



## FOREST MANAGEMENT IN CROATIA FOCUSING ON INNOVATION

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LÁSKOVÁ J., POSAVEC S., 2011: Lesné hospodárstvo v Chorvátsku s dôrazom na inovácie. Lesn. Čas.  
– Forestry Journal, 57(2): 134–142, 6 fig., tab. 5, ref. 14. ISSN 0323 – 1046. Original paper.

Inovácie sa stali jednou z hlavných tém moderného ponímania lesníctva. Ich prínos sa skúma v zahraničí, tak ako aj na Slovensku, napríklad v projekte Integrácia rozvojových, inovačných a environmentálnych politík pre lesníctvo. Dôležitosť tohto prístupu spočíva hlavne v tom, že sa odkláňa od klasického poňatia lesného hospodárstva, ktoré je zamerané prevažne na drevo a obchod s ním. Následná diverzifikácia výstupov pri uplatňovaní efektívneho zavádzania inovácií je nepochybne, no napriek tomu sa mnohí vlastníci tomuto prístupu z mnohých dôvodov vyhýbajú. Skúmanie inovačného správania v Chorvátsku vyplýva z výskumu, ktorý sa uskutočnil s respondentmi v hlavných inštitúciách, ktoré sa zaoberajú lesníctvom. Okrem konkrétnych inovácií, ktoré sú uvedené aj v tomto článku, je cieľom prieskumu hodnotiť postoje k inovačnému správaniu z pohľadu inštitúcií nie vlastníkov – a to napríklad aj faktorov, ktoré im napomáhajú, a naopak bránia ich uskutočňovaniu. Vyhotovenie daného prieskumu bude v budúcnosti po ďalšom zanalyzovaní slúžiť na porovnanie inovačného správania v Chorvátsku a na Slovensku a na zdieľanie najlepších praktík z oboch krajín.

**Kľúčové slová:** inovácie, obhospodarovanie lesa, vlastníci, podporné a brzdiace faktory

Innovation has become one of the main issues in a modern conception of forest management. Contribution of innovation introduction has been evaluated abroad and then also in Slovakia, for example in the project: Integration of development, innovation and environmental policies for forest sector. The importance of this perception rests upon the fact, that it deflects from the classic perception of forestry that is based on wood and wood sale. The following diversification that should stem from successfully implemented innovation ideas is undoubted, but apart from that many forest owners do not lean to such an opinions from a couple of reasons. Innovation behaviour research in Croatia is based on questionnaire with respondents from main institutions interested in forestry. Besides specific innovation that is also described below, the objective of the research is to assess the innovation behaviour from the perspective of institutions not forest owners – also for example fostering and impending factors to innovation. The conduct of such a research will serve in the future after further analysis as a base for innovation behaviour comparison in Croatia and Slovakia and for sharing of best practices from both countries.

**Key words:** innovation, forest management, owners, fostering and impending factors

### 1. Introduction

The objective of the paper is to publicize the results from research that was held in Croatia, Zagreb during Short Term Scientific Mission (STSM)<sup>1</sup>. Primary goal of the STSM was to determine the perception of the people educated and interested in forestry on innovation in Cro-

atia. This reason, for such a research rests in a fact that, forestry is in the recent time more oriented in innovation processes and innovation as a whole.

Innovation policies are a key pillar of the EU “Lisbon Strategy”, the economic development policy of the EU. On the EU-policy level, innovation is recognized as

<sup>1</sup> Short Term Scientific Mission is intended for young researchers and must be in compliance with the COST Action (COST Action E51 – Integrating Innovation and Development policies for the Forest Sector). It should foster cooperation between COST member states.

a crucial factor for the creation of economic growth and employment in the EU and for enhancing the development of rural regions. The European Union is trying to improve its competitiveness vis a vis other players in the global economy by increasing the innovation activities of the European enterprises. Similarly, innovation is one of the two explicit objectives of the EU 6<sup>th</sup> Framework Programme for Research, in addition to the creation of a European research area. In a forest policy context, the MCPFE (Ministerial Conference on the Protection of Forests in Europe) has recently adopted the Vienna Resolution on the “Economic Viability of Sustainable Forest Management” calling for the strengthening of innovation and entrepreneurship in the sector (FOURTH MINISTERIAL CONFERENCE ON THE PROTECTION OF FORESTS IN EUROPE, 2003).

We consider innovation as a term of a modern age. Unlike that it is a modern issue and almost everything use to be designated by this term, the theories of innovation are influenced by work of Peter Schumpeter – The Theory of Economic Development from 1934. Innovation represents all of the news that is introduced to market but only some is successfully implemented. This is a result of a long-term process. Innovations do not represent only the introduction of new products and services, but also improvement of them, for example customization.

