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INNO-FOREST

CASE STUDY REPORT

Case study enterprise:
**State Enterprise for Management of Forests
"Srbijašume", Belgrade**



Србијашуме

Recreational innovation case:
New trim trail in Obrenovac

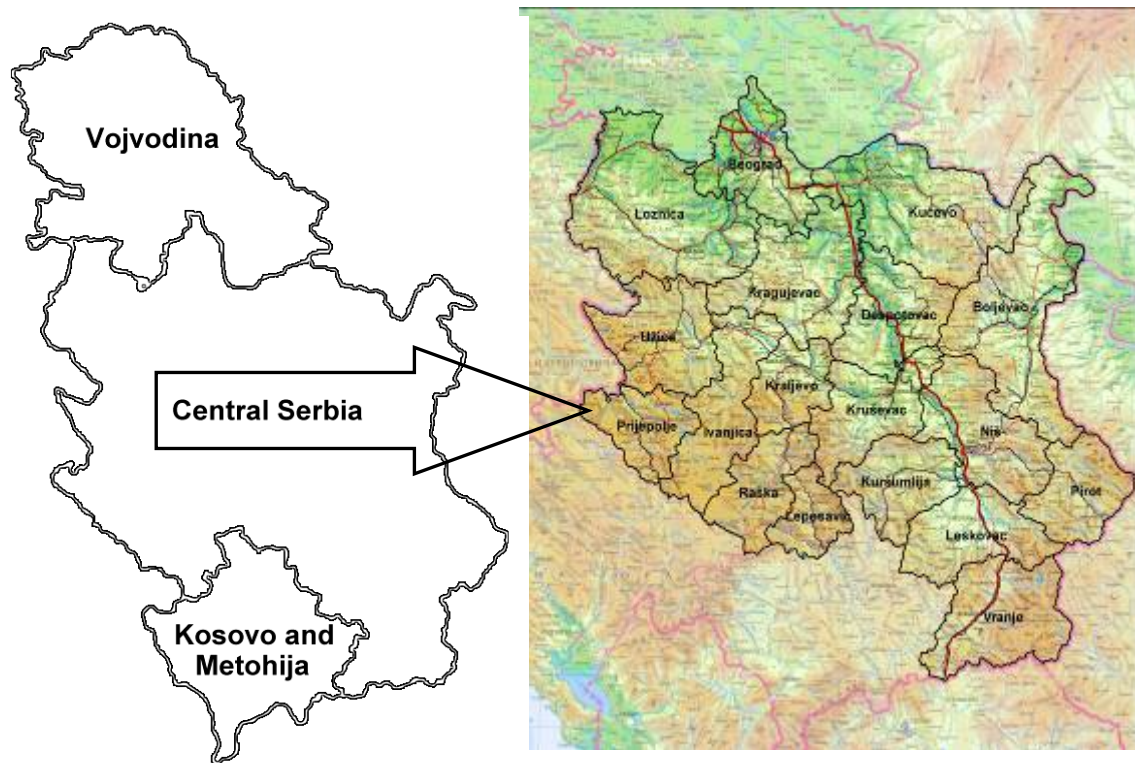
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I) About enterprise

1. Description of the enterprise and the business area

State Enterprise “Srbijašume” is in fact centralized enterprise for forest management in Serbia. Headquarters – General Directorate of SE “Srbijašume” is in Belgrade, and it manages forests that are located in western, central, eastern and southern parts of the country, without responsibility for forest areas in Vojvodina Province and in Kosovo and Metohija Province neither.



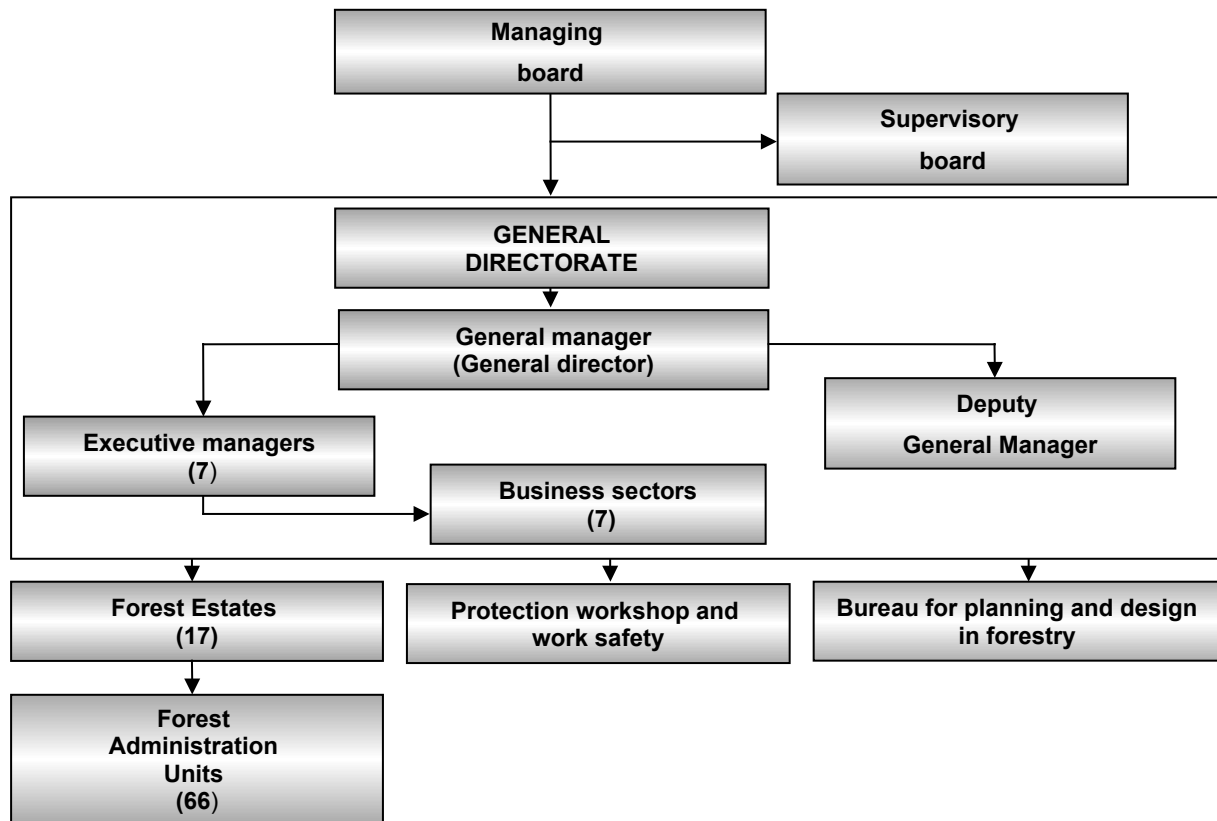
Picture 2: Geographical position and territorial division of SE “Srbijašume”

