %). The forest owners who want to hold the property or capital at current standard they will maintain the current state (42 %).

Target/ Reaching the target (%)	A	B	C	D	E	F	G	H	I	J
Make larger profits	12	18	1	22	13	5	16	8	3	0
Increase value of forest land	13	15	1	18	13	0	9	24	6	2
Hold the property or capital at current standard	6	14	2	17	3	5	6	42	5	0
Close the business	0	0	100	0	0	0	0	0	0	0
Other	0	33	0	33	33	0	0	0	0	0

Table 29: Targets fulfilment breakdown

Way of reaching the target:

A	Purchasing additional forests	F	Specialization
B	Supporting their own products on the market	G	Collaboration with other forestry businesses
C	Selling forests	H	Maintaining the current state
D	Rationalization	I	Changing structure of work
E	Enlarging a range of products and services	J	Other

The following table describes breakdown of employees depending on the area of forest property. It is possible to see that there exist a direst proportion between the size of the area and number of employees. Larger the area is greater number of stuff is employed. From the responses it is possible to see that there is in general twice as many or more labours employed as officers for certain area of forest land. Also we can summarise that external employees represent more than 50 % of all staff in forest land of area from 51 to 5000 ha.

Area (ha)	Staff (officers) no. of responses	Average no. of employees (officers)	Labours no. of responses	Average no. of employees (labours)	External employees no. of responses	Average ratio of external empl. on total no. of employees (%)
< 50	10	**1**	9	**3**	10	**44**
51 - 200	22	**1**	20	**5**	22	**59**
201 - 500	12	**2**	7	**5**	12	**74**
501 - 1000	8	**2**	7	**4**	9	**56**
1001 - 5000	16	**6**	14	**12**	15	**65**
5001 - 10000	1	**17**	1	**40**	1	**40**

Table 30: Employees breakdown

In the questioner the respondents were asked to answer also questions related with impact of financial crises 2008-2009 on their business. The table below summarise how the respondents see the influence of the financial crises.

Financial Crisis	Responses (%)
Evoke subsistence problems	13
It is a challenge which is need to overcome	39
Not influence us	46
Other	2

Table 31: Financial crisis

In most of the cases (46%) respondents answered that financial crises do not influence them. 39% respondents perceive the financial crises as a challenge that is needed to overcome.

The following table shows a different point of view on financial crises of those who have implemented the innovation in comparison with those who have not. 56% of those who have implemented the innovation replied that the financial crisis represents for them a challenge which is needed to overcome. On the other hand 57 % respondents who have not implemented the innovation replied that financial crisis does not influence them. The result confirmed that respondents who implemented the innovation are not afraid to face new challenges and are able to see them even in the financial crises.

	Implemented innovation	
Financial Crisis	Yes (%)	No (%)
Evoke subsistence problems	22	9
It is a challenge which is need to overcome	56	34
Not influence us	17	57
Other	6	0

Table 32: Financial crisis - comparison

The following table describes in detail an influence of the financial crises in respect of area of forest land. Table summarises in percentage how the forest owners are influence by crises in particular area of forest land.

	Financial Crisis/ responses (%)			
Area (ha)	Evoke subsistence problems	It is a challenge which is need to overcome	Not influence us	Other
< 50	10	22	**68**	0
51 - 200	14	38	**48**	0
201 - 500	20	**47**	33	0
501 - 1000	9	**73**	9	9
1001 - 5000	18	**71**	6	6
5001 - 10000	0	**100**	0	0

Table 33: Financial crises and area breakdown

It is possible to see that for the forest land smaller that 200 ha the forest owners consider themselves as not being influenced by the crises (68 % of respondents within the area till 50 ha, 48 % respondents within the area from 50 to 200 ha). For the forest owners who own less that 50 ha result the outcome of inquiry from the above mentioned tables. Mostly such owners try to hold the current state of their property and do not spent too much resources on forest management which could influenced by the crises.

However the owners of forest land larger than 501 ha perceive the financial cries as a challenge that is needed to overcome. It is very positive to see that only relatively small percentage of respondents perceive the crises as a subsistence problem.

Innovation

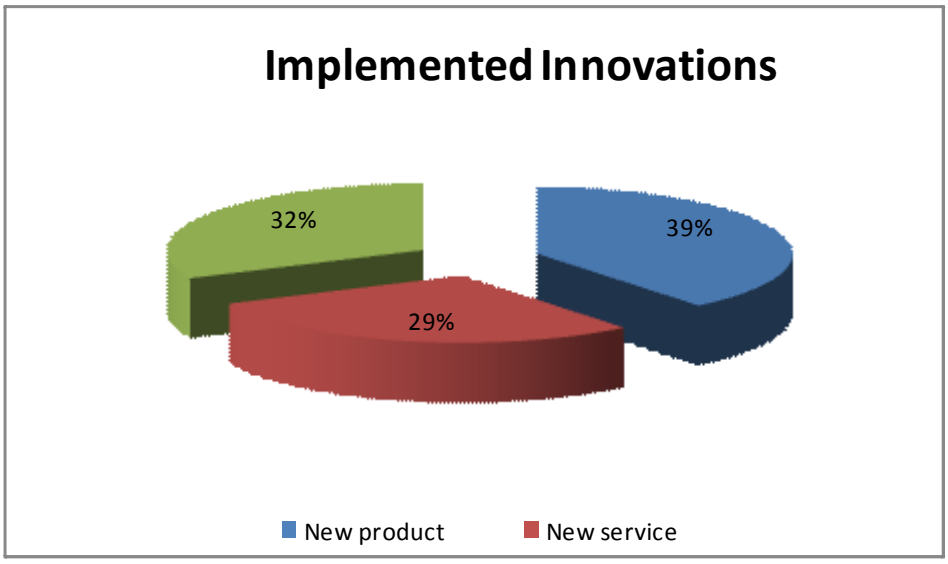
In the second part of the questioner the respondents we asked questions on innovation. Altogether 73 % of all respondents replied that had implemented innovation in last three years before the financial crises started.

	No. of implemented innovations / responses (%)		
Type of innovation	One	Two	More that two
New product	55	30	15
New service	80	5	15
Tech/org. innovation	82	13	5

Table 34: Type of innovation

From the table above is possible to see that in majority of all cases the forest land owners had implemented in last three years before the financial crises started only one innovation. Two innovations were implemented the most frequently in case of product (30 %). More than two innovations were implemented mainly in case of new product or service (both 15%).

The following graph shows percentage of respective innovations implemented. From all innovations in most cases was implemented new product in 39%, tech./org. innovation was implemented in 32 % and new service was implemented in 29 %. Nevertheless figures show that implementation of all innovations is balanced.



Graph 2: Implemented innovation

The table below shows impact of innovation on business results. Absolute majority of owners who implemented new product (54 %), service (62 %) or tech./org. innovation (55 %) answered that it had a positive effect on their business. No respondent who implemented either new product or service answered that it had a negative effect on the business results. More than one third of all respondents (36 %) who implemented a new product responded that it had a very positive impact on their business results.

Impact	New product (%)	New service (%)	Tech/org innovation (%)
Very positive	36	12	5
Positive	54	62	55
Neutral	11	27	35
Negative	0	0	5
Very negative	0	0	0

Table 35: Impact of innovation

It is possible to summarise that implementation of innovation in general had a positive effect on business results.

Further, the respondents were asked to identify who gave them the first stimulus for implementation of innovation. The table below gives a comprehensive overview. Among the most frequent responses was stimulus from a co-worker and a forest office. Other significant stimulus for implementation of innovation was given from customer, owner, journals, seminars, etc. Trainings also play an important part.

Stimulus for implementation of innovation	Responses (%)
Co-worker	14
Owner/ co-owner	11
Other forest owner	8
Supplier	7
Customer	11
Forest office	14
University/research authority	2
Seminars/courses/excursions	10
Agriculture chamber	0
Consultancy company	0
Consultant for regional development	1
Vocational training	9
Workshops/conferences	2
Journals	10
Other	0

Table 36: Stimulus for implementation of innovation

On the other hand it is possible to see that role of consultants as well as the Agriculture Chamber is very weak. What is quite surprising is that impact of

workshops and conferences is very small in comparison with practically focused seminars, courses and excursions.

The implementation of innovation was also assessed from the perspective of reached education of respondents.

	Implementation of innovation (% of all responses)		
Education	Yes	No	Sum
Primary school followed by a training	0	2	2
Forest vocational training school	0	1	1
Other vocational training school	0	4	4
Secondary forest school	9	21	29
Other secondary school	5	26	31
Forestry or wood - majored university	13	12	26
Other university	2	5	7

Table 37: Education and implementation of innovation

The table above shows that those who implemented innovation have at least secondary education and the most often graduated at a forestry or wood majored university (13 %). From those who did not implemented the innovation reached the most of them a secondary education. In general if we have a look on education of respondents, more than half of them have forest education which is very good sign for the business as it is managed by relevant well educated people in forestry field.

Positive and Negative Factors on Implementation of Innovation

The respondents were also asked which factors had a positive effect on implementation of innovation in their business. The table below summarises the impact of individual factors on implementation of innovation. Positive impact is evaluated on scale ranging from “+3” (largest positive impact) to no impact “none”. The figures within the table are counted in percentage for single scale.

The most positive impact (3+) on implementation of innovation had EU subsidies (25%). The second most positive impact (2+) on implementation of innovation had co-operation with suppliers, customers and services (27%). The

percentage of replies that had a little or no positive impact is very balanced. Among the most frequent answers which factors had none impact on implementation of innovation were Chamber of Agriculture's advisory service, forestry subsidies from public funds, qualified workforce offer, co-operation with institutions and chambers and co-operation between institutions. From the responses is possible to see a strong support of innovation via EU funds.

Innovative positive impact / responses (%)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
None	4	0	12	4	12	8	0	12	8	8	0	0	12	12	12
1+	12	8	4	12	8	4	8	0	8	8	12	8	0	4	4
2+	7	9	0	0	11	2	11	2	2	7	27	16	4	2	0
3+	14	8	0	6	3	6	25	0	3	3	19	6	6	3	0

Table 38: Positive factors on implementation of innovation

Positive impact on innovations	**Code**	Qualified workforce offer	H
Financial services offer	A	Possibility of education, training and further education	I
Tech/org. innovations services offer	B	Innovations enquiries offer	J
Chamber of Agriculture's advisory service	C	Cooperation with suppliers, customers, services	K
Other advisors	D	Cooperation with other forest owners	L
Forestry subsidies from public funds	E	Cooperation with institutions and chambers	M
Forestry management scheme on innovation and region. dev. support	F	Cooperation between institutions	N
EU subsidies	G	Other support	O

The following table summarises the most negative impacts on implementation of innovation.

Innovative negative impact/ Responses (%)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
-3	18	5	3	13	5	5	3	11	5	8	0	0	5	3	0	3	5	5	3
-2	13	5	7	10	2	13	9	1	3	5	3	3	5	3	6	5	1	3	1
-1	9	4	4	4	11	3	1	7	7	9	8	5	5	3	7	8	8	7	3
No importance	1	9	11	3	3	4	5	5	4	5	8	5	4	7	4	5	5	5	4

Table 39: Negative factors on implementation of innovation

Negative impact on innovations	**Code**	Environmental laws	J
Lack of own financial resources	A	Forestry Act	K
Low on external funds	B	Trade Act	L
Qualified workforce availability	C	Financial/Tax expenditure	M
High introduction costs	D	Labour law	N
High current costs	E	Technical standards and regulations	O
Saleability risk	F	Collaboration with suppliers, customers, services	P
Lack of information on sales markets	G	Collaboration with institutions and chambers	Q
Lack of information on possible new products and services	H	Collaboration between institutions	R
Lack of information on innovation implementation support schemes	I	Other negative impacts	S

The most negative effect (-3) on implementation of innovation had lack of own financial resources (18%) further it was high introduction cost (13%) another very significant factor was lack of information on possible new products and services (11%). On the other hand no negative effect on implementation of innovation had lack of qualified workforce availability (11%). From the above table is clearly possible to see that the greatest barriers for implementation of innovation were of a financial character. Also the respondents perceived lack of information on successfully implemented innovation as an obstacle. From that it is possible to assume that there is still not sufficient awareness of various possibilities of implementation of innovation within business.

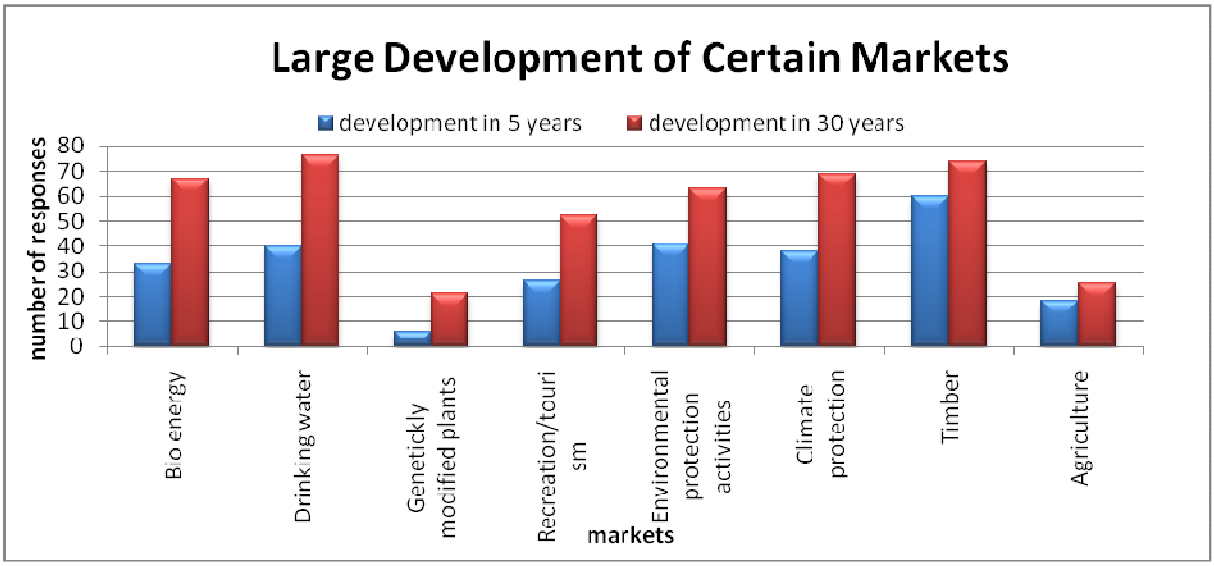
Personal opinion of forest owners on development of certain markets and forestry in general

Besides finding out the business objectives of the forest owners, the questionnaire dealt with respondents´ views on some aspects of forestry management development and the areas where various sorts of improvement are expected.