Innovation is an important factor for economic growth and creating of new jobs. Innovation in forest enterprises can eminently impact the economical growth and employment in the rural areas. The term innovation is used by many authors and in many modifications, e.g. EDQUIST (1997), NELSON (1993) are focusing on technology innovation, LUNDVALL (1992) on innovation in the institutional system. Specifically in the forest sector, the following authors research innovation as a term: EDER (1989), GLÜCK (1991), PREGERNIG (2000), RAMETSTEINER, KUBECZKO (2003). Generally, innovation is deemed as a technology innovation, e.g. NELSON, WINTER (1977) have stated that innovation is a non-trivial change in products and services where there are no previous experiences. Innovation is now often used as a synonym to technology innovation.

Besides this, current literature distinguishes between two main groups of innovation, product and process, as seen on the Figure 1. Product innovation is defined as

change in the output of the enterprise or organization, in which can either be goods or services. Process innovation can either be technological innovation or innovation in the organization of the enterprise or organization (RAMETSTEINER, WEISS, KUBECZKO 2005).

Innovation can be described as continuous or discontinuous change in the inputs, processes or outputs of an enterprise, where the changes can be radical or increment. From the view of innovation introduction of the enterprise, there are two main groups of innovation, „new to the firm“ and „new to the market“. New to the firm innovation can be well established in the market already, however are newly introduced in the product portfolio of that a firm offers. On the other hand, new to the market innovation means that something new has been introduced into the market still do not have to be automatically introduced by firms, but need a conscious decision on the firm level (RAMETSTEINER, WEISS, KUBECZKO 2005).

Innovations are important from many of reasons and they can be divided into to main groups: 1. External implications, 2. Internal implications. From the point of forest enterprises the internal implication is obviously achievement of higher income, overall economic growth and competitiveness of the enterprise, which can obtain a stable economic position on the market due to implementation of innovations. One of the reasons could be that it diversifies its activities and so it produces a higher supply for more groups of consumers. External implications are for example, generating of new working offers in the region, rural development and regional development.

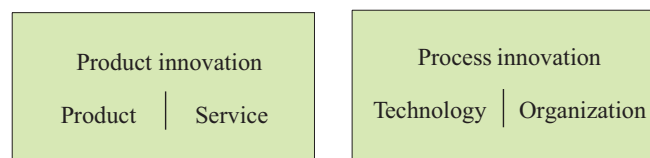
Innovation process in very complicated and its preparation requires a long-term research on demand in the region, where the innovation is to be developed. Besides, creation of plan that could guarantee the required result is necessary. This plan includes:

- Business description – what is offered
- Market strategies
- Competitive analysis
- Operation and management plan
- Funding (OSLO MANUAL, Guidelines for Collecting and Interpreting Innovation Data, 2005)

Oslo manual divides innovation into 4 main groups – products, process, marketing and organization. In the questionnaire we used the same division of innovation.

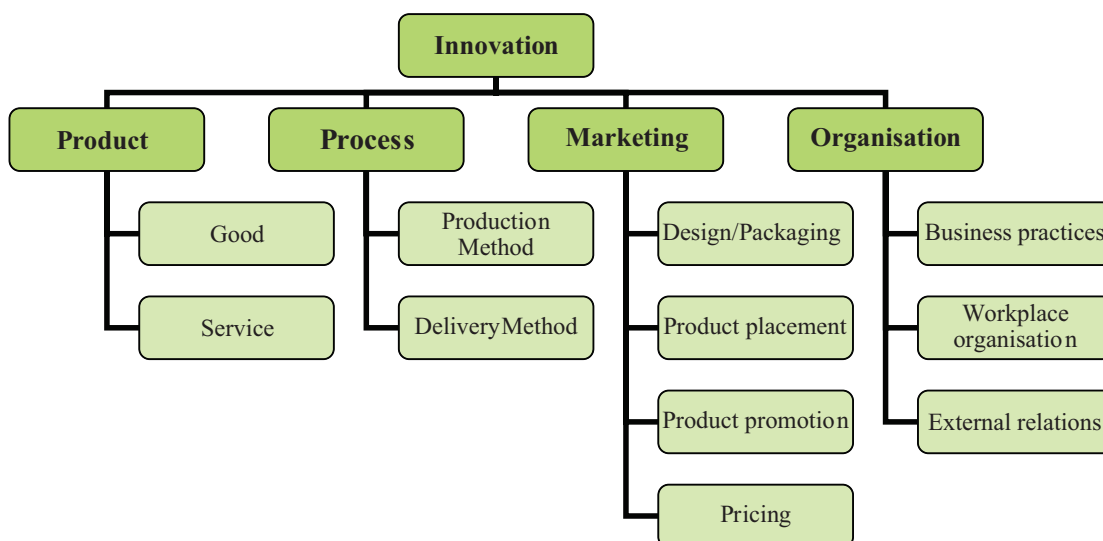
## 2. Materials and methods

The purpose of the STSM is the evaluation of the survey that was held in Slovakia and providing of our experiences to University of Zagreb, Faculty of Forestry, which is interested also in conducting the similar research. According to the COST E51 research plan, a matter of this survey is: “Research on innovations and entrepreneur behaviour of forest enterprises owners and managers.” The similar survey has been conducted in Slovakia in years 2008/2009 as a part of the project In-