By 1991 Forest Law, Serbia was administratively divided into 27 Forest Areas covering municipalities of larger cities, with areas of both state and private forests. Today SE “Srbijašume” manages forests through 17 Forest Estates (FE) which are equal to those Forest Areas in Central Serbia, as seen on Picture 2. FE are further divided into Forest Administration Units (FAU), and there are 66 of them in whole SE. Because of such territorial division SE operates on three levels:

1. General Directorate of SE - creates business and development policies and is divided into seven business departments (Department for Silviculture and forest protection; Department for utilization of forests and other resources; Department for development and International cooperation; Department for finances and accounting, Department for commercial affairs, Department for legal affairs and Department for marketing and public relations).
2. Forest Estates (17) – are administrative connection in the middle that helps to run the business on local level by creation of forest management plans and other means of support to FAU. Every FE consists of several Services (Service for commercial affairs, Service for forest utilization, Service for

planning and management, Service for finances and accounting, Service for legal and general affairs) and sometimes FE have special Working Units as Machinery or Nursery.

3. Forest Administration Units (66) are base units for which forest management plans are made. They consist of Management Units (MU) for management of state forests (624) and Districts for private forests (239).



Picture 3: Organizational scheme of SE "Srbijašume" (Working Plan 2221)

According to the Forest Law SE "Srbijašume" was formed to perform following duties (business activities):

- Silviculture, forest maintenance and regeneration, reconstruction and reclamation of degraded forests and brushwood, production of forest seeds and nursery stock and establishment of new forests and forest plantations,
- Enhancement and utilization of multiple benefit functions of forests,
- Production of forest assortments and exploitation of other forest products and their transport, forest recreation, game breeding and hunting, and other aspects of forest utilization,
- Design, construction and maintenance of forest roads, parks and green spaces for recreation and other facilities used in forest management,
- Development of the programmes, projects and plans of forest management,
- Soil survey for special purposes,
- Professional jobs in private forests,
- Wholesale and retail,
- Foreign trade,
- Economic activities in foreign countries
- Hunting and game breeding,

- Tourism (hunting and recreation),
- Nature protection,
- Fishery
- Also SE can perform other activities and jobs defined by the Statute of SE, as long as they are not in disturbing the basic activities obliged by the law (www.srbijasume.co.yu).

1.1. Short history

Enterprise was founded by the State on the 1st of October 1991 after the current Forest Law was adopted (25th of July 1991). To create SE “Srbijašume”, 54 smaller independent companies (some of which were previously independent Forest Estates) were united. At that time it managed around 1 110 000 ha, divided into 27 FE, 110 FAU with of over 10 000 employees.

First change happened in June 1999 when International UNMIK Administration was established over Kosovo and Metohija. SE “Srbijašume” was omitted control over 6 FE, which was 21% of forest area. In period until 2000 SE “Srbijašume” was owner of 5 dependant companies – 4 wood processing companies and one that was fabricating food, mineral water and conducted trade of agricultural products. But in 2001 process of restructuring of the enterprise started with plan to privatize dependant companies (segregate non-core duties, segregate machinery, reorganize parts of enterprise that were not profitable) and optimize number of the employees. Next reduction came at the end of year 2002, when 4 FE from Vojvodina according to law passed in Autonomous Province Vojvodina formed new SE for forest management – “Vojvodinašume“. New SE segregated another 8% of forest area and 1700 employees. Today SE manages around 916 000 ha and does professional services for private owners on another 996 000 ha.

Altogether, after that separation number of employees was around 7050, which was still above the needed workforce for the available resources. As restructuring plans and social program went on, the number was further reduced for another 68%, or 3,344 remaining in SE “Srbijašume”.

1.2. Main ratios and personnel

Total income	57,851,803 €
Total expenditures	56,661,918 €
Profit	1,081,100 €
Total wages	16,564,199 €
Wages (per employee, per month)	410 €

Table 1: Some of the main ratios of SE “Srbijašume” for 2006 (PPT).

As previously mentioned, total number of employees now is 3,344. There are 491 forestry engineers and 119 highly educated staff from other branches. Rest of the staff is 922 foresters with secondary forestry education (forest technicians) and approx. 1800 unqualified employees with either secondary or elementary education.

1.3. Main products, services, markets and customers

a. Wood production

Roundwood production:			%
Roundwood of hard broadleaves	253393	m ³	61.6
Roundwood of soft broadleaves	67103	m ³	16.3
Roundwood of conifers	90266	m ³	22.1
Total	410762	m ³	100.0
Cordwood production:			
Hard broadleaves	614700	m ³	95.6
Soft broadleaves	22568	m ³	3.5
Conifers	5984	m ³	0.9
Total	643252	m ³	100.0
Ratio of total production of technical wood and cordwood:			
Production of roundwood (logs + roundwood)	410,762	m ³	39
Production of cordwood (40 % pulpwood, 60 % fuelwood)	643,252	m ³	61
Total	1,054,014	m ³	100

Whole amount of roundwood and fuelwood is sold on domestic market (to sawmills and citizens), and none is being exported. There is also problem with placement of pulpwood since there are no capacities for processing, and at the time it is not competitive on foreign markets (Working Plan 2225-1).

b. Silviculture and afforestation

Silviculture and afforestation activities:	ha (%)
Simple reproduction of forest	45,415(98%)
Forest regeneration	7,126 (15%)
Natural regeneration	6,109 (13%)
Artificial regeneration	1,017 (2%)
Forest tending	38,289(83%)
Extended reproduction forests	964 (2%)
Total (Simple rep. + Extended rep.)	46,379 (100%)
Tree marking	1,244,855