The question concerning general forestry management development is divided into two parts – a five years´ and thirty years´ expectations. The table below summarises a development of certain markets in scale from a none to large development.

		Development (no. of responses)			
Market	Expectation (in years)	None	Little	Medium	Large
Bio energy	5	1	27	65	33
	30	2	13	40	67
Drinking water	5	7	33	43	40
	30	4	10	31	76
Genetically modified plants	5	41	56	19	6
	30	16	41	44	21
Recreation/tourism	5	2	29	66	26
	30	1	14	57	52
Environmental protection activities	5	0	27	54	41
	30	0	11	49	63
Climate protection	5	10	35	38	38
	30	5	12	38	69
Timber	5	1	15	49	60
	30	0	10	40	74
Agriculture	5	13	51	41	18
	30	10	33	53	25

Table 40: Development of certain markets



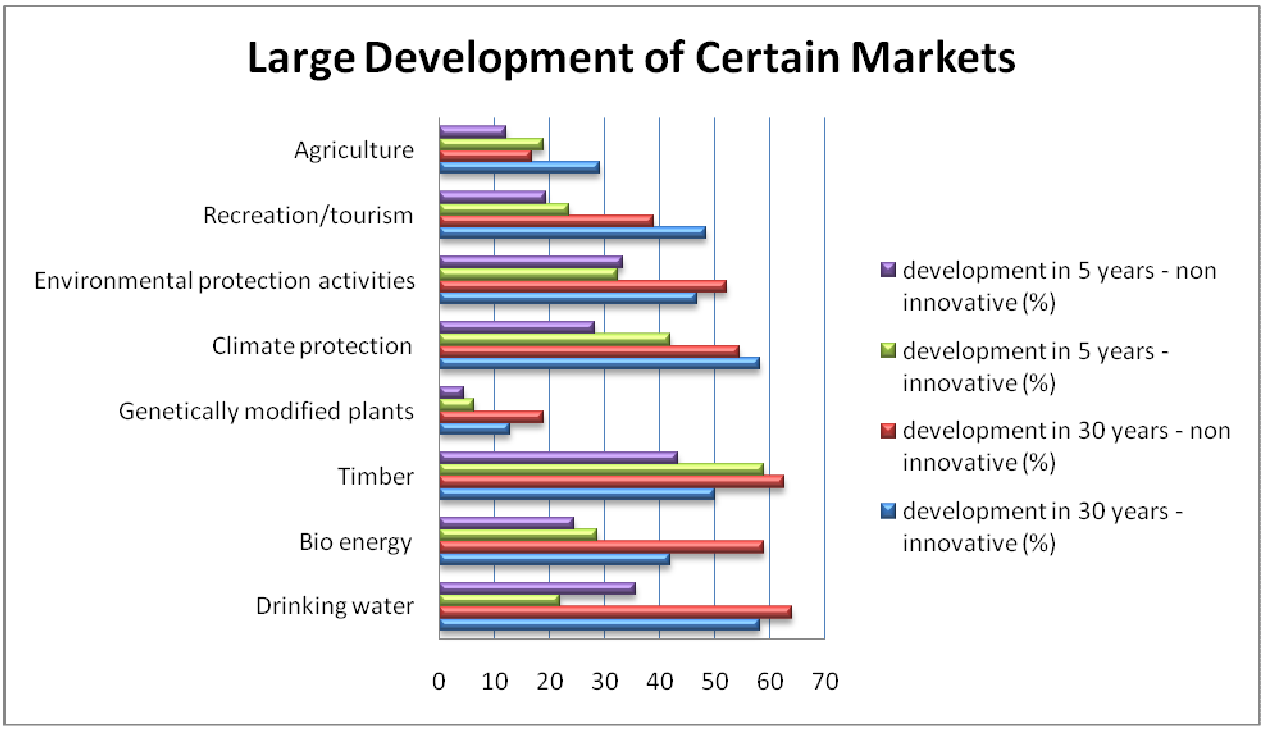
Graph 3: Large development of certain markets

The table and the graph above show that in the short term period (5 years) the respondents think that the greatest important will have timber, further environmental protection activities and drinking water. On the other hand that smallest importance will have utilisation of genetically modified plants.

From the long term perspective (30 years) the respondents replied that importance of all respected markets will increase. If we have a look on how many times the importance for certain market increased in comparison with the short term perspective the highest score get genetically modified plants even though they will have in general the smallest importance. The biggest importance is expected to have drinking water, further timber, climate protection and bio energy. This outcome is rather not very logic as the water in the Czech Republic is not owned by a person therefore it is difficult to develop a market with it.

The following graph summarises opinion of innovative and non innovative respondents on large development of certain markets from the short term (5 years) and long term (30 years) perspective. From the short term perspective the opinions of innovative and non innovative respondents are rather similar. The greatest importance is expected to have timber. On the other hand the responses vary in the long term perspective. The respondents who applied the innovation expect that the greatest importance will have drinking water together with the climate protection in comparison with respondents who did not applied any innovation who's expectation

are similar to the short term development. They expect timber and drinking water followed by bio energy to have the greatest importance.



Graph 4: Large development of certain markets – comparison of innovative and non innovative forest owners

In the next part of the application form the respondents were asked to reply how they evaluate implementation of new products or services into the forestry of the Czech Republic. The respondents were asked to evaluate five statements on this topic in scale fully agree / rather agree / do not know / rather disagree / fully disagree. Replies were evaluated in percentage per individual statements. The following table summarises all replies on all statements.

Opinion / responses (%)	I think that there are enough opportunities in forestry of the Czech Republic where new products and services can bring a profit	I hardly ever think of offering new products and services because it is simply not profitable	The forestry of the Czech Republic needs great changes	Implementation of innovation represent for me a risk therefore I try to find new solutions	Traditional forestry prove itself as fully adequate
Fully agree	12	9	33	8	9
Rather agree	45	44	31	43	23
Do not know	18	17	17	20	17
Rather disagree	23	25	18	22	39
Fully disagree	2	5	1	7	13

Table 41: Opinion of respondents on implementation of innovation into forestry

From the table above is possible to see that 45 % of respondents who replied that they rather agree on the first statement that there are enough opportunities in forestry of the Czech Republic where new products and services can bring a profit. However 44 % rather agree that they hardly ever think of offering new products and services because it is simply not profitable. Respondents fully agree (33 %) that the forestry of the Czech Republic needs great changes. 43 % of respondents rather agree that implementation of innovation represent for them a risk therefore they try to find new solutions. Last but not at least 39 % of respondents rather disagree that traditional forestry prove itself as fully adequate.

In generally it is possible to say that forest owners see that there should be a change in the forestry however they are reserved towards the innovation. They see enough opportunities for implementation of innovation but still perceive a great risk, which is linked with innovation which they do not want to undergo, as they are afraid that the innovations will not be profitable. Though it is positive that forest owners start to think in pro innovative way and try to find new solutions.

The following table summarises opinions of innovative and non innovative respondents on implementation of innovation in forestry. In most of the areas the responses are rather similar. The only big difference is at the statement referring to offering new products and services. 43 % of respondents who replied the question and have applied innovation rather disagree that they hardly ever think of offering new products and services because it is simply not profitable in comparison with the respondents who have not applied any innovation who rather agree with the

statement (47 %). The result of the responses on this statement was logic and expectable.

Opinion / responses (%)	I think that there are enough opportunities in forestry of the Czech Republic where new products and services can bring a profit		I hardly ever think of offering new products and services because it is simply not profitable		The forestry of the Czech Republic needs great changes		Implementation of innovation represent for me a risk therefore I try to find new solutions		Traditional forestry prove itself as fully adequate	
innovative/ non innovative	yes	no	yes	no	yes	no	yes	no	yes	No
Fully agree	14	12	0	13	29	35	17	4	6	10
Rather agree	53	42	37	47	40	28	57	37	17	25
Do not know	17	18	14	17	14	17	17	22	9	20
Rather disagree	17	26	43	18	17	18	6	28	57	33
Fully disagree	0	2	6	4	0	1	3	9	11	13

Table 42: Opinion of respondents on implementation of innovation into forestry from the innovative and non innovative perspective

The following table summarises how respondents see development of forestry in the Czech Republic within short (5 years) and long (30 years) horizon. The survey shows that majority of respondents do not expect any substantial changes in next five years, in contrast to the longer-term horizon of thirty years most of respondents expect either black (42 %) or rosy (39 %) development but very small percentage (10 %) expect that it will remain without changes.

Development	In 5 years	In 30 years
Black	9	4
Rather black	23	42
Without changes	51	10
Rather rosy	14	39
Rosy	3	5

Table 43: Development of forestry in the Czech Republic

The table below compares responses of those who have implemented the innovation and those who have not on how they see development of forestry in the Czech Republic within short (5 years) and long (30 years) horizon. The outcome shows that the results are very similar. Majority of respondents do not expect any

substantial changes in next five years, in contrast to the longer-term horizon of thirty years where the future development is seen either black or rosy.

	5 years expectation Implemented innovation		30 years expectation Implemented innovation	
Development	Yes	No	Yes	No
Black	8	9	3	5
Rather black	28	21	42	43
Without changes	44	53	0	13
Rather rosy	17	13	47	36
Rosy	3	3	8	3

Table 44: Development of forestry in the Czech Republic - comparison

Personal data identification respectively company data

In order to find out the up-to date share of products and services supplied by particular owners, the last part of the questioner was focused on company data. The following table shows percentage breakdown of produced goods and services:

Products/services	Responses (%)	Ratio of total income (%)
Wood	37	87
Other wood production	18	7
Game	1	2
Other production	3	7
Services for forest owners	12	8
Tourism services	6	10
Environmental protection serv.	10	14
Lease of land	4	9
Other services	10	5

Table 45: Share of products and services

The table above shows that 37 % of respondents replied that most of their income is from wood, which actually represents in average 87% of their total income. From the figure is clearly possible to see that the most important role on the respondent's income plays wood production further services for forest owners and environmental protection services.

Last but not least the respondents were asked question on their education and education of their co-worker. The following table summarises responses.

Education	Respondent (%)	Co-worker (%)
Primary School followed by training	2	2
Forest vocational training school	1	1
Other vocational training school	4	8
Secondary forest school	29	38
Other secondary school	31	24
Forestry or wood - majored university	26	20
Other university	7	8

Table 46: Education

The results show that that more than half of the forest owners as well as their co-workers have relevant forest education which is a background for a good forest management.

8.2 Comparison with 2002 Survey

The similar survey was carried out in 2002 under a framework of the Project of EFI-Regional Project Centre INNOFORCE Vienna – Innovation and Entrepreneurship (I&E) in Central Europe, the Czech University of Life Sciences in Prague, Department of Forestry Economics and Management, Faculty of Forestry conducted by Dr. Vilém Jarský. Further in this chapter are compared some of the results of 2002 survey with 2009/2010 survey.

The survey carried out in 2002 worked with the following input data:

Area (ha)	Responses (%)
< 10	3
10 - 100	46
100 - 500	25
500 - 1000	10
> 1000	16

Table 47: Area (2002 survey)

In comparison with the 2009 survey more owners of larger area were involved in 2002 survey.

Area (ha)	Responses (%)
< 50	45
51 - 200	22
201 - 500	11
501 - 1000	8
1001 - 5000	13
5001 - 10000	1

Table 48: Area (2009 survey)

Business Objectives

An important part of the survey laid in finding out respondents´ business objectives and the ways of achieving them. Surprisingly, the most frequent objective was not making larger profits, as one might expect in business, but efforts to hold the property or capital at current standard was the most frequent reply in enquiry of 2002 (Jarský 2002). However for the respondents of enquiry of 2009 the most frequent objective was to increase value of forest land. We can see here the positive development towards forest property, when the owners are willing to invest into forestry in order to increase its value and the production function stays apart. It is important to stress that most of respondents of enquiry of 2009 were small forest owners therefore it is understandable that the production function doesn't play the main role.

Regarding to the way of achieving the targets according to the respondents of the enquiry of 2002 the objective of an increase in earning profits is supposed to achieve, at first, by collaboration with other forestry businesses (22 respondents), enlarging a range of products and services (21 respondents), purchasing additional forests (21) and supporting their own products on the market (20 respondents). The target of holding the properties should be achieved – according to 86 replies – by preserving the current method of work and introducing rationalization (26 respondents). Not more than 8 respondents want to dispose of the property, out of which 6 through the sales of the forest (Jarský 2002).

From the results of enquiry of 2002 we can see that way of reaching the objectives has changed. Concerning the objective of an increase in earning profits, on the basis of the reply is possible to see that forest owners are more oriented on its business. They want to reach this objected mostly by rationalization and supporting their own products on the market. The target of holding the properties has remained

the same for both quarries as well as that the number of respondents who want to dispose of the property is very little.