**Fig. 1.** Groups of innovation

Source: Oslo Manual, Guidelines for Collecting and Interpreting Innovation Data, 2005.



**Fig. 2.** Division of innovation types into groups following Oslo Manual

Source: *Innovation and Entrepreneurship in Forestry in Central Europe*, RAMETSTEINER, WEISS, KUBECZKO 2005.

tegration of development, innovation and environmental policies for forest sector.

Questionnaire was originally made according to the Austrian experience and designed at BOKU Institute Wien and EFI Regional Office Innoforce. We have taken the scope of this questionnaire and then have applied it on conditions in Slovak forestry. Research on this issue was referring to the research held in 2003–2004 in Germany, Austria, Italy, Swiss, Czech Republic, Hungary, Slovenia and Slovakia by the European Forest Research Institute (EFI INNOFORCE). According to the questionnaire, innovation is presented as a novelty in connection with introduction of a new product or service or technology and organizational change. In Slovakia, we have addressed this questionnaire to the subjects in forestry from both state and private sector. In total, 257 subjects responded, of which 236 (91.8%) were non – state actors and 21 (8.2%) state actors.

Faculty of Forestry in Zagreb expressed their will to make the similar survey, so we provided them with our Slovak translation. On the other hand, we can help with emphasizing of the best practices.

Because there is a long-term intention to make a comparison of these survey from both countries but the Croatian one is not finished yet, as a goal of my STSM was to determine the perception of professionals, interested in forestry. Both countries passed transition from the planned to the market economy, the system of organization and forestry is quite similar, and there is assumption to get the very valuable and authentic outputs.

From the methodology aspect, we tried to put accent on the most important areas concerning innovation, and the production of such a questionnaire stems from the Slovak version, respectively EFI version in its core, but was adapted more on perception of people and overall

overview about innovation. It should be the first step to make the further research intended on innovation behaviour in the forest enterprises themselves.

The questionnaire intends to find and to assess positions of people, mainly foresters to innovation in Croatia. The work plan was to research the attitude about the innovation from the main stakeholders in forestry sector and analyze main forest policy documents, which influence innovation development in forestry and wood industry branches. Producing the questionnaire was a well-founded step, because if we would like to make a comparison, there is a need to have some measurable outputs on both sides. The questionnaire puts the accent on the following problematic:

- Innovation in general
- Levels of developed innovation
- Kinds of developed innovation
- Kinds of to be-developed innovation
- Fostering factors to innovation process
- Impeding factors to innovation process

To fill the questionnaire we have arranged meetings with professionals from the forestry sector from the below-stated organizations and made a short interview on the basis of the exact scope of the questionnaire for each individual respondent. The questionnaire was filled either by the respondent or the interviewer. Some questions were explained to the respondent due to better understating of the researched issue and intentions of the interviewer. In the end of the interview, each respondent was asked to give his/her more extensively opinion about the particular discussed issues which were important for the general overview and further explanation.

Determining the importance of each innovation and factor in the answers was based on the assigning of different numbers in the scale 0 – 3, where 0 means “no

importance” and 3 “the highest importance”. Levels associated with the answers were given by respondents and present their opinion.

Interviews were made at following organizations:

- *Faculty of Forestry*: Department of Forest Inventory and Management, Department of Forest Engineering, Department for production organization (6 respondents)
- *Croatian Forest Research Institute*: Department of Forest Management and Forestry Economics (7 respondents)
- *Forest Extension Service* (3 respondents)
- *Ministry of Regional Development, Forestry and Water Management* – questionnaires are being made online (1 respondent)

The final number of interviewed people is 17.

### 3. Results

There are assorted types of answers, mostly in open questions due to respondents orientate themselves (respondents are based) in different areas and organizations in forestry, as mentioned above, and that could influence their opinions. Regarding this, the results will primary focus on the common themes that were raised in the answers, but will also point out some specific and important problematic areas.

#### *General view about innovation*

First of all, questionnaire intended to find out, what people think, what we should consider to be innovation in forestry. Innovations are considered as something new that brings prosperity and progress or application of the most recent scientific ideas. People find innovation as a very useful concept how to enhance the economic fragment and strategy in forestry.