There are some subventions from the Ministry of Agriculture, Forestry and Water Management for these activities but they should be larger, to improve profitability of SE "Srbijašume" (Working Plan 2225-14).

c. Real-estate business

Real-estate business is based on the fact that SE "Srbijašume" has ability to rent land areas or buildings owned by state to citizens and other companies to use for their needs. Forest areas are not being rented, just forest lands that are without trees. There are three basic types of rentals available:

- Forest land for rent (telecommunication antennas, storages, waterlines, agriculture)
- Business/Office quarters rent (for retail services, offices, garages, storages)
- Exploitation of mineral resources (quarries)

These rents are mainly from domestic telecommunication companies, banks, as well as domestic construction companies and furniture retailers (Working Plan 2225-2).

d. Hunting and fishing

SE "Srbijašume" manages 42 hunting grounds on total area of 501,161 ha. On that area SE manages approx. 11,000 large game animals and 80,000 small game animals, with year plan to shoot 1,800 large game animals and 3,000 small game animals.

SE applied to the State for management of several water objects on Sava and Danube rivers, and got 4 sections of those rivers on 5 year terms which expire at the end of this year. On those areas SE charges permits for sport fishing, professional fishing and fish trade and conducts control of those activities (Working Plan 2225-3).

e. Non Wood Forest Products

Mushrooms, forest fruits, medicinal plants, agricultural products, fruits, and timber assortments (from private forests) are being purchased from private collectors/producers and then processed or traded further.

The market, mainly foreign (90%), dictates which products, in which quantity and year are to be predominantly procured. But the working assets also largely determine the quantity of purchased products, their sale and their storage. Unfortunately policy of SE does not make possible the utilisation of all potentials in these activities (Working Plan 2225-4).

f. Management of protected areas

SE "Srbijašume" manages 96 protected areas, the area of which is 242,440 ha, which accounts for 47.8 % of the total protected nature in the Republic of Serbia. According to the Law on Environmental Protection, the means for the protection and development of the protected nature are provided either from the Budget of the Republic of Serbia; or from the income of the manager, the compensation for the utilisation of the protected area, and from other sources. SE "Srbijašume" made income out of Protected Natural Goods that was only 1/3 of expenditures for their management (Working Plan 2225-12).

g. Services for private owners

Along with SE "Vojvodinašume" and SE of National parks, SE "Srbijašume" is one of providers for services in private forests. Professional services in private forests are:

- Data collection for temporary annual plan for management of private forests
- Making of the temporary annual plan for management of private forests
- Tree marking for cutting and issuing documentation
- Organizing forest protection work

Users of these services are 500 000 different owners, either citizens who have forests on their properties or churches or monasteries that have forests on their holdings. These services are not paid by forest owners, but directly from the State Budget (Working Plan 2225-5).

h. Nursery production

Nursery production is established in 33 registered nurseries on area of 234 ha. The areas of the nurseries are not uniform, ranging from 1 to 25 ha. There are 137 registered seed production areas, with the total area 980 ha. In 2004, 2030 kg of forest seed was produced, 14,329,000 forest seedlings and 220,000 horticultural seedlings. During 2005, 4,900,000 forest seedlings were sold. 2,700,000 seedlings were sold to external buyers and 2,200,000 seedlings sold within SE to other Forest Estates. External buyers are the Ministry of Agriculture, Forestry and Water Management, SE "Vojvodinašume", Youth organization "Gorani", Water Management companies, SE of National Parks, other State Enterprises, individual private persons and international buyers.

i. Tourism and accommodation services

SE "Srbijašume" has 10 tourist accommodation objects and 2 restaurants. SE "Srbijašume" has tourist agency – "Šumeturs", within Forest Estate "Belgrade", that also provides tourist arrangements in external accommodation – summer and winter destinations in country and abroad (Working Plan 2225-6).

j. Green engineering

Green engineering is organised mainly with purpose of contending for services to maintain and expand suburban forest areas that are under charge of Belgrade city administration, but also for other similar contracts. This activity is run by horticultural engineers within FE "Beograd" and has been highly profitable in recent years. SE "Srbijašume" practically has no competition when it comes to the maintenance of suburban forests, which have a protective and recreational-tourist function (Working Plan 3209).

1.4. Main trends in the business area

a. Wood production

Although there was minor decrease in roundwood production since 2000, it is mostly due to felling structure. Increase in demand for roundwood is expected. Also rise in demand for cordwood as bioenergy source is expected from Western Europe due to EU policies (Working Plan 2225-1).

b. Silviculture and afforestation

Silviculture, tending and afforestation are done according to Forest Management Plans created for 10 year periods approved by the Ministry of Agriculture, Forestry and Water Management. They should be made to fulfil of Spatial plan of Republic of Serbia – to increase forest area in Serbia from 27% to 41% by 2050, but with current trends in afforestation that is not likely to happen at expected time (Working Plan 2225-14).

c. Real-estate business

Increase of demand for areas and objects is being expected due to foreign investments in telecommunications and improvement of motorway infrastructure. Due to rise in demand, increase of prices is also expected (Working Plan 2225-2).

d. Hunting and fishing

Improvement in quantity and quality of large game populations is needed to make SE "Srbijašume" more competitive on regional level. 94% of customers are domestic hunters and hunters associations and the rest of 6% are foreign hunters – mostly from Austria, Germany, Italy, Slovenia and Spain.

SE believes that it has done good job managing water objects in its custody and is expecting that the State will give them again 5 year management rights (Working Plan 2225-3).

e. Non Wood Forest Products

Fulfilment of requirements set by EU demands investments and development of technological capacities to produce final products for which demand is going to grow. This field is not recognised by SE policy as important enough at the time, because of inability to compete with smaller specialised private companies, which often do not play by the rules. So this sector is stagnating now on low branches (Working Plan 2225-4).

f. Management of protected areas

Projected area of PNG in Serbia is around 10%. Increase to that percentage would be further burden to the SE "Srbijašume" if subsidies from the State Budget remain as low as they are. There is also idea to create special organizational unit within SE "Srbijašume" for management of PNG (Working Plan 2225-12).

g. Services for private owners

These services are provided by the same forest engineers that have to manage state forests, and it difficult for them to do both jobs simultaneously. These services are paid from the State Budget. There is idea to create special organizational unit for management of private, but there is also belief that Extension service for private owners should be organised within the Ministry of Agriculture, Forestry and Water Management, thus separated from SE (Working Plan 2225-5).

h. Nursery production

SE has very strong position on domestic market in this area. Upward trend of sales is expected because of need for increase of forest area according to Spatial Plan of Republic of Serbia. But unfair competition by private firms on the market of horticultural seedlings etc. - do not provide the security in the planning and production of seedlings.