Expectations and development

In respect of some aspects of forestry management development and areas where various sorts of improvement are expected, the table below summarises the responses how has the expectation of large changes in the listed areas/markets changed. The table is divided into two horizons - a five years and a thirty years expectation.

		Development (no. of responses)	
Market	Expectation (in years)	Large (2009)	Large (2002)
Bio energy	5	33	27
	30	67	93
Drinking water	5	40	68
	30	**76**	**132**
Genetically modified plants	5	6	6
	30	21	22
Recreation/tourism	5	26	63
	30	52	104
Environmental protection activities	5	41	62
	30	63	116
Climate protection	5	38	58
	30	69	107
Timber	5	**60**	**97**
	30	74	105
Agriculture	5	18	n/a
	30	25	n/a

Table 49: Comparison of market development

From the table above is possible to see that according to respondents of both quarries the expectations in short term as well as in long term perspective are the same. In the short term perspective the greatest role will play timber market in comparison with a long term perspective where the largest development is expected in area of drinking water.

The question concerning expectation on general forestry management development was also divided into two parts – a five years´ and a thirty years´expectations ranging in subjective categories – from black to rosy. The survey of 2002 shows that majority of respondents did not expect any substantial changes in next five years, in contrast to the longer-term horizon of thirty years where almost a half of respondents expected „more or less rosy development". Both extremes „rosy" and „black" appeared in both horizons in almost identical number of responses – approximately in 5% of replies (Jarský 2002). If we compare the result of 2002 enquiry we can see that the expectation of short-term perspective (5 years) has remained the same and respondents do not expect any substantial changes. However regarding the long term development, the respondents are more pessimistic, 42 % of respondents see that future development rather black, nevertheless nearly similar numbers of respondents (39 %) see the development rather pink. From this result is possible to see that current opinion of forest owners is very inconsistence.

The following table compares percentage breakdown of produced goods and services by forest owners between the two enquiries:

	2009 enquiry		2002 enquiry	
Products/services	Responses (%)	Ratio of all income (%)	Responses (%)	Ratio of all income (%)
Wood	37	87	34	86
Other wood production	18	7	21	7
Game	1	2	9	4
Other production	3	7	1	8
Services for forest owners	12	8	9	12
Tourism services	6	10	5	5
Environmental protection serv.	10	14	3	12
Lease of land	4	9	15	6
Other services	10	5	3	26

Table 50: Comparison of percentage breakdown of produced goods and services

From the table above is possible to see that the greatest percentage of respondents in both inquiries replied that most of their income comes from wood, which actually represents in average 87% / 86% of their total income. From the figure is clearly possible to see that for the most of respondents the wood production plays the most important role in the income. Figures related to other wood production have

remained nearly unchanged. However we can see that at present more forest owners have started to orient at environmental protection services (10%) and other services (10%). Nevertheless interesting is that ration of the all respondents' income at the areas of environmental protection services in comparison with year 2002 had just slightly increased. Regarding the area of other services the ration on the all respondents' income had radically decreased. Contrary we can see a dramatic decrease within the forest owners' portfolio in relation with game.

Implementation of innovations

The key question for the both surveys was whether the respondents have implemented an innovation over past three years. Figure 62 summarises results, it is possible to see that in comparison with 2002 survey the respondents implemented less innovation over the past three years. However, it can explain a fact that nearly half of the respondents of 2009 enquiry own forest land of the area smaller than 50 ha. Subsequently they have small investment resources.

Innovation	2009 responses (%)	2002 responses (%)
Implemented	27	31
Not implemented	73	69

Table 51: Comparison of innovations implementation

Information on how many innovations (broken into 3 key groups) were implemented summarises the following figure.

Type of innovation	2009 responses (%)	2002 responses (%)
New product	39	21
New service	29	27
Tech/org. innovation	32	51

Table 52: Breakdown of innovations implementation

If the innovation was implemented, most often one innovation was introduced only in the respondent's forestry business or forestry property, the leading one having been technological/organisational innovation for 2002 survey (Jarský 2002). However within 2009 survey the respondents implemented the most often new product.

Generally the implementation of innovation among the categories is now more balanced and we can presume that forest land owners have learned successfully implement the innovation in all categories.

The following table shows that in both surveys if the respondents implemented innovations over past three years, the most often only one innovation implemented.

No. of innovations implemented	2009 responses (%)	2002 responses (%)
One	71	50
Two	17	30
More than two	12	21

Table 53: Number of innovations implemented

In respect of an impact of the implemented innovation on the business, the respondents were asked what the impact has been like. In 2002 survey a majority, 67%, of the innovations were of positive impact on the business. Negative impact was shown in only 3.1% innovations, none was very negative. To summarise, positive impact proves in 79% of innovations (Jarský 2002).

The results are similar from the 2009 survey. A majority, 57%, of the innovations were of positive impact on the business. Negative impact was shown in only 1% innovations, none was very negative. To summarise, positive impact proves in 76% of innovations. In generally we can see that the innovations had positive impact on business, moreover the experience with a negative impact has decreased.

In case of which type of innovation was implemented, the respondents were asked where they had received information on possibility of its implementing and where the initial stimulation had come from. For the 2002 survey journals/specialist magazines and professional training were the sources that appeared the most often. The initial stimulation came from the owner himself or herself or co-owner, followed by co-worker (Jarský 2002). For 2009 survey the initial stimulation for implementing the innovation came the most often from co-owner or forest office. Also journals/specialist magazines and professional training were the sources that appeared the most often.

Further were examined positive and negative effects, which influence innovation implementation, as these aspects are essential.

In respect of 2002 survey, positive values most often occurred in collaboration with customers (suppliers, services), followed by collaboration with other forest

owners. Having evaluated the most positive impact only, the first position is the same, followed by publicly funded subsidies. Out of the set alternatives, just Chambers of Industries´support were of no importance (Jarský 2002).

In respect of 2009 survey, positive values most often occurred in area of cooperation with suppliers, customers and services followed by EU subsidies. Having evaluated the most positive impact only, in the first place finished EU subsidies followed by cooperation with suppliers, customers and services. It is possible to see that EU funds play an important role in implementation of innovation.

In respect of 2002 survey, negative values most often occurred in respondents own funds and high investment cost. Taking just the most negative aspects into account, the only difference appears in the order of the two aspects. Having limited number of alternatives, the respondents least often chose the impact of labour law (Jarský 2002).

In respect of 2009 survey, negative values most often occurred the same area - no respondents own funds and high investment cost. These replies occur the most also in context of the most negative aspects.

9. Economics Instruments that Influence Implementation of Innovation

The outcome of 2009/2010 survey clearly showed a significant positive effect of funding on implementation of innovation. The main role plays since accession of the Czech Republic to the European Union EU funds. As funding is an important economic instrument, this chapter further describes in general way as well in a perspective of forestry.

According to OECD classification (OECD 1994), there are seven types of Economic Instruments (EIs):

1. **Emission charges or taxes** (i.e. payment on the quantity and quality of pollutant discharged) are the most commonly used instrument.
    - Water effluent charges
    - Waste charges
    - Air pollution charges
    - Noise charges

2. **User charges** are commonly used by local authorities for the collection and treatment of solid waste and sewage water. They are primarily a financing device.

3. **Product charges or taxes** are applied to the prices of products which create pollution as they are manufactured, consumed or disposed of. Product charges or taxes are intended to modify the relative prices of the products and/or to finance collection and treatment systems.

4. **Administrative charges or fees** are generally designed to help fund licensing or license monitoring systems. A few countries already apply these tools; for example, in Norway a charge is levied when registering new chemical products.

5. **Marketable (tradeable) permits** (also referred to as emissions trading) are based on the principle that any increase in emission must be offset by a decrease of emission of an equivalent, and sometimes greater, quantity.

6. **Deposit-refund systems** are also widely applied in OECD countries, in particular for beverage containers. As packaging constitutes an acute problem (about 150 million tonnes per annum in OECD countries), this approach will probably further develop in the future.

7. Finally, **subsidies** also constitute an important EI. The main forms of financial assistance are grants, soft loans and accelerated depreciation. The main function of subsidies is to help industry (and agriculture) to catch up with the pollution control investment backlog.

EIs have gained particular attention in recent years as effective instruments which serve to integrate environmental concerns into economic development strategies. EIs offer numerous benefits:

- EIs are key to environmentally sustainable development: By integrating environmental concerns directly into the economic incentive structure that producers and consumers face each day, EIs implicitly promote a shift in the allocation of resources towards those activities which are both environmentally sound and economically attractive.
- EIs help internalise environmental costs: Economic instruments can reflect the real costs of pollution and attempt to incorporate them into the prices of goods and services. In the absence of the corrective role played by EIs, the under-pricing of pollution and natural resources allow distortions and inefficiencies to remain in the economy.
- EIs often are more cost efficient than traditional policy instruments: Due to the flexibility granted to polluters in achieving pollution targets, EIs encourage pollution reduction where abatement activities can be implemented in the most cost efficient way.
- EIs support the Polluter and User Pays Principles: Economic instruments solicit direct payments from those who introduce pollution into the environment and those who use natural resources taken from the environment. In other cases, i.e. packaging, EIs require a deposit from potential polluters.
- EIs raise revenues for environmental investments or general government expenditure: In most EITs, revenues from pollution charges are used to co-

finance priority environmental investments, often via environmental funds. The current trend in Western countries is toward "eco-tax reform," where revenues from eco-taxes flow to the central government budget. The ultimate goal of eco-tax reform is to shift taxes from "goods" such as employment or income to "bads" such as pollution or resource consumption.

- EIs are compatible with current priorities and trends in regulatory and fiscal reform: EIs can contribute to achieving overall policy objectives such as: making government intervention more effective; reducing cost; promoting technological innovation; encouraging private investment; and reducing distortions in fiscal systems.
- EIs may have positive effects on innovation and competitiveness: By raising the price of pollution and natural resources, EIs encourage the development and trade of more efficient technologies. Enterprises that operate more cleanly and efficiently reap the reward of lower costs and increased competitiveness.
- EIs help businesses and consumers in taking longer term choices: By revealing the high, cumulative costs of pollution and resource consumption to producers and consumers, EIs help enterprises and individuals develop strategic plans to reduce environmentally damaging behaviour and save money in the long run.
- EIs are useful to mitigate "diffuse pollution": Pollution coming from various, small sources such as vehicle emissions, chemical run-off from farms and packaging wastes etc. can be better and more cost-efficiently controlled by EIs than traditional policy instruments (Klarer et all).

Main EIs that influence the implementation of innovation in the Forestry are subsidies. As since 1 May 2004 the Czech Republic has been a member of the European Union it has been eligible apart from the national subsidies also for subsidies from the European Union. In period 2000 to 2004 the Czech Republic was already eligible for EU co-financing via pre-accession support.

9.1 Financing of Innovation from EU Budget – General perspective

If we look on innovation from the narrow perspective and consider just innovation as such the possibilities for its financing from the EU budget are following. At the Community level, the Union possesses three key funding instruments to support research and innovation: Cohesion policy which is funded through the **Structural Funds and Cohesion Fund**; the **Research Framework Programme** and the **Competitiveness and Innovation Framework Programme**. In 2007 the European Commission published its ideas on 'Competitive European Regions through Research and Innovation' and called on Member States and regions to make more effective use of the available funding instruments. The issues to be addressed in achieving this aim cut across many domains of European Commission policy, such as economic affairs, employment policy, energy, transport, agriculture, environment and information society, going beyond the programmes under our responsibility (URL 8).

To sum it up there are three main EU funding instruments – the 7th Framework Programme for Research, Technological Development and Demonstration activities and the 7th Euratom Framework Programme for Nuclear Research and Training Activities (FP7), the Competitiveness and Innovation Framework Programme (CIP) and the Structural Funds (SF). Furthermore, support for innovative investments in agriculture, forestry, food industry in rural areas is provided by the European Agricultural Fund for Rural Development (EAFRD), and in the field of fisheries by the European Fisheries Fund (EFF) (EC 2009).

Research: 7th Framework Programme for Research, Technological Development and Demonstration activities and the 7th Euratom Framework Programme for Nuclear Research and Training Activities (FP73)

EC FP7 with a total budget of over € 50 billion for the period 2007-2013 is the EU instrument specifically targeted at supporting research and development. It provides funding to co-finance research, technological development and demonstration projects based on competitive calls and independent peer review of project proposals. Support is available for collaborative and individual research projects as well as for the development of research skills and capacity. Since the

1980s, the successive Research Framework Programmes have played a lead role in multidisciplinary research and cooperative trans-national R&D activities in Europe and beyond. Euratom FP7 (2007-2011) has a dedicated budget of € 2.75 billion for applied research and training activities in fusion energy and nuclear fission and radiation protection (EC 2009).

Innovation: Competitiveness and Innovation Framework Programme (CIP)

The Competitiveness and Innovation Framework Programme aims to foster the competitiveness of European enterprises and has a total budget of over € 3.6 billion for the period 2007-2013. Specific CIP programmes promote innovation (including eco-innovation); foster business support services in the regions and better access to finance, with small and medium-sized enterprises (SMEs) as the main target; encourage a better take-up and use of information and communications technologies (ICT); help to develop the information society and promote the increased use of renewable energies and energy efficiency (EC 2009).

Cohesion Policy: Structural Funds and Cohesion Fund (SF)

The purpose of the Structural Funds (European Regional Development Fund – ERDF and European Social Fund - ESF) and the Cohesion Fund is to strengthen economic, social and territorial cohesion by reducing disparities in the level of development among regions and Member States. Each region or Member State has developed, in discussion with the Commission and in partnership with all relevant private and public stakeholders, operational programmes that cover the entire programming period 2007 - 2013. Many thematic areas are supported by the Structural Funds, including research, innovation and enterprise for which EU funding in the period 2007-2013 will be above € 86 billion. The allocation of funds in a given Member State or region varies according to its level of development. However, most regions will have some funding available from the Structural Funds in support of Research, Technological Development and Innovation (RTDI). Unlike FP7 and CIP, the **management of the Structural Funds is decentralised to regional or national bodies** (EC 2009).