They can be linked with many areas. Mostly, people consider as innovation: products and services. Following organizational innovations are described more as reorganization of forestry institutions – Croatian Forests and Croatian Forest Institute. Innovation is also a new knowledge how to lead institutions and connection between them that could bring more effective way of management in the future. Connection with other organizations is deemed also like connection or cooperation with other sectors than forestry sector. Cooperation with other industries is vital also because of they produce most of innovation that can be consequently implemented to forestry practices and help to precede forestry innovation. In these perception education and multidisciplinary approach is essential.

Knowledge about the mode of business management in forest enterprises brings more possibilities to the enterprise on the market; however idea of innovation in the area of marketing is like in other transformed countries not very spread. On the other hand, respondents are conscious of this problem and put stress on marketing

innovations and also marketing research. One of the problems with marketing can lean on a fact, that transformed economics face other important problems that should be solved firstly.

Another area of innovation can be described as technology. People identify it also as specific innovations, use of new machines (for example, environmental friendly machines), new working methods that aim more productive management or provide sustainability.

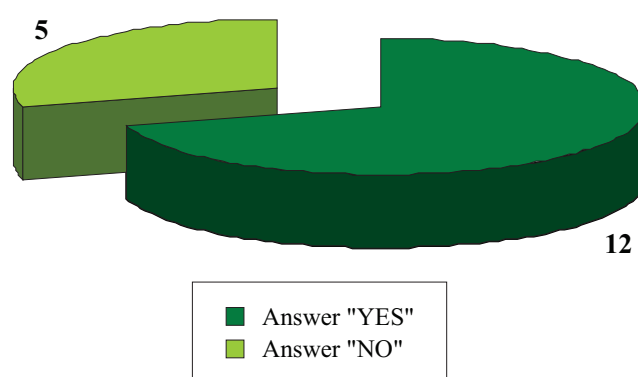
Better financing as an objective of each industry is considered to be innovation in a sense of more funding from the perspective of forest owners and is also closed to lack of subsidies, those are not fully drawn, because of low level of information and practical guidelines in this area.

Interference with public and bringing them closer to forestry is another perception of innovation. Work with public remains in the hand of state through its organizations. Also, it should encourage people to work in forestry and secure jobs in this sector in local conditions – mostly rural and undeveloped areas.

#### *Is innovation process essential in forestry in Croatia and what are the reasons for that?*

The majority of respondent (12 of 17) presented, that innovations are essential in their country (see Figure 3, below).

The stress on importance of innovation implementation consists in the development of Croatia. Because forestry sector interfere with many other sectors, it is important to stress the factor of economic, knowledge and state that manages this sector. First of all, respondents mentioned the very important idea of being competitive. Gaining competitiveness for forest enterprises is in this time period essential also because of world economic crises, however, as it was assumed that this is one of the main driving factors for innovation, finally it wasn't mentioned by any respondent. Competitiveness is linked



**Fig. 3.** Are innovations essential in Croatia?

Source: *Innovation and Entrepreneurship in Forestry in Central Europe*, RAMETSTEINER, WEISS, KUBECZKO 2005.



together with higher income or benefit that can be got from implementation of innovation.

For a long time, forestry remained a conservative sector, which was built mainly on the wood as a resource. This state is no more applicable, also due to the fact mentioned above, but also because of limited resources, forest enterprises should but more wide-orientated to avoid the one-sided approach. From the view of funding issue it should present more stable type of management. In this sense, there is a need for more effective forest management and organizational changes, because in a process it will be more difficult to maintain the same situation also regarding climate change and limited resources.

Taking into account perception of respondents, the level of developed innovations in general in Croatia is low. Some respondents indicated more than one answer that depends on the type of innovation, they were mentioning. There was only one clear answer, that innovations are developed on a high level. The complete results on this problem are presented in Table 1.

**Table 1.** In general, on which level are innovations developed in forestry in your country?

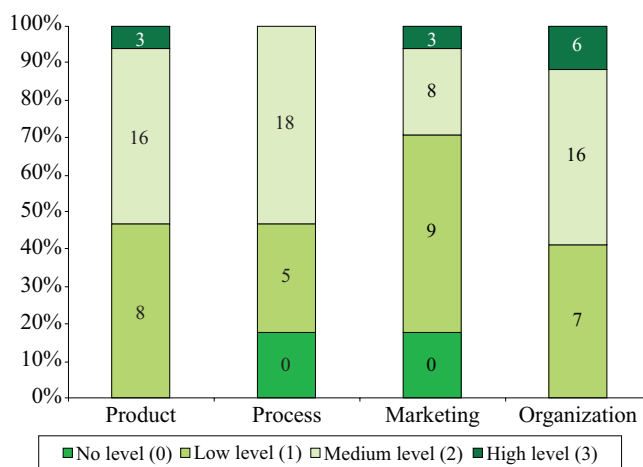
	High level	Medium level	Low level	No level
Number of answers from respondents	1	5	11	0

In the questionnaire, we searched the types of innovation that are developed in Croatia. Mostly, people consider all of the kinds of innovation as developed or implemented. In case of innovation of product and organization there is a unanimous consensus. Process and Marketing is deemed as less developed than the previous ones.