The current state of nursery production points to the need of rationalisation of nursery production and upgrading of technical equipment. It is also necessary to revise the forest seed sources, regarding their state and the demands of seed types and quantity (Working Plan 2225-6).

i. Tourism and accommodation services

Expectations are that there will be increase in number of tourists visiting for hunting purposes, ecotourism and tourism of special interests. This is area where significant improvement is possible, but it has to be done in such manner not to disturb primary duty of SE - forest management (Working Plan 2225-7).

j. Green engineering

This activity has very good outlook. Expansion of business is expected due to Belgrade city administration plan to increase green space area, from the present 15% to 26% by 2021. Plan is to increase number of employees on this activity and create new organisational structure which would increase competitiveness in tenders for the procurement of works. That is because more competitive unit prices can be achieved by decreasing the costs of work done (Working Plan 3209).

2. Present situation regarding innovation aspects

To get insight on present situation regarding innovation aspects in SE "Srbijašume" interview with Mr. Vojislav Janković, Executive manager of Sector for Development and International Cooperation in SE General Directorate was conducted. Major processes mentioned during the interview were restructuring of SE, full digitalization of business, new way of monitoring wood production and modern seed processing centre.

2.1. Present innovations

a) Restructuring of SE "Srbijašume"

This is a process that started in 2000 in the initiative of the Government, who wanted reorganize all SE to make them meet the demands of market economy. SE "Srbijašume" had to change organizational structure, cut the irrational (big and not profitable) parts of the enterprise and reduce the number of employees through social programme. This project was conducted in cooperation of the Ministry of Agriculture, Forestry and Water Management, SE "Srbijašume", OBF-Consulting and Austrian Agency for Development (ADA).

b) Full digitalization of business

Full digitalization of business is going to solve two big issues - communication and slow flow of the information through the SE. Plan is to create Virtual Private Network for SE and new software subsystems for business (accounting, contracts, e-mail and planning) and forestry (planning, database of forest resources and GIS). VPN would have server in the SE General Directorate, and all other units (FE, FAU) would work on it through local terminals. This process is half way through. Forest resources database is finished and GIS is expected to be done by the end of 2008. Challenge of this innovation is a number of staff members that are old and are not willing to adopt such novelty – they want to work the "old fashion way", they don't need computers and prefer doing things "manually".

c) Modern seed processing centre

Project of modern seed processing centre with bank of genes in Požega in FE "Užice" is now phase of production. Swedish BCC equipment is about to be installed into new building. This object will replace the old seed procesing facility from the XIX century.

d) Visitors centre in nature park "Golija – Studenica"

This object was recently opened by SE GM Mr. Ješa Erčić. It is an old forest house that has been renovated and adopted for visitors. Purpose of the centre is education of visitors and local communities about values of nature that has not been changed

yet and about biodiversity protection. It is expected that this will promote rural development and encourage local communities to participate in planned tourist activities, production of organic food, and presentation of ecological and cultural values of the area. (www.srbijasume.co.yu)

e) Bioenergy plants in cooperation with local communities

This area is something new and is done in compliance with new policies in EU. Such plants are good because they are solution for placement of fuelwood and exploitation of forest residues while providing electricity.

2.2. Resources and working methods/strategies for innovations

SE "Srbijašume" has Sector for Development (and International Cooperation) in their General Directorate, but it is shorthanded (approx. 10 engineers is not enough for the enterprise of this size) and does not have sufficient funds to conduct own development projects. Therefore it relies on cooperation with other development centers (research, consulting and educational institutions). Concept of buying the knowledge is the principle in these conditions.

As Mr. Jankovic described, innovational processes here are derived from innovations accomplished in countries that are on higher level of development compared to Serbia. Since Serbia is not a leader in forestry sector, we depend on others experience. Working method for innovations could be roughly described through following steps:

- Do survey what is done elsewhere.
- Analyze applicability to our surroundings.
- Do cost/benefit analysis.
- Look for capacity for such investment (financial) – many ideas stop here because there is not enough money – investment potential is small, bank loans have very high interest rates, own funds are small, budget funds are uncertain and donations are rare.
- Production (project, revision, correction, creation of executive workgroup, physical production).
- Implementation (creation of procedures and training of employees for new positions).

3. Description of the business goals of the enterprise

Business goals for SE "Srbijašume" were set during the project of restructuring. According to the official power point presentation of SE, they are:

- Develop a company oriented to the market and the buyers, for sustainable management of forests, other wooded land, and goods.
- Increase the profitability and increase the competitiveness at the European level; preparation for the European integrations.
- Increase the value and upgrade the state of natural resources and increase the area under forests.
- Take active responsibility for rural development, the population and the society in Serbia.

4. Future innovations the enterprise is planning to work with

a) Wood production monitoring

There is idea to implement new way of monitoring wood production with ID numbers/plates for all trees in custody of SE. It is expected that this would be end to malversations that happen in forest by disloyal employees. Right now, too much energy is being spent on suppression of corruption. Transparency is the best way to reduce the space for such things in forestry, particularly considering current social circumstances in Serbia. With such system it would be possible to trace logs from stump to buyer without any losses. Since this is very large investment it is on hold right now, and SE is in search of possible solutions.