The three EU funding sources (FP7, CIP and Structural Funds), when operating individually, provide significant support for research, development and innovation. Although the EU can in some circumstances provide 100% of the eligible

costs of the financing for a programme or project, the general rule is that the beneficiary (whether a public authority, SME or research entity) also contributes to the cost. This is called co-financing. The Structural Funds, FP7 and CIP each have their specific rules on the required level of co-financing. However, value of the funding sources can be further enhanced by combining them. While co-financing the same project by different EU funds is either prohibited or not practically possible, it is possible to combine the resources of the Structural Funds, FP7 and CIP in a complementary way. This means using different funds for different actions (with separate cost statements/bills), which are carried out in a related or consecutive manner (EC 2009).

9.2 Financing of Innovation in Forestry

The European Agricultural Fund for Rural Development (EAFRD) in the programmining period 2007 – 2013 has become the main instrument at Community level for the implementation of the EU Forestry Strategy and the EU Forest Action Plan.

European Agricultural Fund for Rural Development (EAFRD)

With over 56 % of the population in the 27 Member States of the European Union (EU) living in rural areas, which cover 91 % of the territory, rural development is a vitally important policy area. Farming and forestry remain crucial for land use and the management of natural resources in the EU's rural areas, and as a platform for economic diversification in rural communities. The strengthening of EU rural development policy is, therefore, an overall EU priority.

The EU has a common rural development policy, which nonetheless places considerable control in the hands of individual Member States and regions. The policy is funded partly from the central EU budget and partly from individual Member States' national or regional budgets.

In the table below it is possible to see the development in funding of rural development in EU including pre-accession funding.

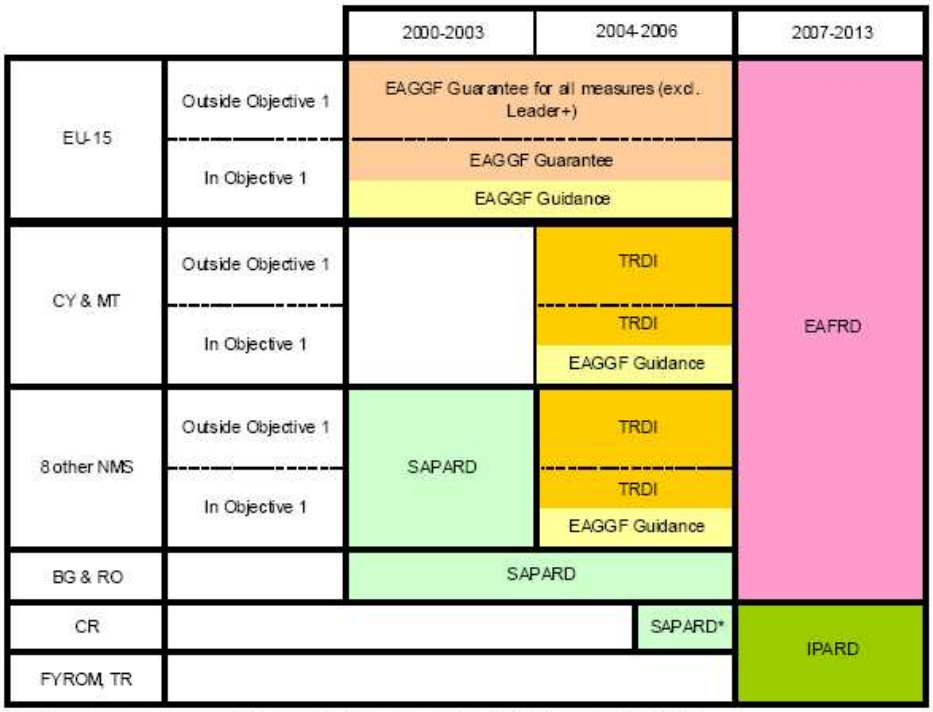


Figure 14: Community funding rural development
(Directorate General for Agriculture and Rural Development, 2009)

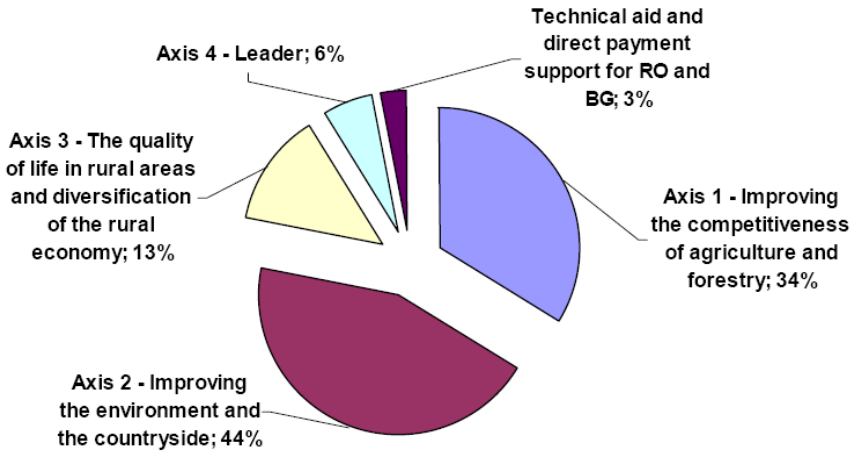
The essential rules governing rural development policy for the period 2007 to 2013, as well as the policy measures available to Member States and regions, are set out in Council Regulation (EC) No. 1698/2005. Under this Regulation, rural development policy for 2007 to 2013 is focused on three themes (known as "thematic axes"). These are:

- improving the competitiveness of the agricultural and forestry sector;
- improving the environment and the countryside;
- improving the quality of life in rural areas and encouraging diversification of the rural economy(URL 10).

The Rural Development Regulation is among others **the main instrument at Community level for the implementation of the EU Forestry Strategy and the EU Forest Action Plan** (EC2 2009).

A total amount of about € 226 billion will be made available over the period 2007– 2013 for the 94 programmes across EU, including all public and private

expenditure. EU co-financing for these programmes from the European Agricultural Fund for Rural Development (EAFRD) amounts to € 90.8 billion, corresponding to 61% of the public expenditure (EC 2009). The total amount of financial resources allocated to the eight forestry measures (with separate budget) during the period 2007-2013 is € 12 billion. Slightly over half of this funding will come from the rural development fund. This constitutes about 7 % of overall intended EAFRD spending (EC2 2009).



Graph 5: Total EAFRD expenditure 2007-13 by axis (EC2 2009)

EAFRD consists of 4 axis (source: EC2 2009):

Axis 1: Improving the competitiveness of the agricultural and forestry sector

To enhance efficiency and competitiveness while promoting growth and jobs in rural areas, farmers, foresters and other land users can profit from a wide range of support measures to meet the challenges of structural change and increased competition in more open and globalized food markets. Overall, Member States plan to invest € 98.2 billion, of which € 30.9 billion from the EAFRD, on support under this objective (axis 1). For this axis, 14 Member States have committed an above-average (i.e. over 34%) level of EAFRD resources. These include eight new Member States. The Member States allocating the highest percentage to axis 1 are Belgium (48.1%), Latvia (46.8%) and Portugal (45.5%). The Member States with the smallest

percentage of resources in axis 1 (i.e. below 30%) are Ireland (10.3%), Finland (11.1%) and the United Kingdom (11.9%).

Axis 2: Improving the environment and the countryside

To improve the environment and the countryside, rural development programmes focus on priority areas such as the preservation of biodiversity and valuable landscapes, sustainable forest management, the mitigation of climate change and renewable energy. Rural development resources allocated to these priority areas contribute to achieving EU environmental objectives, such as the Göteborg commitment to reverse biodiversity decline by 2010, achieving good water quality by 2015 and the Kyoto targets for mitigating climate change.

Farmers, forest managers and other rural area actors can benefit from a wide range of measures provided by EU rural development policy for these purposes. In total, Member States have planned an EAFRD amount of € 39.6 billion for axis 2 measures. This represents 43.6% of total EAFRD resources over the programming period 2007-2013.

The Member States allocating the highest percentage of resources (more than 60%) to this axis: Ireland (79.6%), Finland (73.3%) and the United Kingdom (72.8%); which are the same those that allocated less for axis 1. The Member States allocating the lowest percentage (below 35%) to this axis are Romania (23.4%), Bulgaria (24.4%) and Malta (26.1%). To some extent, these are also the Member States with a stronger emphasis on axis 1.

Axis 3: The quality of life in rural areas and diversification of the rural economy

The main aim of axis 3 is to ensure a ‘living countryside' and to help maintain and improve the social and economic basis of rural areas. Supporting investment and innovation in the rural economy and rural communities is vital to raise quality of life in rural areas through improved access to basic services and infrastructure and a better environment.

Overall, Member States plan to invest € 27.6 billion, of which € 12.2 billion from the EAFRD, under this objective (axis 3), which is 13% of total EAFRD resources. For the current period Member States have on average attributed 13% of EAFRD funding to this objective. This is increased by the funding for axis 4 (Leader),

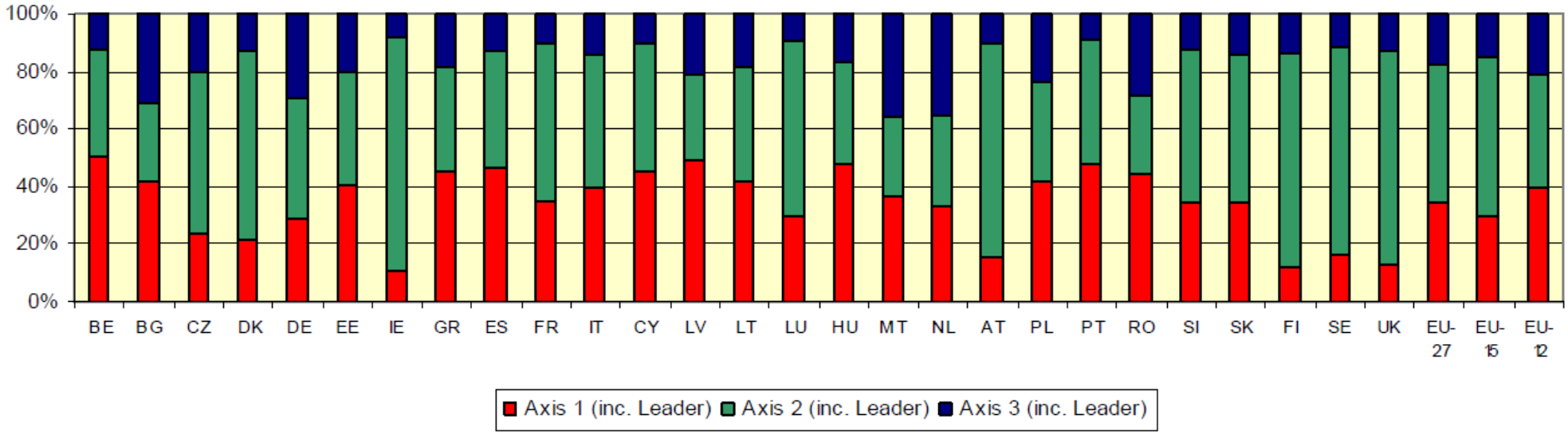
where axis 3 measures are also implemented through local action groups in financial terms.

Member States allocating the highest percentage of funding to this axis include highly urbanized countries such as Malta (32.2%) and the Netherlands (29.8%), but also Bulgaria (26.9%). Although twelve Member States are below the minimum requirement of 10% when looking at the figure below, they in fact respect this requirement when taking into account the implementation of axis 3 measures via the Leader method. For some of those Member States (Ireland, Portugal and Spain), the low percentage is closely linked to the fact that they implement measures of axis 3 exclusively or almost exclusively via the Leader method.

Axis 4: Leader

At EU level, the Leader method is a prominent policy instrument to enhance local rural governance and structures, thereby enhancing the effectiveness and efficiency of RD policies. Leader is based on a bottom-up approach and strongly advocates the creation of new public-private partnerships in rural areas. Leader encourages socio-economic players (e.g. including land and forest owners or micro entrepreneurs) to work together to produce goods and services that generate maximum added value in their local area.

The figure 7 presents the relative importance of the three main axes, as percentage of the EAFRD contribution devoted to these three axes. Funds implemented through Leader have been reattributed to the respective axes. Despite the common minimum percentages, the picture looks quite different in the various Member States.



Graph 6: Relative importance of the 3 thematic axes by Member State, programming period 2007-2013
(Directorate General for Agriculture and Rural Development, 2009)

In total, Member States have allocated an EAFRD amount of € 5.5 billion to axis 4 measures. This represents 6% of total EAFRD resources over the programming period 2007-2013. € 3.7 billion of the EAFRD funding foreseen for Leader will be used for actions implementing measures for diversification and quality of life, while € 522 million and € 165 million respectively is programmed for actions in the areas of competitiveness and environmental protection. Leader has also a territorial co-operation component, which supports joint actions implemented by several rural territories (EC2 2009).

The one forestry-specific measure ("Improvement of the economic value of forests") under **axis 1** has an intended total expenditure of € 2 billion. Planned EAFRD expenditure on this measure is € 652 million, which constitutes 0.7 % of the total EAFRD funding. The total amount of intended spending for forestry measures under **axis 2** is around € 10 billion. The amount to be allocated to these measures in EAFRD is € 5 533 million, which constitutes 6.1 % of the total budget available for rural development (EC2 2009).