**Table 2.** Which listed groups of innovation are developed in your country?

Groups of innovations	Answer YES	Answer NO
Product	17	
Process	14	3
Marketing	14	3
Organization	17	

Moreover, researching groups of innovation was built on a system of points. Respondents were in charge to give adequate points from 0 to 3 to each group of innovation to rate a level on which they are, in their opinion, implemented. Results on the Figure 4 were made as a sum of



**Fig. 4.** Ratings of the groups of developed innovations  
Source: *Innovation and Entrepreneurship in Forestry in Central Europe*, RAMETSTEINER, WEISS, KUBECZKO 2005.

all ratings from respondents. Points are presented at the top of each column and were calculated as a number of respondents multiplied by appertaining marked level.

The highest rating belongs to groups of organization innovation with a total number of 29 points. Innovation in organizational area is in Croatia very actual theme. Respondents then give examples of the specific innovation that are developed in forestry in Croatia regarding their interest and are listed below.

Organizational innovations have a common feature, which is a transition process. From the point of organizations based in forestry, it was and still is vital to change the structure after the fall of socialism system and legislature. There was a need to restructure the main institution, state owned forest enterprise, "Hrvatske Šume" – Croatian Forests that could lead to more effective management of forest. Another institution – Croatian Forest Research Institute went through reconstruction in the recent time. Another important innovation regarding organizational changes rests the establishment of a new institution – Forest Extension Service. Forest Extension Service is a specialized public institution for conducting matters in part of public authorities, improving management of forests and woodlands in private forests. (<http://suma-ss.hr/forest-extension-service-for-private-forests-in-croatia.html>).

Moreover, we can include also Bologna process in education in this category that provides a standard of academic degrees and quality standards in educational process.

Innovation that can be identified with a new law proposal is possible. Not only because there should have been new laws according to transition period but also new law defining new and changing state in forestry itself.

Other three groups of innovation were gradually on the following levels, from the second highest – product

(27 points), to process (23 points) and at the end marketing innovation (20 points).

Product and process innovations are connected. Product innovations are presented by:

- Biomass
- Pallets and wood chips
- Certification – FSC and product
- Recreational and tourist locations and services
- Entrance fees to national parks (for example to Plitvice)
- New Eco-products with certificate or eco-mark
- Forestry workers identity cards that provides information on licenses, certificates
- Forest road constructions

Process innovation is linked up to products. It involves mostly technology that is used to processing products – for example new machines in biomass processing and wood processing. Technology produced in Croatia acquired also importance. Indication of specific kind of innovation was in this case less successful, because respondents focused on technology in general.

Marketing innovations were discussed above and we presented reason, why they are not so developed depending on the state of economy in the transition process and the markets standards. It is a very small-developed part of forestry focusing mostly on sale of wood, but not on additional forest possibilities, however, there are several attempts to boost marketing ideas. Marketing approaches according to the respondents have several levels:

- PR focusing on wood, wood-products and non-wood products and pricing
- Promotion of EU projects and international workshops.
- New projects promoting forestry sector – for example “DRVO JE PRVO” (Wood is first)<sup>2</sup>

As another types of innovation can we classify protection of genetic resources and diversity.

Another problem rests on the knowing which kinds of innovations should be developed, and so which are important and on the other hand which are considered as less implemented, so they should be strengthen. This question aims to find out, if people think innovations and also what types of innovations are really important to forestry.

As seen from the Table 3, respondents state that all of the four groups of innovations are important, giving most weight to product and marketing innovations, following by organizational and the last process innovation. There is a general view, that products form the majority of innovations or only products represent what is called

**Table 3.** What kinds of innovations should be developed in your country?

Groups of innovations	Answer YES	Answer NO
Product	17	
Process	15	2
Marketing	17	
Organization	16	1

innovation. The better explanation is that all other of the groups are closely connected to product innovation, because they can foster its implementation. Generally, full-implemented strategy towards innovation can make some progress together with cross-sectoral cooperation as mentioned above (innovation can be based in another sector and passed to forestry).