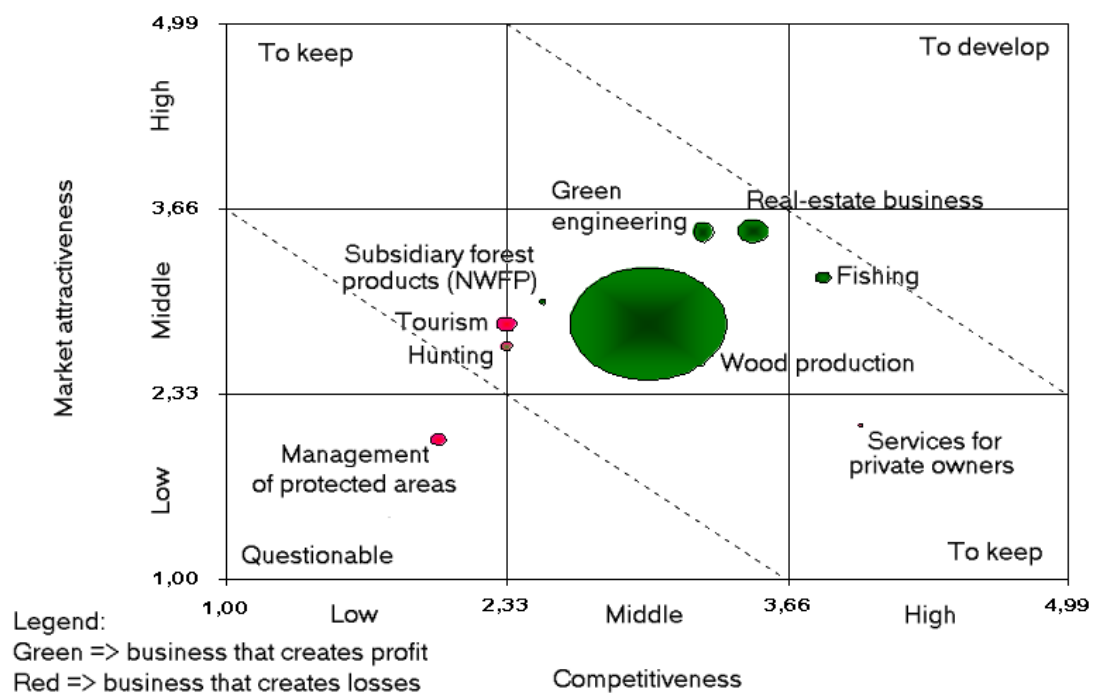
b) Transition to Joint Stock Company

Since Serbia is a country with economy in transition, many state companies have been privatized. There is a belief that something like that should happen to SE "Srbijašume". Solution for that would be transition to Joint Stock Company of closed type in which owner would be the State. Such model exists in Austria and Bavaria for example. This would actually be extension of the restructuring process.

5. Analysis and recommendations for the enterprise how to enhance the innovations:

5.1. Market analysis

After it has been restructured SE "Srbijašume" had to conduct analysis of main activities. That was done to determine importance of strategic activities and to create development strategies for all of them.



Picture 4: Profit margin of the main bossiness activities of SE "Srbijašume".

It is clear that major forces of SE are wood production and real-estate business which are situated very well on the market because of the fact that SE is user of state owned forest and forestland so it can easily benefit from that. Fishing is something that is done along the way, through 5 year management rights over parts of Danube and Sava River. Rest of the activities are not making profit – either because offer made by SE is not attractive enough or because competition is ahead of SE (for example in case of NWFP). Management of protected areas and services for private owners are duties of SE subsidized by the State and at the time, because of legislative frame, there is no real market for them.

5.2. Resource analysis - knowledge, networks

Considering staff numbers and qualifications SE has good knowledge base to run and develop its forestry activities. Restraining factor is lack of own centre for research and development of new solutions.

On the other hand, through Sector for Development and International Cooperation SE has very good cooperation domestic educational (Faculty of Forestry, University of Belgrade, Forestry High Schools in Kraljevo, Sremska Mitrovica) and research institutions (Forestry Institute, Belgrade and Institute for lowland forestry, Novi Sad) as well as good relations with some foreign institutions (OBF-Consulting, Austria).

5.3. Resource analysis - financial and other material resources

Altogether SE “Srbijašume” manages 915,972 ha of state owned forests and provides expert support for private owners on 996,581 ha. Total volume of those forests is 115,723,135 m³, total annual increment is 2,961,057 m³ and average annual increment is 3.8 m³/ha/year. Approx. 60% of increment is being removed every year, which is total drain of 1,750,116 m³. Broadleaf species account for 84% of the volume, while conifers are the rest of 16%. Main species by volume are Beech (65%), Oak (15%), Spruce and Fir (7%), Pine (7%) and others (6%). In forests managed by SE “Srbijašume” natural high forests and forest cultures cover 56% of area, coppice forest 30% and shrubs and brushwood 14% (PPT).

According to interview with Mr. Jankovic ability of SE to invest into development on its own is not significant. At this time such projects are funded in cooperation with external investors and with help from the State.

6. A’WOT – analysis about enterprise’s innovation ability

This specific form of SWOT analysis was conducted by identification of the most important internal and external factors for innovation ability of SE “Srbijašume” from the interview with Mr. Vojislav Jankovic, and from analysis SE conducted in 2005 to evaluate restructuring process and determine new business policy.

6.1. SWOT – about enterprise’s innovation ability

Strengths	weights	scaled	results
s1 - Staff with high expert and practical knowledge	90	0.204	0.0411
s2 - Good collaboration with scientific and research institutions in Serbia	100	0.227	0.0457
s3 - Number of staff has been optimized	60	0.136	0.0274
s4 - Enterprise covers whole area of Central Serbia	40	0.091	0.0183
s5 - Integral business policy within SE	60	0.136	0.0274
s6 - Business credibility and tradition	60	0.136	0.0274
		0.930	0.1872
Weaknesses			
w1 - Big administration, complicated passing of decisions	60	0.103	0.0208
w2 - SE does not have own Development Centre	100	0.172	0.0346
w3 - Insufficient funds for own investments	70	0.120	0.0242
w4 - Non-motivated short term employees	80	0.137	0.0277
w5 - Large differences between natural resources quality, which has directly influence on business success	40	0.069	0.0138
w6 - Non-wood forest product business is not considered as important enough	60	0.103	0.0208
w7 - Information system is not completed	80	0.137	0.0277
		0.842	0.1695
Opportunities			
o1 - Attracting foreign investments/partners	90	0.309	0.0623
o2 - Harmonization of new legislature that complies with EU regulations	50	0.172	0.0346
o3 - Wide range of products and services required by market	60	0.206	0.0415
o4 - National Forestry Development Strategy and taking part in rural development	50	0.172	0.0346
o5 - Transition into different form of organization - Joint Stock Company	60	0.206	0.0415
o6 - Finalization of the restructuring process	60	0.206	0.0415
o7 - Energetic policy of EU - promotion of renewable energy sources	50	0.172	0.0346
o8 - Improvement of relations with international scientific and research institutions	100	0.344	0.0692
o9 - Export to foreign markets	80	0.275	0.0553
		2.062	0.4151
Threats			
t1 - Influence of political changes in the Government on SE and other political pressure on forestry	100	0.258	0.0519
t2 - Extremely bad bank loans with high interest rates	80	0.206	0.0415
t3 - Transition is slow process	60	0.155	0.0311
t4 - Corruption	60	0.155	0.0311
t5 - Uncertainty of subsidiaries by the State	80	0.206	0.0415
t6 - Low % of forestry in GDP (0,03%) - bad base for lobbying politicians	60	0.155	0.0311
		1.134	0.2283
TOTAL		4.968	1.0000
Relative weights of SWOT groups:			
the most important strength	66	0.227	
the most important weakness	50	0.172	
the most important opportunity	100	0.344	
the most important threat	75	0.258	
total	291	1.000	