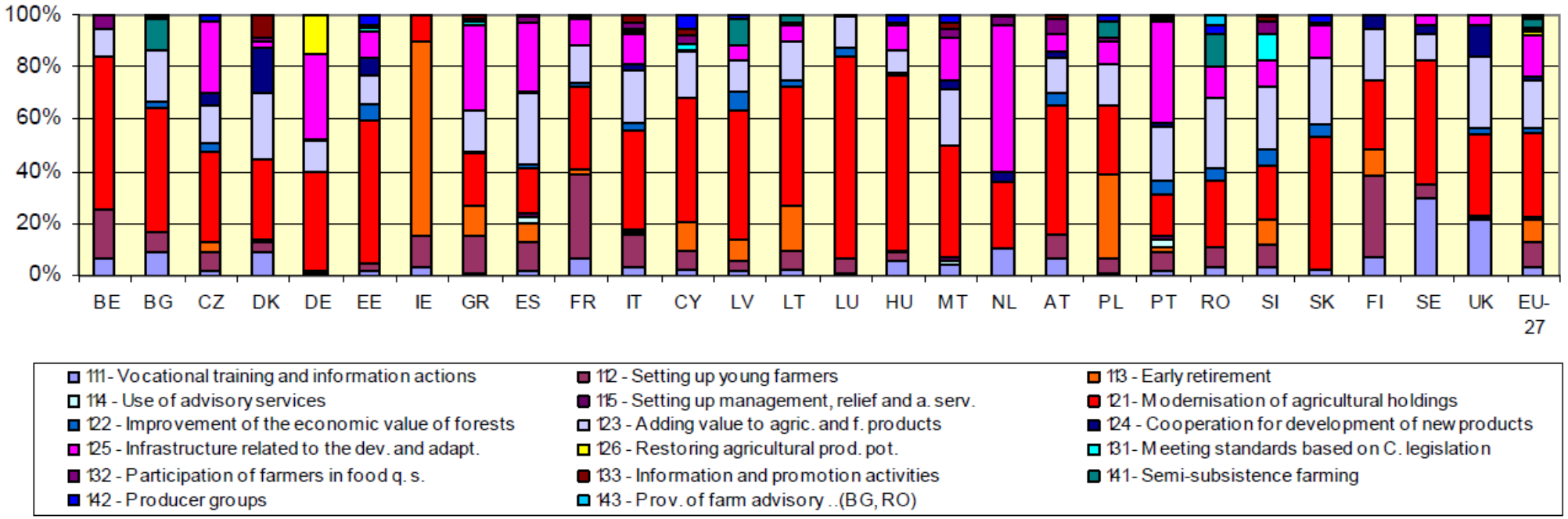
In addition to the forestry-specific measures substantial amounts of funding is directed to forestry through those axis 1 measures which can cover both agricultural and forestry activities. The measures "adding value to agricultural and forestry products" and "support to infrastructure related to the development and adaptation of agriculture and forestry" have the largest budgets among these **forestry-related measures**. The expected contribution to forestry under these measures can be estimated to be significant as in total 69 and 64 programmes respectively referred to forestry activities as part of the scope of these measures (EC2 2009).

Based on indications in the programmes and experience from the previous programming period it can be estimated that the financial resources made available from the EARFD to forestry activities within the forestry-related measures will be in the range of € 1-2 billion, which would make the total financial resources available to forestry activities under these measures to be in the range of € 2-4 billion (EC2 2009).

Adding together the funding intended for forestry-specific (€ 6.2 billion) and forestry-related measures (€ 1-2 billion) it may be concluded that **around € 8 billion will be made available from the Community budget (EAFRD)** and up to € 16 billion in total. These amounts correspond respectively to 9 % of the EAFRD funding

and 7-8 % of the total amount of financial resources devoted to rural development programmes during the programming period 2007-2013 (EC2 2009).

The following graph shows Relative importance of axis 1 measures per Member States in % within the total EAFRD contribution allocated to this axis for programming period 2007-2013.



Graph 7: Relative importance of axis 1 measures per Member States in % within the total EAFRD contribution allocated to this axis for programming period 2007-2013 (Directorate General for Agriculture and Rural Development, 2009)

However the outcomes of the research which was carried out under the COST Action E 51 shows that countries can differ in the priorities and objectives of their national or regional Rural Development Programmes. Many countries or regions have clear priorities in their strategies designated by the size of the tentative budget for particular measure. The priorities, however, are not only expressed by budgets for different measures but also by different interpretations of the measures' goals. The same forestry actions are often supported by different measures. For example for the measure 122, which is actually focusing on improvement of the economic value of forests, different approaches were identified. In some countries the purchase of harvesting equipment and silvicultural activities are supported by this measure. In Germany, in contrast, the same silvicultural activities are supported under measure 227 (non productive investments). This shows a significant difference in the objectives for rural development in the countries, because measure 122 aims to improve the competitiveness of the forestry sector whereas measure 227 concentrates on the improvement of the landscape (Sarvašová et all 2010).

EAFRD in the Czech Republic

In the Czech Republic the funding from the EAFRD is possible to obtain via The National Strategic Rural Development Plan of the Czech Republic (NSPRD) for the period 2007-2013.

With the purpose of drawing down finances the Czech Republic prepared a basic strategic document – the National Strategic Rural Development Plan of the Czech Republic for the period of 2007-2013 and later the programme document – Rural Development Programme of the Czech Republic for the period of 2007-2013 which specifies in detail the measures for meeting the objectives of the development of rural areas of the Czech Republic (URL 12). The Czech Republic together with Sweden were first EU countries which the European Commission approved their Rural Development Programme. Measures within the Rural Development Programme will help to fulfil targets of the Lisbon Strategy, to which the Czech Republic as a EU member committed itself to fulfil.

For the whole programme period of 2007-2013 the Czech Republic was allocated EUR 2.8 billion from the European Agricultural Fund and together with the finances from the state budget the total amounts to approx. EUR 3.6 billion (URL 12).

The subsidies are by its character possible to divide into investment subsidies (mainly axis I, III and IV) or area subsidies (axis II apart of subsidies for forest calamites and forest functions). Area subsidies are submitted by so-called „Uniform application“ every year by 15 May. Regarding the investment subsidies, the calls for acceptance of projects are announced.

The managing authority for the Rural Development Programme of the Czech Republic for the period of 2007-2013 is the Ministry of Agriculture; the implementation body is the State Agriculture Intervention Fund which administrates the applications.

From the table below is possible to see distribution of allocation among individual priority axis of EAFRD. It's apparent that the most financial resources are allocated to priority axis II, cca. EUR 222 mil.. The Priority axis I is the second greatest regarding the amount of allocation, cca. EUR 90 mil. From the total allocation which is cca. EUR 402 mil..

Axis	Public resources			Ratio in % (from EAFRD)
	Total EUR	EAFRD EUR	CZ EUR	
Axis I	120 074 642,41	90 055 981,81	30 018 660,60	22,39
Axis II	277 962 693,05	222 022 786,77	55 939 906,28	55,2
Axis III	90 793 376,33	68 095 032,25	22 698 344,08	16,93
Axis VI	25 138 449,59	20 110 759,67	5 027 689,92	5
Technical Assistance	2 413 291,16	1 930 632,93	482 658,23	0,48
Sum	**516 382 452,54**	**402 215 193,43**	**114 167 259,11**	**100**

Table 54: Distribution of national financial resources from EAFRD, year average (MZe 2006)

Innovation is present in the programme under Axis 1 - **Improving the competitiveness of the agricultural and forestry sector**, Priority I.1. *Modernization, Innovation, and Quality*. The main objective of the priority is creation of a strong agricultural and food sector, modernising agricultural enterprises, introducing innovations, and increased quality of products. Priority I.2. *Knowledge transfer* supports creation of a dynamic agricultural and food environment, expanding education, trainings, and consultancy and decreasing the average age of agricultural workers.

Priority	I.1. Modernisation, innovation and quality	
Objective	To create a strong agri-food industry, to modernise agricultural holdings, to introduce innovations and increase the quality of products	% of the axis 85.21
Measure	I.1.1 Modernisation of agricultural holdings	35.40
	I.1.2 Investments in forests	10.13
	I.1.3 Adding value to agricultural and food products	14.57
	I.1.4 Land consolidation	23.12
	I.2.1. Producer groups	1.99
Priority	I.2 Knowledge transfer	
Objective	To create a dynamic agri-food environment, to extend training and advisory services and to reduce the average age of workers in agriculture	% of the axis 14.79
Measure	I.3.1 Further vocational training and information actions	1.49
	I.3.2 Setting up of young farmers	6.86
	I.3.3 Early retirement from farming	4.08
	I.3.4 Use of advisory services	2.35

Table 55: Priorities, objectives and measures under axis I (MZe 2008)

In the table above is possible to see that most of money is allocated to priority I.1 “Modernisation, innovation and quality” (85, 21% of the allocation for priority axis I). The measure I.1.2 “Investments in Forests” is at the fourth place (10, 13% of the allocation for priority axis I) regarding the allocation within the priority which represents circa EUR 12 million of the total allocated financial resources.

Measures of axis I.2 „Knowledge Transfer“ (14, 79% of the allocation for priority axis I) that investment into people is an integral part of subsidies within of the priority axis I as support of further vocational training and information action in agriculture and forestry. Particularly the support of further vocational training and information action can significantly contribute to promote innovation in working experience.

The applicants have an opportunity to apply for assistance for forestry in the following areas in line with the EAFRD programming document:

I.1.2 Investment in Forests

I.1.2.1. Forestry Machinery

Sub-measure code: 122

Eligible expenditure:

- Purchase of machines and equipment for the construction and maintenance of forest roads, paths and pavements, soil amelioration, torrent control, retention reservoirs, facilities for tourism and machinery and equipment serving

regeneration and thinning of forest stands and primary processing of wood by environmentally friendly technologies.

I.1.2.2. Technical utilities of business establishments

Sub-measure code: 123

Eligible expenditure:

- Acquisition and upgrading of technologies (including intangible investments) that will allow to process and use residual biomass for energy generation and other purposes,
- construction and modernisation of small-capacity outdoor operations that will be producing products with a higher share of added value (including intangible investments).

I.1.2.3. Forestry infrastructure

Sub-measure code: 125

Eligible expenditure:

- Construction, upgrading, reconstruction and general repairs of forest roads over 2 m width, including associated buildings,
- construction, upgrading, reconstruction and general repair of facilities controlling water regime in forests, including associated buildings,
- construction, upgrading, reconstruction and general repair of other infrastructure, buildings and facilities serving the needs to forestry.

All the above mentioned sub-measures have EU contribution amount to 75 % of public sources. The Czech Republic's contribution amount is to 25 % of public sources. In respect of implementation of innovation in forestry, it is clear that all those sub-measures within the measure I.1.2 "Investments in Forests" are of a great importance, especially if we understand innovation from a subjective point of view (thus from the forest owner perspective).

The table below shows the comparison of individual rounds related to forestry under the priority I.1.2 till 4.5.2010.

	2nd round	5th round	8th round
Number of registered projects	460	721	695
The amount of the registered projects (CZK)	727 245 796	879 087 252	917 103 272
Number of approved applications	255	372	336
The amount for projects approved (CZK)	325 351 752	412 556 005	333 544 418
The success rate of applicants	55%	52%	48%

The overall budget for a measure	Total money engaged	Total disbursed	Remain to be engaged	Remain to be paid
2 143 949 312 CZK	1 071 452 175 CZK	503 387 350 CZK	1 072 497 137 CZK	1 640 561 962 CZK

Table 56: Comparison of Rounds (The Ministry of Agriculture 4/5/2010)

Historically the first call for applications for subsidies from the Rural Development Programme of the Czech Republic for period 2007 – 2013 was announced by the minister of agriculture on 9 July 2007. Until January 2010 in total 9 calls for reception of applications had been announced. On 17 December 2009 the minister of agriculture approved a specification of rules for 9th call for reception of application (URL 13).

All calls are announced and posted on the website of the Ministry of Agriculture or on the website of the State Agricultural Intervention Fund, always at least 4 weeks before a period for receiving applications.

In phase of preparation of the application the applicant should carefully study the *„**rules,** laying down the conditions for granting subsidies to projects of rural development programs for concrete action“*. Every measure has its own rules, which consist of general and specific conditions.

The applicant must submit an application to the regional department of the State Agriculture and Intervention Fund. In case that the applicant has fulfilled all requirements of the application, the application is successfully registered. After that an administrative review request is carried out. In the case of deficiencies the applicant is asked to complete the application. Furthermore, ongoing monitoring and evaluation of the acceptability of projects is carried out. In case that the project is approved for financing and no gaps are found in the annexes submitted by the applicant, the applicant is drawn to the agreement, which means the promise of subsidies on condition that the applicant does not break established rules (URL 15).

Support of Forestry in Previous Programming Period in CZ

Between 2004 and 2006 it was possible to finance forestry form structural funds for the implementation of the European economic and social cohesion policy, namely form The European Agricultural Guidance and Guarantee Fund (EAGGF).

Structural funds provide finances intended to reduce the economic and social differences between Member States and their regions. In the period before the accession of CZ to the EU, the SAPARD programme served as a tool enabling preparation for the proper drawing of EU funds (URL 20).

For the CZ two documents for the shortened programming period of 2004-2006 were prepared by the Ministry of Agriculture - the Operational Programme Rural Development and Multifunctional Agriculture (OPRDMA) and the Horizontal Rural Development Plan (HRDP). Via OPRDMA financial resource from the guidance section were used and via HRDP financial resource from the guarantee section were used.