Product innovations are seen in three different levels. First, it includes wood and non-wood products. Wood innovation can be also orientated on a high-quality wood, for example cherry or ash wood that brings more profit to forest owners. Non-wood forest products in general, fall behind wood and wood products, but there is a need to enhance their development, which is close to recreational services. Recreational services belong to another product innovation. Taking into consideration the tourist tradition of Croatia, they should be developed on a high level, because it can bring also more profit. Bio-energy, especially biomass is an important part of Croatian forestry, focusing on nature protection and other way of energy exploitation. Carbon balance as a part of management plans and marketing in this area is a base for the pilot projects in Europe and initiate development in Croatia. Some respondents claimed also products with certification and marking of Croatian origin.

Lack of marketing in forestry is obvious, but in terms of results people consider this shortcoming as necessary for the future development. Call for marketing of all products (wood and non-wood) and services and acknowledgement of this problem could bring it to more proper measures that should be taken.

Restructuring of organization and internal changes are undertaken in order to gain more effective forest management as in state enterprise as in private forest owners. Unlike organizational changes, people realize that a social factor, as participation of employees and culture can be a decisive factor. Learning business practices and better workplace organization belong to organizational innovation, too.

<sup>2</sup> DRVO JE PRVO is a pilot project with objective to increase wood consumption in Croatia and also to increase consumer awareness about benefits of wood and wood-products quality and to strengthen the competitiveness of domestic wood processing firms. It was founded in 2007 by three stakeholders: Croatian Chamber of Commerce, Croatian Forests and former Ministry of Agriculture, Forestry and Water Management (United Nations Economic Commission for Europe UNECE, Timber Committee: Country Market Statement: Croatia, 2007)

Lack of consistent legislature in forestry is another shortage, not giving private forest owners demanding management rules as state forests and also a need to employ a forester professional in order to manage the forest in an appropriate way.

As the most evident is a lack of Forest National Programme that is developed in almost all countries in Europe.

Improvements in process are seen as implementation of new machinery or technology or transportation innovation.

### ***Fostering and impeding factors to innovation process***

Fostering and impeding factors are sorted out into the same sub-groups: Economic Legislative, Social, Environmental, Technical-organizational and others. Respondents should state if they suppose given factors as effecting forestry or not. Then, they should rate a level to each of the groups. Evaluating of the results was made with the same point method as levels of developed innovations, so results on the Figures 5 and 6 were made as a sum of all ratings from respondents. Points are presented at the top of each column and were calculated as a number of respondents multiplied by appertaining marked level.

Economic factors fostering innovation process refer mainly to financial support – from public resources, Rural development programme, EU programs and projects and private resources, as for example – supply of financial products (credits).

Under legislative factors we understand law on national and also European level. Croatia is not member country of European Union, but is accession country and should follow some European legislature due to the process.

Social factors are connected with interactions among people. They represent the ability of forest owners and managers to cooperate with other subjects (forest enterprises, forest owners, managers, their own co-workers, if they have any) and we can classify into this group of factors also cooperation with services, suppliers, purchasers and state administration. In general, we can indicate, that it represents all of possible interaction in the innovation process.

Cooperation and the ability to accept innovation ideas are the basis condition to innovation process. From this point of view, social factors have two different perceptions: internal – connected with owners or managers attitude towards innovation and external – cooperation and integration.

Factors that can influence a community in the sense of certain group of people, which can forest owners affect by their decisions, are called environmental. It refers to problems of environment and nature protection. Another integrated part is existing environment, that can

not be change in a short term view by forest owners and it shapes the possibilities of future innovation that can be developed in such an area.

Technical-organizational factors are linked to before implemented innovation and they foster further development of innovation. For example, changes in use of new technology and other factors as consulting activities provided from state and independent consultants or the possibilities of further education or third-age education. Offering of information services about innovations on a regular basis is important factor that should help owners or managers of small-scaled forests, which are not interested in this agenda.

### ***Fostering factors***

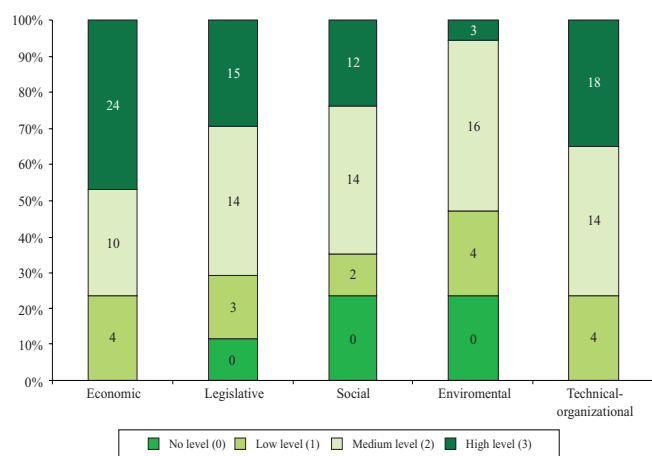
From the results of the questionnaire, it is visible, that there are two groups of fostering factors, which are undoubted, most important– economic and technical-organizational; each respondent indicated them as fostering. Another groups as legislative (with 15 answers from 17) and then social and environmental (both with 13 answers from 17) are not seen by respondents as much fostering as the first two groups. It depends on the matter of respondent's interest.