6.2. Calculated AWOT results about the importance of the factors

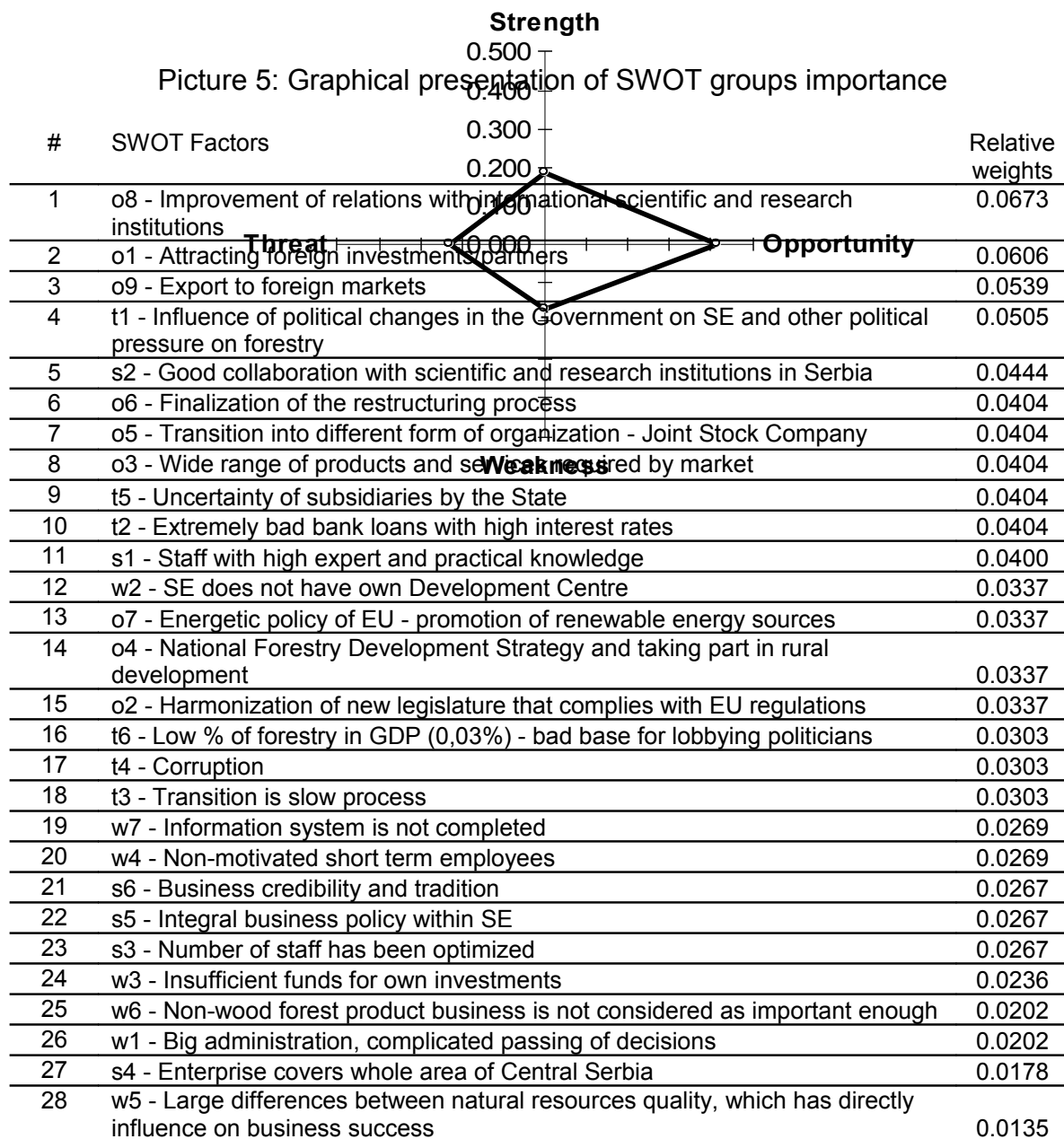
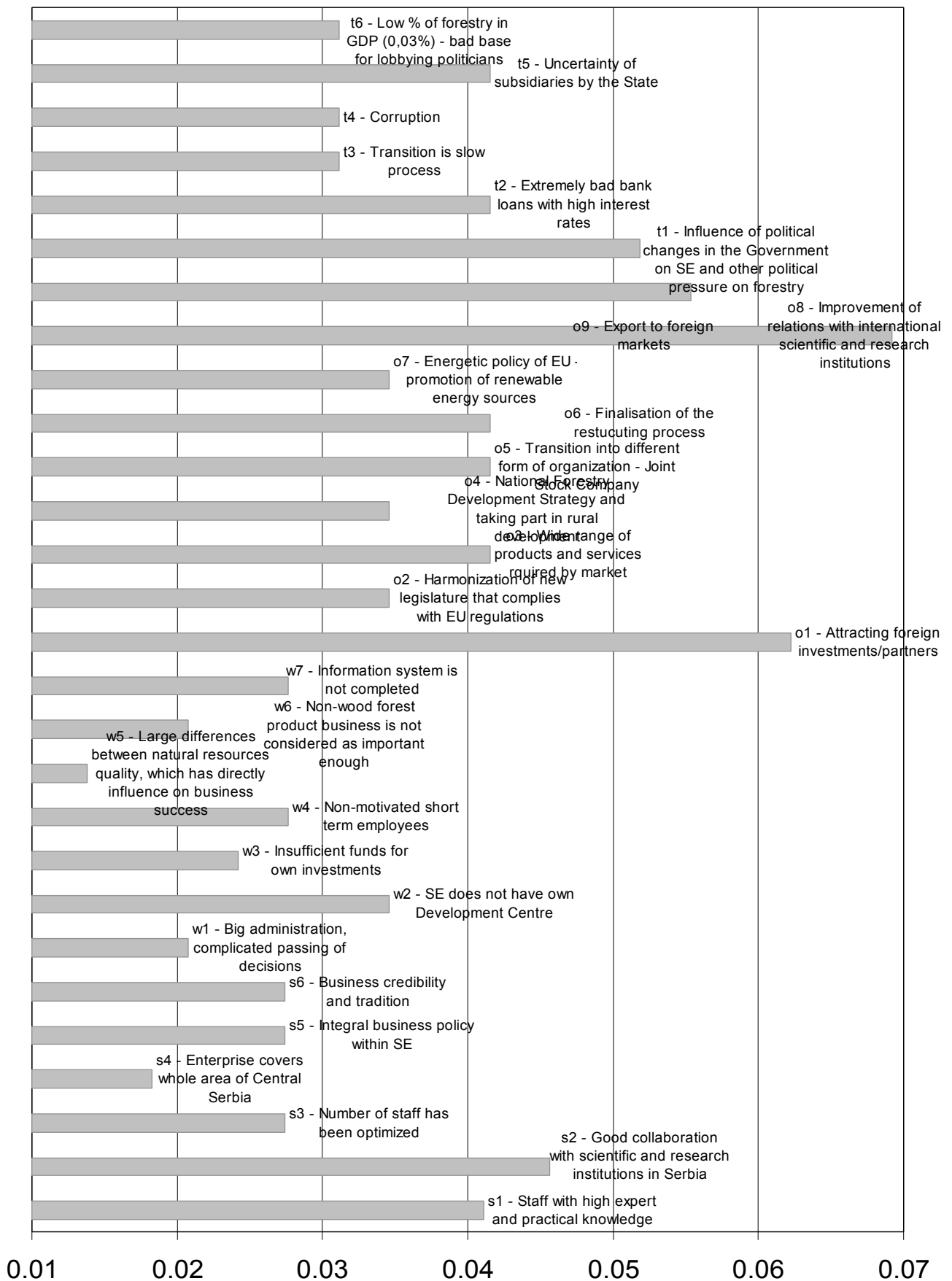