OPRDMA is divided into three priorities; the forestry is under “Priority I. - Support to Agriculture, Processing of Agricultural Products and to Forestry“, measure “1.3 Forestry”. The measure 1.3 if further subdivided into following sub-measures by the OPRDMA (MZe 2004):

Sub-measure 1.3.1 Restoring Forestry Potential Damaged by Natural Disasters and Fire and Introducing Appropriate Preventive Instruments

Specific objective of the support is to reduce the extent of damage caused by natural disasters and fire.

Areas of support:

- protective measures designed to prevent or mitigate damage caused by natural disasters in forests and emergency measures in case of calamity caused by biotic and abiotic factors especially by insect and fungal pests (e.g. gregarious spruce sawfly, large larch sawfly, bark beetles, spruce bell moth, pine bud moth, larch bud moth, silver fir leaf roller, oak leaf roller, loopers, needle-cast fungus etc), due to large-scale outbreaks,
- reconstruction of damaged forest stands,
- forest regeneration following salvage felling,

- preventive anti-flood measures on small watercourses and in their catchment areas, and anti-erosion measures,
- reconstructions of damaged structures and establishment of damaged slopes, erosion furrows and gullies.

Sub-measure 1.3.2. Investments in Forests

Specific objective of the support is to support for investments in forests is aimed at increasing substantially the economic, ecological and social value of forest holdings. Improving the quality of forest infrastructure is a prerequisite for increasing the social value of forested landscape.

Areas of support:

- construction, reconstruction or modernisation of forest transport network,
- construction, reconstruction or modernisation of facilities regulating water regime (amelioration, retention basins, etc.),
- activities leading to a regulation of the number of forest visitors and providing for their safety, mainly following activities (construction footpaths for tourists, including e.g. cycle tracks, objects on them to ensure the safeness of the visitors, e.g. footbridges, railing, steps, parking places, relaxing places, shelters, forest fountains, information boards etc.),
- purchase of machines and equipment to maintain and repair forest roads, paths and trails, to maintain and clean water bodies, watercourses and amelioration networks, and for ecological technologies used in forest management.

Sub-measure 1.3.3. Establishment of Associations of Forest Owners

Specific objectives of the support is to support for the establishment of associations of small forest owners is granted for the purposes of a joint management of associated forest holdings. The objective of the support is to ensure a professional management of associated holdings and the attainment of a more effective and balanced management.

Areas of support:

- expenditures for establishment and equipment of necessary office spaces including PCs,
- the procurement of equipment, which are connected with the range of services that the association will be providing to its members for a minimum period of the upcoming five years.

Sub-measure 1.3.4 Planting of Land not Used for Farming

Specific objective of the support is to support allows converting non-farm land that is a source of weeds in cultural landscape into forests with a diversity of tree species. The extension of forested areas primarily in agricultural landscapes will lead to a strengthening of landscape biodiversity.

Areas of support:

- planting of land not used for farming, for non-commercial forestry purposes,
- maintenance of young forest stands planted under (a) until these are secured.

The table below shows financial framework of measures 1.3 and related sub-measures for period 2004 – 2006 in EUR. It is clear that the greatest allocation has sum-measure Investment in Forest circa EUR 7, 6 mil. Total allocation for priority I was circa EUR 151, 1 mil. Allocation for a OP was EUR 250, 6 mil.

No. of measure	Measure/Sub-measure (2004 - 2006)	Public resources (EUR)	Out of which:		Private resources (EUR)
			EU (EUR)	*CZ (EUR)*	
1.3.	**Forestry**	12 374 811	9 060 264	3 314 547	7 742 361
1.3.1.	**Restoring Forestry Potential Damaged by Natural Disasters and Fire and Introducing Appropriate Preventive Instruments**	3 325 470	2 660 376	665 094	-
1.3.2.	**Investments in Forests**	7 682 803	5 377 962	2 304 841	7 682 803
1.3.3.	**Establishment of Associations of Forest Owners**	59 559	41 691	17 868	59 559
1.3.4.	**Planting of Land not Used for Farming**	1 306 980	980 235	326 745	-

Table 57: Financial framework of the measure 1.3 and related measures (MZe 2004)

From the perspective of promoting innovation the sub-measure 1.3.3 Establishment of Associations of Forest Owners originally appeared as an important measure as encourages forest owners to create new associations (which is a major innovation). However the interest for this measure was not very high. Therefore the most important sub-measure in respect of innovation is the sub-measure 1.3.2 Investments in Forests, especially purchase of machines and equipment, where only the first two years the purchase of 42 machines were supported (Jarský, Ventrubová 2007).

The main objective of HRDP was to ensure the sustainable development of agriculture, the countryside and its natural resources.

The programme's objectives included:

- preservation and support of the agricultural system with low inputs,
- protection and support of sustainable agriculture meeting environmental demands,
- preservation and strengthening of a viable social structure in rural areas.

The allocation for the whole programme period of 2004-2006 amounted to EUR 697,175,741, of which the sum of EUR 542,800,000 came from the European Agricultural Guidance and Guarantee Fund (80% supplementary funding) (URL 21).

Implementation of HRDP was in 6 measures from which only one was focused on forestry named "Forestry". In the framework of this measure were proposed 2 sub-measures – "Afforestation of Agricultural Land "and "Planting Fast-Growing Trees for Energy Use".

From the perspective of promoting innovation, it should be noted that the first sub-measure "Afforestation of Agricultural Land" is not too important. Its importance in respect of innovation can be only potential and moreover indirect. In theory, the sub-measure "Planting Fast-Growing Trees for Energy Use" would be of a greater importance, since it could be a significant share of alternative energy sources (and related development). Nevertheless an experience shows that it is not like this. In 2006, only 15 hectares of fast-growing tree species were supported via the sub-measure in comparison with supported 884 hectares of afforested agriculture land.

Moreover, it should be noted that the sub-measure concerns only owners of agricultural land.

The following table shows comparison of single measures in forestry area in programming period 2004-2006 with the programming period 2007-2013.

Rural Development Plan (period 2007- 2013)	Innovation	Programming period 2004-2006	Innovation
Investing in forests	S	1.3 Forestry (OP)	S
Use of advisory services	P	The measure is new	-
Vocational training and information activities	P	2.2 Vocational Training (OP)	P
Payments under the Natura 2000 in forests	I (P)	The measure is new	-
Forest-environment payments	I (P)	The measure is new	-
Restoring forestry potential and after disasters support for social functions of forests	I,P	1.3 Forestry (OP)	I,P
Afforestation of agricultural land	P	Forestry (HRDP)	P

Table 58: Comparison of support in forestry in respected programming periods (Jarský, Ventrubová 2007)

From the perspective of promoting the innovation the measures are assessed as significant – S, potentially significant – P and insignificant - I. In both periods, the investments in forests can be considered as significant measure on the other hand payments related to forest protection, biodiversity, etc. are considered as insignificant (Jarský, Ventrubová 2007).

Successful Examples in Implementation of Innovation in the Forest Sector

Regarding the implementation of innovation in Forestry the Ministry of Agriculture has already published examples of successfully implemented projects which were co-financed via Rural Development Programme. Below you can see examples of co-financed projects from the priority axis I. In 2007 460 projects with total financial requirement for subsidy of CZK 740 mil. were registered under the measure I.1.2 Investment in Forests. The grates interest for subsidy was recognised in region NUTS 2 Southwest (Regional department SZIF České Budějovice), where 151 projects were registered (which represents 32,8% of total registered applications) and in region NUTS 2 Southeast (Regional department SZIF Brno) with 104 registered projects (that is 22,6% of total registered applications) (MZe 2009).

From the presented examples of successfully co-financed projects in apriority axis I is from the standpoint of innovation evident that process innovation is

dominated. Mostly the examples represent purchase of new machinery/technology for forest enterprises, which will increase work efficiency. The examples of successfully implemented innovation are presented in Annex III.

The research carried out by questioners showed that most frequent innovations were plantation of Christmas trees, buying timber, expansion of professional management, production of wood chips and chopped wood for fuel.

From the above mentioned examples we can see that radical innovation is hardly supported in the forest sector, mostly there are innovations new to a company like buying new machinery, which is the most frequent case. Innovations in forest sector are first of all concerned with traditional products and diffusion rather than promoting new ideas.

10. Conclusions

The main aim of this thesis was to look at the issue of innovation not just from the general perspective but also analyze the innovation potential of the forest sector in the Czech Republic as well as in some European countries. This work is very tightly related with the COST Action E 51 *"Integrating Innovation and Development Policies for the Forest Sector" which I took a part while carrying a research for the thesis.* Some results of this work actually stem from the Action E 51 and were sometimes further developed. The Action E 51 was completed in 2010 and some of its results were published as "COST E51 Policy Integration and Coordination: the Case of Innovation and Forest Sector in Europe".

In general the innovation is a central theme of the present and considerable resources are spent by the European Union as well as by the individual countries to support the innovation. The innovation is considered as an engine of future development and the only way leading from the economic crises to economic recovery.

The strategic document in the field of innovation on the European level is the "Lisbon Strategy" which was launched by the Heads of State or Government during the meeting of the European Council in Lisbon in March 2000. The main aim of the strategy is to make the European Union the most competitive economy in the world and achieve full employment by 2010. A list of targets was drawn up with a view to attaining the goals set in 2000.

In 2005 a midterm review was carried out which however showed that the indicators used had caused the objectives to become muddled and that the results achieved had been unconvincing. For this reason, the Council has approved a new partnership aimed at focusing efforts on the achievement of stronger, lasting growth and the creation of more and better jobs. As far as implementation is concerned, the coordination process has been simplified (URL 17).

After the midterm review only two quantified goals which were further measurable were set – a level of employment and investment into Research and Development.

The principles of the Lisbon Strategy were incorporated into strategic documents of the Czech Republic as well as into the documents of the other member

states of EU. Among the most pro-innovative documents belong the National Innovation Policy in the Czech Republic where terms related with innovation occur frequently and innovation is a central issue. In other policies the innovation is consider as an important issue. An exception is the State Energetic Conception where the innovation occur only seldom and the National Environmental Policy where innovation occurs sometimes. The level of pro-innovativeness is usually possible to link with the year when the document was approved. The "old" documents are less proactive in field of innovation than recently approved ones. In respect of the innovation related to forestry the situation is not so favourable. Out of six analysed policy areas/documents there are only two documents which touch the innovation in forestry – The National Forest Programme and the Rural Development Programme, the innovation in the documents is consider as an important issue.

From the perspective of other countries which documents were analyzed the most pro-innovative document from the general point of view is the Innovation Policy on the other hand the less innovative documents are the Renewable Energy Policy and Sustainable Development Policy. The outcome is therefore similar to the situation in the Czech Republic. Regarding the innovation in forestry on the European level also here is lack of such innovation implemented in the policies. In most of the cases innovation are implemented only sometimes or never and that also in the Forestry Policy. An exception is France where innovation related to the forest sector occurs frequently but not in the Forestry Policy how it would be expected, where only general innovation occurs frequently, but surprisingly in the Innovation Policy.

From the facts mentioned above it is evident that strategic documents reflect the innovation and consider it in most of the cases as an important issue. In respect of the innovation in forest sector there is clearly still lot of space for further implementation of the innovation and lot of work will have to be done in this area in the future. The positive is that it is possible to see progress in terms of innovation related to the forest sector in the recently approved policies. Therefore it is possible to assume that such a trend will continue and we can expect more innovation in forestry.

Another stimulus in terms of greater implementation of innovation in the future is an EU document "Europe 2020", a strategy for smart, sustainable and inclusive growth adopted in June 2010. The Europe 2020 Strategy sets out a vision for Europe's social market economy over the next decade, and rests on three

interlocking and mutually reinforcing priority areas: Smart growth, developing an economy based on knowledge and innovation; Sustainable growth, promoting a low-carbon, resource-efficient and competitive economy; and Inclusive growth, fostering a high-employment economy delivering social and territorial cohesion (URL 18).

From the facts mentioned above it is clear that innovation will be incorporated into the strategic documents even more in the future. We can hope that the forest sector will not stay apart but will also follow this trend. However this process can last longer than in other sectors due to specificities of the sectors such are extremely long production period, seasonality, geographical environment, etc. as well as long tradition which is joined with fixed working practices.

Forest owners have started to implement innovation into their businesses because also they perceive importance of innovation for increase of their competitiveness on market.

From the enquiry carried out from November 2009 until April 2010 is possible to see that there is in general positive experience with implemented innovation. Nevertheless the innovation is started to be implemented very slowly, only small percentage of forest owners implemented in past three years more than two innovations. Those forest owners who implemented only one innovation focused mainly on new service or technological/organization innovation. On the other hand those who implemented two innovations in past three years focused in most cases on new product. From those forest owners who implemented the innovation none had very negative experience. Only 5% of those who implemented technological/organization innovation had a negative experience. Nevertheless in general the positive result dominated. What was surprising is a fact that in most cases the forest owners implemented innovation on the basis of the stimulus from co-worker, co-owner, forest office or customer followed by seminars and courses. There is clearly not enough information been disseminating on possibilities for implementation of innovation. More seminars, courses, workshops as well as support of exchange of experience among forest owners are needed to be enhanced. Another outcome of enquiry was that no consultancy company gave the forest owners stimulus for implementing the innovation even though some innovation are eligible for co-financing from EU funds. We can assume that there is still a gap on market with consultancies of this kind.

Among the most positive factors on implementation of innovation were frequently EU subsidies, co-operation with suppliers, customers, service s as well as offers of financial services. On the other hand the negative factors on implementation of innovation were mostly lack of own financial resource, high introduction cost and lack of information on innovation implementation support scheme. This outcome even more stress the need of capacity building, seminars and support of further dissemination of examples of good practice, etc.