**Table 4.** What are the fostering factors for innovation process?

<b>Groups of fostering factors</b>	<b>Answer YES</b>	<b>Answer NO</b>
Economic	17	
Legislative	15	2
Social	13	4
Environmental	13	4

A qualitative approach determines, which of these factors are more important according to respondents. The results are quite similar to quantitative analysis in Table 4.

The highest number of point – 38, is assigned to economic factors as finances pose the highest prerequisites in processes of innovation implementation. Followed by technical-organizational (36), legislative (32), social (28) and environmental (23 points). This graduality of fostering factors regarding innovation is sensible. Paying attention mostly to technical facilities and organizational condition means that there should be a previous condition that will consequently help to develop innovations. Legislative factors, however, plays an important part in the process, giving boundaries to the innovations that could be developed and also to a mode, how they could be implemented, because forest enterprises should range only in a way that is permitted by the law. This condition is connected also to environmental factors – mostly



**Fig. 5.** Ratings of the fostering factors to innovation process  
Source: *Innovation and Entrepreneurship in Forestry in Central Europe*, RAMETSTEINER, WEISS, KUBECZKO 2005.

nature protection. Social factors as one of the less rated factors could indicate that people are aware that a will of a subject, who is likely to introduce or implement innovation is not sufficient. Most of the new ideas that can be presented in particular enterprise are at the end concluded by management, so such proposals are reliant to their decisions. It has importance, but poses a subjective problem to innovation implementation. Results are presented below in Figure 5.

Other fostering factors are long-term education, level of knowledge, political will to introduce such an innovation or political pressure and advocacy.

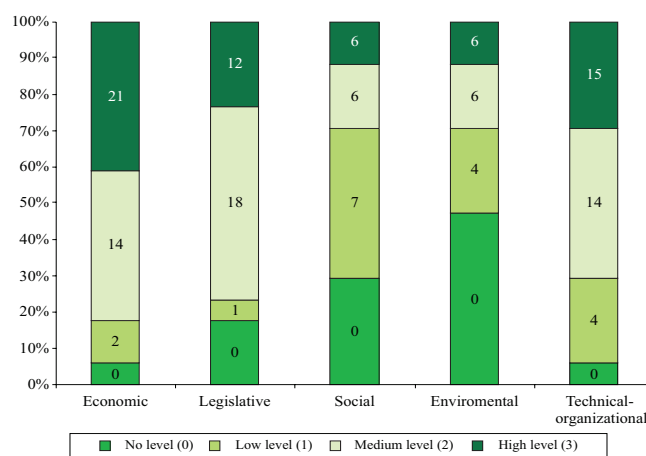
#### Impeding factors

Respondents suppose the same groups of factors – here as impeding – not as much affecting innovation process. It results from the number of answers that designate factor as impeding. The most impeding factors from the respondents view are economic and technical organizational, which are also most important fostering factors. Legislative factors are not found as impeding in three cases, social in 5 and environmental in 8 cases.

Significance of impeding factors is measured the same way as by fostering factors. Proportion of ratings in the entire 5 groups is very similar to the fostering factors.

**Table 5.** What are the fostering factors for innovation process?

Groups of impeding factors	Answer YES	Answer NO
Economic	16	1
Legislative	14	3
Social	12	5
Environmental	9	8
Technical-organizational	16	1



**Fig. 6.** Ratings of the impeding factors to innovation process  
Source: *Innovation and Entrepreneurship in Forestry in Central Europe*, RAMETSTEINER, WEISS, KUBECZKO 2005.

We can conclude that people consider the same groups of factors – mostly economic and technical organizational as most important, whether taking them as fostering or impeding. Figure 6 presents the complete results with the correspondent points to each category.

#### 4. Discussion and conclusions

This survey aims to research with a method of directed interview based on questionnaire what are perceptions of people interested in forestry about a rate of innovation management in their country. Because, innovation belongs in the recent time to more significant themes and priorities in forestry that should be researched, it is vital to find out what do professionals from different institution think about the importance of this problematic.