Table 2: SWOT factors sorted by descending importance



Picture 6: Graphical presentation of SWOT results

6.3. Written conclusions based on the AWOT - results

AWOT results for SE "Srbijašume" innovation ability, based on factor weights given on basis of the importance of innovation factors given on the final seminar; show clearly that there is space for advance in this field.

Further restructuring and existing Forestry Development Strategy of the Republic of Serbia are certainly fostering factors for that. Similar is with European integrations and acceptance of obligations set for accession to EU. The fact that this is big enterprise is both advantage and disadvantage for innovations, depending on innovations character.

On the other hand current political and economical situation caused by transition in Serbia are creating pressure over SE management that is not necessarily promoting innovative thinking. There is problem of dependence on budget funding for large projects and some business areas that are not subsidized rightfully.

Another issue is that SE relies too much on external providers and help instead on their own, which in future can get SE in bad competitive position. Many "classical" forestry activities are done by contractors instead of own force, which results in decrease of competitiveness of SE. Engineering staff is not motivated to improve skills and knowledge (nature protection, application of GIS in planning and etc.) which is needed for improvement of competitiveness on domestic, regional and international market. This is partially due inefficient organizational form of SE and due to contemporary political situation.

7. List of recommended tasks to do:

According to research and knowledge prior the IP course my suggestions for SE "Srbijašume" would be the following:

- Create own development center that would conduct research and development of own innovations.
- Improve cooperation networks on international level by creating new connections with foreign forestry companies and research institutions.
- Finalize transition to Joint Stock Company and find its place within the Forestry Development Strategy of the Republic of Serbia.
- Follow the EU trends in forestry and be aware of latest breakthroughs in countries with forestry systems similar to ours.
- Make a breakthrough on EU market with new or improved products that would be competitive.
- Improve competitiveness in NWFP, tourism and hunting on local level by enhancement of current offer in those areas.
- Lobby politicians, so that duties covered by the State budget are duly paid and don't need to be covered by enterprises funds from other business.

On basis of what I learned during the IP course, further recommendations would be:

- Improvement of cooperation on all levels, not just in forestry sector but in other sectors, too.
- Getting more information about market. Look for the demands from society and be in constant contact with clients, ask for feedback.
- If applicable SE should differentiate products further and move up the value chain toward more innovative specialized production.
- Use quality control, standardisation and trademarks of mass products and different kind of certification systems for specialised products. Territorial marketing is one form of effective support or such products.

Certainly the most important factors for innovation capability of enterprise, as determined on the final seminar, are in following order:

- Well developed networks
- Know-how
- Open mind for innovative thinking
- Available financial resources
- Good business management, being able to cope with risks
- Good institutional support
- Knowing the market demand
- Profitability of innovation
- Available natural resources

II) About innovation case:

1. Chronology and subject of the innovation:

Innovation case I researched is a new trim trail built in vicinity of Obrenovac municipality in state owned forest which is very popular among locals for picnic and relaxation. Purpose of the trim trail is to improve recreational possibilities for local population and expand recreational functions of that forest.

1.1. Problem situation before the innovation

Municipality of Obrenovac is actually small city some 30 km south-west of Belgrade. On the confluence of Kolubara and Sava rivers is small forest called "Zabran" managed by SE "Srbijašume". Close to the forest is area with several dozen of weekend houses and a little beach on the Sava river bank in flooded part of the foreland. On holidays, or sometimes on weekends, up to 5000 people come in this area to have a break from their daily routine.