Another interesting result was a relation between level of reached education and pro-innovative thinking. It is clearly possible to see that innovation was implemented in forestry mostly by people with relevant forest education. From those who implemented the innovation the greatest percentage were graduates from forestry or wood universities. Therefore greater impact should be put on education in general. If we want forestry to be competitive sector, enough people with relevant education have to be involved in it.

In generally from the outcome of the enquiry is possible to say that forest owners believe that forestry in the Czech Republic needs certain changes however they are reserved towards innovation. They see enough opportunities for implementation of innovation but still perceive a great risk linked with innovation that they do not want to undergo, as they are afraid that innovation will not be profitable. It is positive that forest owners have started to think in pro-innovative way and try to find new solutions nonetheless greater stimulus will be needed.

In respect of development of forestry in the Czech Republic the survey shows that majority of respondents do not expect any substantial changes in next five years, in contrast to the longer-term horizon of thirty years most of respondents expect either black or rosy development but very small percentage expect that it will remain without changes.

A part of the research was compared with enquiry carried out in 2002. Regarding the number of implemented innovation it was showed that in comparison with 2002 survey the respondents had implemented less innovation over the past three years. However that can explain a fact that nearly half of the respondents of 2009 enquiry own forest land of the area smaller than 50 ha. Therefore implementation of innovation is not a major issue for them.

In both enquiries the respondents were in most cases positive about the impact of implemented innovation on their business. Even in 2002 the main stimulus

for implementation of innovation was found most often in journals, professional training, co-worker, co-owner, etc. It is obvious that no big changes have been done. Thus more effort should be put into spreading information on possibilities of innovation implementation.

If we compare the character of implemented innovation, the results of 2002 enquiry show that leading area was technological/organizational innovation in comparison with 2009 enquiry were responses were almost equally spread among product, service and technological/organizational innovation. This shows a progress in innovation implementation. Forest owners have learned over past seven year how to implement the innovation in various areas.

As regards positive impacts on implementation of innovation the main change since 2002 is a possibility to co-finance the project from EU funds which is now a significant stimulus. Negative impacts were the same for both enquiries – mainly lack of own finances and high investment cost.

Respondents were also asked about produced goods and services. The greatest percentage of respondents in both inquiries replied that most of their income comes from wood. Currently more forest owners have started to orient at environmental protection services and other services. Nevertheless interesting is that ration of all respondents' income at the areas of environmental protection services in comparison with year 2002 had just slightly increased. Contrary results show a dramatic decrease in relation with game and lease of land. Also here is possible to see a positive trend of orientation towards green economy.

Regarding the future development of markets expectations are the same for both inquiries. In short time perspective (five years) the greatest role will play timer market in comparison with a long term perspective (thirty years) where the greatest development is expected in an area of drinking water.

Main economics instrument that influences the implementation of innovation in the Forestry are subsidies. As the Czech Republic is since 1 May 2004 a member of the European Union it is eligible also for co-financing from the EU funds.

The European Agricultural Fund for Rural Development (EAFRD) in the programming period 2007 – 2013 has become the main instrument at Community level for the implementation of the EU Forestry Strategy and the EU Forest Action Plan. The EAFRD allocation for the Czech Republic for 2007 – 2013 period is EUR 2.8 billion together with EUR 3.6 billion from state budget.

The Ministry of Agriculture as a Managing Authority of EAFRD has already published examples of successfully implemented projects which were co-financed via the Rural Development Programme. In 2007 under the priority I.1 Modernisation, Innovation and Quality, the measure I.1.2 Investment in Forests 460 projects with total financial requirement for subsidy of CZK 740 mil. were registered.

Up to now mainly purchases of new machinery for forest enterprise dominated which enable faster and more efficient operation. It is possible to expect that this trend will continue to apply. However promotion of innovation in forest sector is rather slow in comparison with other sectors. Therefore EU subsidies are the right tool for speeding up the process. It is obvious, from the reported statistics, that foresters are interested in the subsidies and have learned how produce a successful projects.

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ANNEXES

CONTENTS OF ANNEXES

ANNEX I - Tables of Action COST E 51
Part A – General description

Part A - General document information

Name:	
Adoption:	☐ Parliament ☐ Government ☐ Ministry:_____ ☐ Others:_____ ☐ No formal approval Level: ☐ National ☐ Regional ☐ Local Adoption date:
Validity period:	
Revision:	
Monitoring/ Evaluation:	
Related documents:	
Geographical scope:	☐ National ☐ Regional; name: ☐ Local, name:
Budget:	
General description of contents as written in document	
Objective of the document	
Priorities	
Structure	
Measure Areas	
Follow-up / Implementation	
Follow-up measures:	☐ No follow-up activities so far ☐ New or adapted funding programme(s) /budget line; name: ☐ New or adapted regulations/laws; name: ☐ New or adapted informational campaigns/instruments; name: ☐ New or restructured institutions/organisations; name: ☐ Implementation in forest policy:
General comment:	

(Rametsteiner 2006)

Part B – Integration of innovation

Part B - Overall Innovation Orientation

Overall innovation orientation	Please mark the frequency of occurrence of the more generic terms 'innovation' or synonyms ('new products', 'new services', 'new processes', new marketing methods' , 'new business models') in the document	☐ never ☐ sometimes ☐ frequently
	Please mark the frequency of occurrence of the forest sector 'innovation frontier'	☐ never ☐ sometimes ☐ frequently
	Please mark the frequency of occurrence of the terms that are related to innovation, for example entrepreneurship, diversification, competitiveness	☐ never ☐ sometimes ☐ frequently Terms used:
	Further comments on overall innovation orientation of the document:	
Relevance of innovation:	☐ No relevance at all ☐ Marginal issue ☐ One issue among others ☐ Important issue ☐ Central issue Comments:	
Degree of specification:	☐ very general *(innovation is named in general parts, e.g. preamble, but no related goals, measures, identified needs or similar are addressed by the document)* ☐ rather general *(innovation is addressed in overall goals, needs are identified but no specification of measures)* ☐ rather specific *(innovation is addressed in concrete goals, measures are formulated)* ☐ very specific *(quantified goals related to innovation are formulated, concrete measures introduced, a fixed budget and timetable exist)* Comments:	
Understanding of innovation policy	☐ Predominately traditional science and technology policy ☐ Traditional S&T policy with systemic elements ☐ Systemic innovation policy with S&T policy elements ☐ Predominantly systemic innovation policy Comments:	
Goals and objectives:		
Issues, problems and related topics:		
Innovation areas:		
General comment:		

(Rametsteiner 2006)

Part B - Innovation Support Measures

Innovation support measures	**Research and Development**	
	Diffusion of innovation	
	Strengthening the knowledge base	
	Strengthening interaction	
	Demand creation	
	Improving frame conditions	
	Comments	
Priorities		
Assessment of overall relevance		
Promotion of innovation		
General comment:		

(Rametsteiner 2006)

Part B - Cross-sectoral coordination

Policy formulation	
Co-ordination with other processes and documents	
Administrative Co-ordination:	☐ between different sections/departments within the same ministry; specify: _____ ☐ between different ministries, specify: _____ ☐ between ministries and other public organizations / agencies, specify: _____ Comments:
Stakeholder involvement	☐ Forestry: name most important organisations: _____ ☐ Forest-based industries: name most important organisations: _____ ☐ Agriculture: name most important organisations:_____ ☐ Tourism: name most important organisations: _____ ☐ Energy: name most important organisations: _____ ☐ Environment: name most important organisations: _____ ☐ Other sector: _____: name most important organisations: _____ ☐ Other sector: _____: name most important organisations: _____ Comments:
Coordination mechanisms:	☐ Formal (central) coordination body; name: _____ ☐ Formal coordination process ☐ Inter-sectoral working groups ☐ Inter-sectoral advisory body ☐ Formal mandatory consultation process ☐ Formal voluntary consultation process ☐ Informal consultations (please describe _____) ☐ Others: _____
Policy Implementation	
Responsible actors and their roles:	
Level of delegation	☐ Decentralized, e.g. ☐ Central, e.g. ministry, public agency ☐ Outsourced to private actors ☐ Local, e.g. by municipalities ☐ Regional, e.g. by regional public actors ☐ Others:
General comment	

(Rametsteiner 2006)

ANNEX II - Questioner of 2009

KATEDRA EKONOMIKY A ŘÍZENÍ LESNÍHO HOSPODÁŘSTVÍ
FAKULTA LESNICKÁ A DŘEVAŘSKÁ, ČZU V PRAZE

DOTAZNÍK

Výzkum inovačního potenciálu a zavádění inovací v lesním hospodářství v České republice

Dotazník je určen vlastníků lesů, resp. vedoucím provozu jednotlivých závodů či jiných podnikatelských subjektů

říjen 2009

Otázky související s vlastnictvím lesa

Kdo je vlastníkem lesa, který obhospodařujete?

1. Já osobně	☐	4. Stát	☐
2. Rodinný majetek	☐	5. Obec nebo město	☐
3. Společenství podnikatelů	☐	6. Církev	☐
		7. Ostatní ……	☐

Jak velká je celková rozloha lesů, které obhospodařujete?

1. Do 50 ha	☐	5. 1001 - 5000 ha	☐
2. 51 - 200 ha	☐	6. 5001 - 10 000 ha	☐
3. 201 - 500 ha	☐	7. 10 001 a více ha	☐
4. 501 - 1000 ha	☐		

S kým obhospodařujete les? (průměrný počet v roce)

Počet THP (fyzické osoby)	
Počet dělníků (fyzické osoby)	
% práce odpracované cizími (cizí těžební společnosti, cizí dopravci, ostatní)	%
Rodinní příslušníci	

Jaké jsou Vaše hospodářské cíle při obhospodařování lesa pro příštích 10 let, resp. jaké jsou stanoveny vlastníkem?

Zvyšování zisku	☐
Zvyšování hodnoty lesního majetku	☐
Zachování kapitálu, tedy podstaty lesního majetku	☐
Ukončení lesního hospodaření	☐
5. Jiné cíle, jaké?	☐

Jak chcete výše zmíněné cíle uskutečnit ?
(Je možno více odpovědí)

1. Specializací výroby na jeden produkt	☐
2. Rozšířením nabídky rozdílných produktů	☐
3. Intenzivnějším zhodnocením produktů resp. služeb	☐
4. Vypuštěním nebo omezením rozsahu prací	☐
5. Racionalizací, redukcí nákladů	☐
6. Spoluprací s jinými lesními podniky a podnikateli	☐
7. Nákupem dalšího lesa	☐
8. Prodejem lesa	☐
9. Zachováním současného způsobu práce	☐
10. Jiným způsobem, jakým?	☐

Jak ovlivňuje Vaše cíle a záměr hospodářská krize?
(Je možné označit více odpovědí)

Způsobuje existenční problémy	☐
Představuje výzvu, kterou je třeba překonat	☐
Neovlivňuje nás	☐
4. Jiným způsobem, jakým?	☐

otázky související s inovacemi

Pro lepší pochopení toho, co rozumíme pod inovací, věnujte prosím pozornost definicím uvedeným níže:
Definice inovací:
Produkty nebo služby, které byly v souvislosti s užíváním lesa nabídnuty poprvé, nebo významné či radikální technické nebo organizační změny v pracovním procesu, které slouží ke splnění podnikových cílů.
Nový výrobek/produkt: např. dřevo k energetickému využití, vánoční stromky, pitná voda, jiné nedřevní produkty jako štěrk nebo jiné suroviny, plody, houby, ...
Nové služby: např. pronájem rekreačních objektů, naučné stezky, cyklistické trasy, rekreační koupání v rybnících, kempy, dovolená v lese, pořádání seminářů v příjemném prostředí, střelnice, ...
Technické/organizační inovace: např. metody obhospodařování, zadávání určitých činností třetí osobě, sdružená správa či obhospodařování, ...

Zavedli jste na trh v posledních 3 letech před hospodářskou krizí v souvislosti s obhospodařováním lesního majetku nějaké nové výrobky nebo služby nebo plán, resp. technicko-organizační inovace?

Ano ☐
Ne ☐ → pokud NE, pokračujte otázkou 3.3

Pokud ANO, jaké a kolik?

	žádné	jeden	dva	více než dva
1. Nové produkty	☐	☐	☐	☐
2. Nové služby	☐	☐	☐	☐
3. Technicko/organizační inovace	☐	☐	☐	☐
4. Kolik plánovaných inovací se zpozdilo, nebo se dále nerealizovalo?	☐	☐	☐	☐

Jaké byly dopady inovací na podnikové výsledky?

	Velmi pozitivní	pozitivní	neutrální	negativní	Velmi negativní
1. Nové výrobky	☐	☐	☐	☐	☐
2. Nové služby	☐	☐	☐	☐	☐
3. Technicko-organizační inovace	☐	☐	☐	☐	☐

Odkud vzešel první podnět k zavedení inovace?
(Je možné označit více odpovědí)

1. Od spolupracovníka(ů), vedení, předsednictva	☐
2. Od vlastníka/spoluvlastníků	☐
3. Jiného vlastníka(ů) lesů	☐
4. Od dodavatele služeb	☐
5. Od odběratelů nebo spotřebitelů	☐
6. Od odborného lesního hospodáře nebo od zástupce lesního úřadu	☐
7. Z univerzity nebo jiné vědecké instituce	☐
8. Ze semináře, kurzu a exkurze	☐
9. Od poradce Agrární komory	☐
10. Od poradenské firmy	☐
11. Od poradce pro regionální rozvoj	☐
12. Z vlastní iniciativy - profesní vzdělání	☐
13. Z veletrhu/konference	☐
14. Z odborného časopisu	☐
15. Jiné zdroje, a to: _____	☐

příznivé a nepříznivé faktory

Hrály při zavedení inovace roli i následující skutečnosti?
Pokud Ano, jak příznivě se projevily?
(Je možné označit více odpovědí)

	Stupeň podpůrného účinku			
	velký	střední	malý	žádný
Nabídka finančních služeb	☐	☐	☐	☐
Nabídka služeb technicko/organizačního charakteru	☐	☐	☐	☐
Poradenská činnost Agrární komory	☐	☐	☐	☐
Jiní poradci	☐	☐	☐	☐
Lesnické podpory z veřejných zdrojů (státní rozpočet)	☐	☐	☐	☐
Podpůrné programy na podporu inovací a regionálního rozvoje	☐	☐	☐	☐
Podpora z programů EU	☐	☐	☐	☐
Nabídka kvalifikovaných pracovních sil	☐	☐	☐	☐
Možnost vzdělání a dalšího vzdělávání	☐	☐	☐	☐
Nabídka informací k inovacím	☐	☐	☐	☐
Spolupráce s odběrateli, dodavateli, službami	☐	☐	☐	☐
Spolupráce s jinými vlastníky lesa	☐	☐	☐	☐
Spolupráce s úřady a komorami	☐	☐	☐	☐
Spolupráce mezi úřady	☐	☐	☐	☐
Nabídky jiných podpor	☐	☐	☐	☐

Ztěžovaly Vám zavedení inovací i následující skutečnosti?
Pokud Ano, jak nepříznivě se projevily?