When asking on developed innovation and on the other hand on necessary innovation, we concluded that the value is put on product and organizational innovation in both cases. As product innovation are the very best example of innovation, we can say, traditional kind of innovation, it is claimed as developed and also to be developed in the future. The problem of suchlike approach is that people do consider mostly new product as innovation. However, process innovation is closely connected to product as other type of presented innovation, integrated into groups. Facing problem of marketing, it is a part of innovation activity not yet fully accepted by transition countries of Central and Eastern Europe, but some marketing initiatives already started. Respondents are aware of the problem not taking into account marketing strategies in forestry as in other sectors. Progress in organizational changes rests mainly in the restructuring of the state enterprise Croatian Forests and in organizational change of forest institute and founding of new organizational unit for managing private forests. Constant adaption of organization and institutes towards



new challenges in forestry must be inherent part of the process of organizational innovation. This rule is applied naturally to all of innovations that should accommodate to new-arising condition, not only the ones originated in forestry. The idea of implementing a new proposal should count on changing conditions, mainly economic and moreover, it could be built as an innovation that is easily to adapt. This process includes, however, strategic view of forest owners or managers and business approach. Regarding conservative management of many forests, it is supposed to be a challenging plan.

Fostering and impeding factors play an important part in implementation of new ideas. Economy and problems with funding new projects are both fostering and impeding (as other types of factors that were the same), depending on the success of projects and it also differ from case to case. The second important type form in the both groups, technical-organizational factors that are again linked to product innovation. Next groups of factors are less important to respondents posing not so much affect to innovation.

Concluding the results, it is obvious that the most problems for implementing new innovation idea rest in the finances, that has three possible resources – internal from the enterprise profit, external – from state, in the form of state subsidies or another support and finally from EU funds, that will be possible to draw fully after the accession process in 2012. Performed ideas towards innovation and projects initiatives are on a quite high level. Higher effectiveness could be reached in the sense of changing view of traditional forest management, not only because it is a mainstream in European forestry, but also it gives much more possibilities to forest development and it brings additional method of funding for forest enterprises or owners.

### Acknowledgement

This paper is supported by Slovak Research and Development Agency under the contract No. APVV-0692-07.

### References

- Country Market Statement: Croatia, 2007. United Nations Economic Commission for Europe UNECE, Timber Committee. Dostupné na internete: <http://www.unece.org/timber/mis/market/market-66/croatia.pdf>.
- EDER R., 1989: Die Rezeption von Innovationen in der Forstwirtschaft, Dissertation an der Universität für Bodenkultur, Wien, Austria.
- EDQUIST C., 1997: Systems of innovation: Technologies, institutions and organizations. Pinter London, p. 41-63.
- Forest Extension Service for private forests in Croatia. Dostupné na internete: <http://suma-ss.hr/forest-extension-service-for-private-forests-in-croatia.html>.
- GLÜCK P., 1991: Innovative Forstwirtschaft. Schriftreihe des Instituts für forstliche Betriebswirtschaft und Forstwirtschaftspolitik, Band 11, Universität für Bodenkultur, Wien, Austria.
- Guidelines for Collecting and Interpreting Innovation Data: Oslo Manual, 2005, 166 pp. A joint publication of OECD and Eurostat. Dostupné na internete: <http://browse.oecdbookshop.org/oecd/pdfs/browseit/9205111E.PDF>.
- LUNDVALL B.A., 1992: National systems of innovation: towards a theory of innovation and interactive learning. Pinter Publishers, London.
- NELSON R., WINTER S., 1977: In search of a useful theory of innovation. *Research Policy*, 6(1): 36-77.
- NELSON R.R. (ed.), 1993: National Innovation Systems: A Comparative Study, Oxford: Oxford University Press.
- PREGERNIG M., 2000: Putting science into practice: the diffusion of scientific knowledge exemplified by the Austrian Research Initiative against forest decline? *Forest Policy and Economics*, 1(2): 165-176.
- RAMETSTEINER E., KUBECZKO K., 2003: Innovation und Unternehmertum in der Forstwirtschaft in Zentraleuropa – Arbeiten und vorläufige Ergebnisse des EFI RPC Innoforce, Paper presented at the 35. Forstpolitikwissenschaftler Innentreffen, Gent 9-11 April 2003.
- RAMETSTEINER E., WEISS G., KUBECZKO K., 2005: Innovation and Entrepreneurship in Forestry in Central Europe, European Forest Institute, Research report 19, Brill Leiden Boston, 176 p.
- Vienna Resolution 2: Enhancing Economic Viability of Sustainable Forest Management in Europe, 2003. Fourth Ministerial Conference on the Protection of Forests in Europe. In Europe, 2003. Fourth Ministerial Conference On The Protection Of Forests In Europe, 28 – 30 April 2003, Vienna, Austria. Dostupné na internete: [http://www.foresteurope.org/filestore/foresteurope/Conferences/Vienna/vienna\\_resolution\\_v2.pdf](http://www.foresteurope.org/filestore/foresteurope/Conferences/Vienna/vienna_resolution_v2.pdf) [26.7.2010].