	Stupeň nepříznivého účinku			
	velký	střední	malý	žádný
H.1 Málo vlastních finančních prostředků	☐	☐	☐	☐
H.2 Problém se získáním úvěru	☐	☐	☐	☐
H.3 Nedostatek kvalifikovaných pracovních sil	☐	☐	☐	☐
H.4 Vysoké zaváděcí náklady (investiční náklady, ...)	☐	☐	☐	☐
H.5 Vysoké běžné náklady (mzdové náklady, ...)	☐	☐	☐	☐
H.6 Riziko spojené s prodejností výrobku / služby	☐	☐	☐	☐
H.7 Nedostatek informací o odbytových trzích	☐	☐	☐	☐
H.8 Nedostatek informací o možných nových výrobcích a službách	☐	☐	☐	☐
H.9 Nedostatek informací o podporách při zavádění inovací	☐	☐	☐	☐
H.10 Zákony o ochraně přírody a životního prostředí	☐	☐	☐	☐
H.11 Ustanovení lesního zákona	☐	☐	☐	☐
H.12 Živnostenský zákon	☐	☐	☐	☐
H.13 Finanční / daňové výdaje	☐	☐	☐	☐
H.14 Pracovní právo	☐	☐	☐	☐
H.15 Technické normy a předpisy	☐	☐	☐	☐
H.16 Spolupráce s odběrateli, dodavateli, službami	☐	☐	☐	☐
H.17 Spolupráce s úřady a komorami	☐	☐	☐	☐
H.18 Spolupráce mezi úřady	☐	☐	☐	☐
H.19 Jiné rušivé nebo omezující faktory (napište jaké) …… ……..	☐	☐	☐	☐

Proč jste v letech před vypuknutím hospodářské krize nezavedli a ani neplánovali zavedení žádné inovace? (Uveďte nejvýznamnější důvod!) [Pokud jste inovace zavedli, pokračujte otázkou 3.5]
……

Znemožnili Vám zavedení inovací i následující skutečnosti?
Pokud Ano, jak nepříznivě se projevily?

	Stupeň nepříznivého účinku			
	velký	střední	malý	žádný
H.1 Málo vlastních finančních prostředků	☐	☐	☐	☐
H.2 Problém se získáním úvěru	☐	☐	☐	☐
H.3 Nedostatek kvalifikovaných pracovních sil	☐	☐	☐	☐
H.4 Vysoké zaváděcí náklady (investiční náklady, ...)	☐	☐	☐	☐
H.5 Vysoké běžné náklady (mzdové náklady, ...)	☐	☐	☐	☐
H.6 Riziko spojené s prodejností výrobku / služby	☐	☐	☐	☐
H.7 Nedostatek informací o odbytových trzích	☐	☐	☐	☐
H.8 Nedostatek informací o možných nových výrobcích a službách	☐	☐	☐	☐
H.9 Nedostatek informací o podporách při zavádění inovací	☐	☐	☐	☐
H.10 Zákony o ochraně přírody a životního prostředí	☐	☐	☐	☐
H.11 Ustanovení lesního zákona	☐	☐	☐	☐
H.12 Živnostenský zákon	☐	☐	☐	☐
H.13 Finanční / daňové výdaje	☐	☐	☐	☐
H.14 Pracovní právo	☐	☐	☐	☐
H.15 Technické normy a předpisy	☐	☐	☐	☐
H.16 Spolupráce s odběrateli, dodavateli, službami	☐	☐	☐	☐
H.17 Spolupráce s úřady a komorami	☐	☐	☐	☐
H.18 Spolupráce mezi úřady	☐	☐	☐	☐
H.19 Jiné rušivé nebo omezující faktory (napište jaké) …… ……..	☐	☐	☐	☐

Aby se ulehčilo zavádění inovací, v kterých oblastech byste v budoucnu obzvláště uvítali zlepšení? Uveďte prosím maximálně tři faktory. Můžete také uvést čísla uvedená v tabulkách (otázky 3.2 a 3.4):

1. _____
2. _____
3. _____

založení podniku

Rozšířili jste předmět podnikání nebo jste v letech před vypuknutím hospodářské krize založili novou firmu v souvislosti s obhospodařováním lesa? Případně jste se účastnili nového podnikání např. v těžebním podniku apod. nebo jste spolupůsobili (resp. působíte) při zakládání nového střediska, s.r.o., sdružení majitelů lesa, družstva apod.?

Ano ☐
Ne ☐ → pokud NE, pokračujte částí 5

Pokud Ano, o jaké podnikání šlo?

……..

Jaké výrobky nebo služby zde nabízíte?

…….

Kdo jsou Vaši partneři v tomto novém podnikání?

1. Dřívější zákazníci	☐	4. Jiní, kdo?.....	☐
2. Dřívější dodavatelé	☐	5. Nemám žádné partnery	☐
3. Jiné lesní podniky	☐		

Kdo Vás podpořil při zakládání nového podnikání?

1. Zástupce zájmových sdružení (komora...)	☐	4. Veřejné zdroje	☐
2. Poradenské organizace, firmy	☐	5. Jiné, jaké?.....	☐
3. Banky nebo jiné finanční instituce	☐	6. Žádné vnější podpory	☐

Co Vám z celkového pohledu nejvíce pomohlo při zakládání tohoto nového podnikání?
Jmenujte prosím tři nejvýznamnější faktory:

1. _____
2. _____
3. _____

Co Vám při zakládání nového podnikání činilo největší problémy?
Jmenujte prosím tři nejvýznamnější skutečnosti:

1._____
2._____
3._____

Jakého obratu dosahujete díky tomuto novému podnikání?

Uveďte podíl tržeb nové podnikatelské činnosti z celkového obratu podniku……. %

Váš osobní názor na rozvoj vybraných trhů a na lesní hospodářství obecně
Jak Vy osobně hodnotíte zavádění nových produktů a nebo nových služeb v lesním hospodářství obecně?
Pokuste se vyjádřit ke každé formulaci:

	Úplně souhlasím	Spíše souhlasím	Nevím	Spíše nesouhlasím	Zcela nesouhlasím
1. Myslím, že v lesním hospodářství v České republice je dost možností, kde nové výrobky a služby mohou přinášet zisky.	☐	☐	☐	☐	☐
2. Málokdy uvažuji o nabídnutí nových výrobků a služeb, protože se to jednoduše nevyplatí.	☐	☐	☐	☐	☐
3. Tak, jak to šlo dosud tu už dál nejde, lesní hospodářství v České republice potřebuje doznat velkých změn.	☐	☐	☐	☐	☐
4. Přestože to pro mě představuje určité riziko, pokouším se nalézt nová řešení.	☐	☐	☐	☐	☐
5. Tradiční lesní hospodářství se osvědčilo a je zcela dostačující.	☐	☐	☐	☐	☐

Jak vidíte rozvoj následujících trhů ve středně a dlouhodobém horizontu vzhledem k hospodářskému významu pro odvětví lesního hospodářství?

	střednědobý význam, příštích 5 let				dlouhodobý význam, příštích 30 let			
	žádný	malý	střední	velký	žádný	malý	střední	velký
1. Biomasa	☐	☐	☐	☐	☐	☐	☐	☐
2. Pitná voda	☐	☐	☐	☐	☐	☐	☐	☐
3. Geneticky modifikované výrobky	☐	☐	☐	☐	☐	☐	☐	☐
4. Rekreace / turistika	☐	☐	☐	☐	☐	☐	☐	☐
5. Činnosti v ochraně prostředí - ochrana krajiny, lesů	☐	☐	☐	☐	☐	☐	☐	☐
6. Ochrana klimatu (snižování CO_2 – boj proti klimatické změně)	☐	☐	☐	☐	☐	☐	☐	☐
7. Dřevo	☐	☐	☐	☐	☐	☐	☐	☐
8. Zemědělství	☐	☐	☐	☐	☐	☐	☐	☐

Jak vidíte středně a dlouhodobý rozvoj lesního hospodářství v České republice?

	růžově	spíše růžově	beze změn	spíše černě	černě
Střednědobý rozvoj, v nejbližších 5 letech	☐	☐	☐	☐	☐
Dlouhodobý rozvoj, v příštích 30 letech	☐	☐	☐	☐	☐

Váš komentář nebo připomínky a návrhy k předpokládanému vývoji:

.....
.....
.....
.....

Závěrem ještě několik otázek k vaší osobě resp. k vašemu podnikání.

Jaké nabízíte výrobky a služby v souvislosti s obhospodařováním lesa a jaký je v současnosti jejich podíl na příjmech v procentech?

Obhospodařování lesa pro vlastní potřebu…….. ☐

Výrobky		
1. Řezivo, průmyslové dřevo, palivové dřevo	☐	%
2. Ostatní dřevní produkce (Vánoční stromky, ozdobná klest, sazenice, semena...) pokud ano, které? ……	☐	%
3. Zvěřina	☐	%
4. Ostatní produkty - pokud ano, jaké? ……	☐	%
Služby		
5. Služby pro ostatní vlastníky lesů např. kácení stromů, zalesňování, doprava...	☐	%
6. Služby pro turistiku a odpočinek pokud ano, které? ……	☐	%
7. Služby v ochraně přírody	☐	%
8. Pronájmy (honiteb, loveckých chat, střelnice)	☐	%
9. ostatní služby pokud ano, které? ……	☐	%
Celkové příjmy z obhospodařování lesů		100%

Jaké je Vaše nejvyšší dosažené vzdělání a vzdělání Vašeho nejbližšího spolupracovníka?

	Vaše vzdělání	Váš spolupracovník
Základní škola a zaučení	☐	☐
Učňovská škola lesnická	☐	☐
Jiná učňovská škola	☐	☐
Střední lesnická škola	☐	☐
Jiná střední škola s maturitou	☐	☐
Vysoká škola lesnického nebo dřevařského zaměření	☐	☐
Jiná vysoká škola	☐	☐

Kolik Vám je let? Jaké je Vaše pohlaví?

Stáří				Pohlaví	
do 30 let	31 až 40 let	41 až 60 let	nad 60 let	Mužské	ženské
☐	☐	☐	☐	☐	☐

Děkujeme Vám za zodpovězení otázek!

ANNEX III – Examples of Successfully Implemented Innovation in Forestry

Successful Examples in Implementation of Innovation in the Forest Sector

Case 1:

Name of project	**Harvester - modern technology for forest felling**
Axis	axis I
Measure	I.1.2 Investment in Forests
Year of registration	2007
Applicant	**Lesy Hluboká nad Vltavou a.s.**
Region	České Budějovice
Project orientation	Forestry
Annotation	**The company "Lesy Hluboká nad Vltavou" has obtained with the support of subsidy from the Rural Development Programme harvester John Deere 1270D ECO III. This forest machinery that belongs also in global perspective among the most favourite machinery of this kind, that allow not only significantly increase performance of felling but represents also a technology that is without doubts more sensitive towards forest ecosystems.**

Budget		
	Total expenditure	11 891 839 CZK
	Cashed subsidy	4 896 639 CZK
	Share of EU on subsidy	1 224 160 CZK
	Share of CZ budget on subsidy	3 672 479 CZK

Case 2:

Name of project	**Purchase of prismatic saw**
Axis	axis I
Measure	I.1.2 Investment in Forests
Year of registration	2007
Applicant	**Jaroslav Křenek**
Region	Vsetín
Project orientation	Forestry

Annotation	**Rural Development Programme supported an application of an owner of a local sawmill Mr. J. Křenka on purchase of prismatic saw. Due to this a small capacity rural company on timber processing was able to start modernizing.**	
Budget	Total expenditure	1 022 676 CZK
	Cashed subsidy	400 000 CZK
	Share of EU on subsidy	300 000 CZK
	Share of CZ budget on subsidy	100 000 CZK

Case 3:

Name of project	Purchase of wheel loader
Axis	axis I
Measure	I.1.2 Investment in Forests
Year of registration	2007
Applicant	**PISA spol. s r.o.**
Region	Středočeský kraj, Nymburk
Project orientation	Forestry

Annotation	**Due to subsidy from the Rural Development Programme the company PISA could have purchased a compact wheel loader Volvo L45B. Sawmill plant of the company PISA got due to subsidy on the loader new impulse for it's own development at present as well as in the future perspective.**	
Budget	Total expenditure	2 151 713 CZK
	Cashed subsidy	897 481 CZK
	Share of EU on subsidy	673 110 CZK
	Share of CZ budget on subsidy	224 371 CZK

(URL 14)