Forest "Zabran" has some 45 ha, divided into compartments 59 and 60 of MU "Košutnjačke šume", within FAU "Lipovica" in FE "Belgrade". This is forest of Pedunculate Oak (*Quercus robur*) and European Ash (*Fraxinus excelsior*) of coppice origin – it was created by clearcut in 1941. It is now almost 70 years old and in very poor condition, because it was not tended when that was needed. Issue is that it is still regarded as production forest in Forest Management Plans, while its condition and habits of local populations show need for revision of such classification.

This innovation is very useful for local population because previously if they wanted to jog and exercise they had to pay for that in a gym or figure out own ways around how to recreate. That is, because there was no open air exercise place in Obrenovac

1.2. Development and implementation of the innovation (milestones)

The first idea that "Zabran" should be recreational forest and contain a trim trail came from Prof. Dr. Lazar Tomanić. Dr. Tomanić is retired professor of Faculty of Forestry, University of Belgrade who used to lecture Forest management planning and is resident of Obrenovac. In 1986 he wrote "Study of current vegetation and project of regulation of Park Forest Zabran in Obrenovac" in which he gave foresight how should this area be developed.

In mid '90. Municipality Obrenovac created own Fund for Environment Protection (Ecological Fund or Ecofund among local population, also Ecofund in further text) with purpose of distributing funding gained from ecological taxes that are due of Thermolectric Plant "Nicola Tesla" that is in this area. Purpose of Ecofund is to invest that money into improvement of wellbeing and healthy development of youth in Obrenovac.

Ecofund is important because they are the one holding the study of prof. Tomanić and pursuing his vision. In 2002 they initiated works on tending "Zabran" as recreational forest. In that year first works were done – bush was removed around spontaneously formed path networks (in width up to 10 m) and some sanitary cuts

were made. In years to come forest was equipped with log benches, tables, trash cans and a road was made around the forest so peasants with farming land around the forest would stop crossing through the forest.

In 2006 a trim trail got into working plan of Ecofund. They made sample design how should the profile of the trim trail look in cooperation with the Institute for civil engineering. With that scheme, they requested SE "Srbijašume" to make an offer for construction of such trail through the forest, because FE "Beograd" is legal user of the forest and is very well equipped for such job. Engineers from SE projected the route of the trim trail through the forest and the construction began.

When the path was done, new contract was signed for equipping the trim with workout stations and information boards. Last works on the trim were done in March 2007 and it is open for public since.

1.3. Detailed description of the innovation and outcome

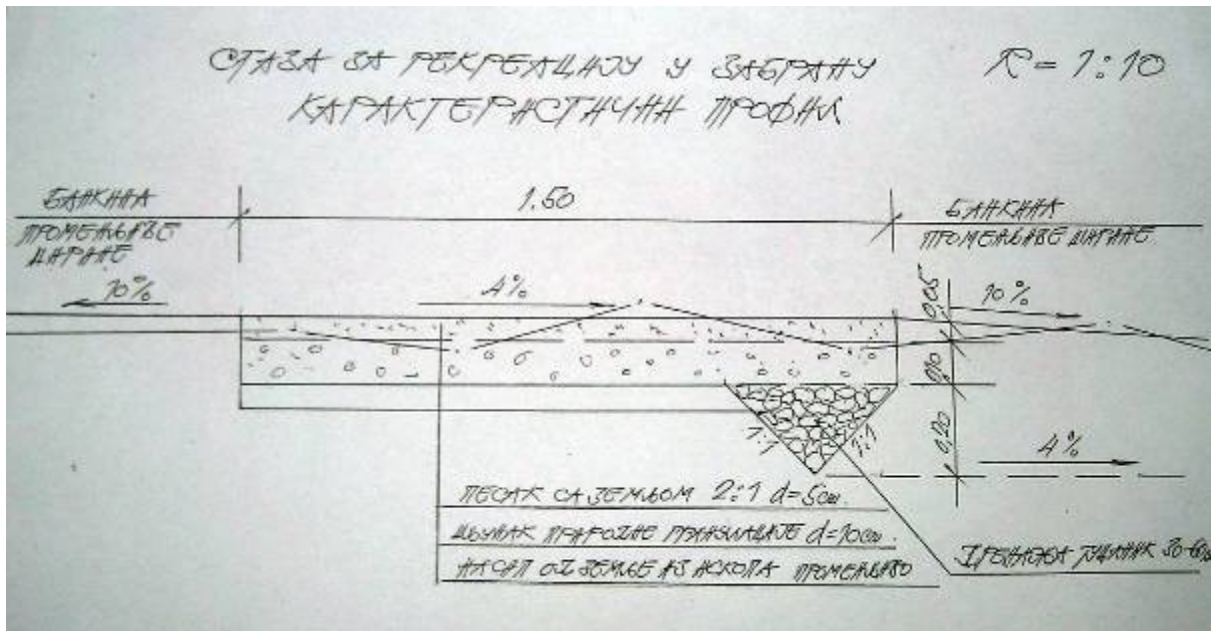
Trim trail is 1480 m long and 1,5 m wide. On two locations on the trail little wooden bridges are placed to ease crossing over parts that are in depressions where ponds accumulate after rain.



Picture 7: Path of trim trail through forest (orange), same as on info boards on site.

It has 16 workout stations compliant with requirements of Union for physical education and recreation. Order and type of workout stations was projected by Mr. Bane Novitović, assistant professor on College of Coaching in Belgrade, but also resident of Obrenovac. He was contacted for the business by Ecofund, because of his expertise in physical education and fitness as trainer for sportsmen recovering from injuries. Workout stations are:

- | | | | |
|-----------------------|----------------------|-----------------------|-------------------------|
| 1. Stem | 5. Aerobic exercises | 9. Shaft for pull-ups | 13. Bench |
| 2. Low parallel poles | 6. Sit-ups | 10. Two angled poles | 14. High parallel poles |
| 3. Hurdle | 7. The ladder | 11. High hurdle | 15. Zigzag logs |
| 4. Aerobic exercises | 8. Angled pole | 12. Aerobic exercises | 16. Aerobic exercises |



Picture 8: Cross section of the trim trail suggested by Ecofund, from the request for offer to SE “Srbijašume”.

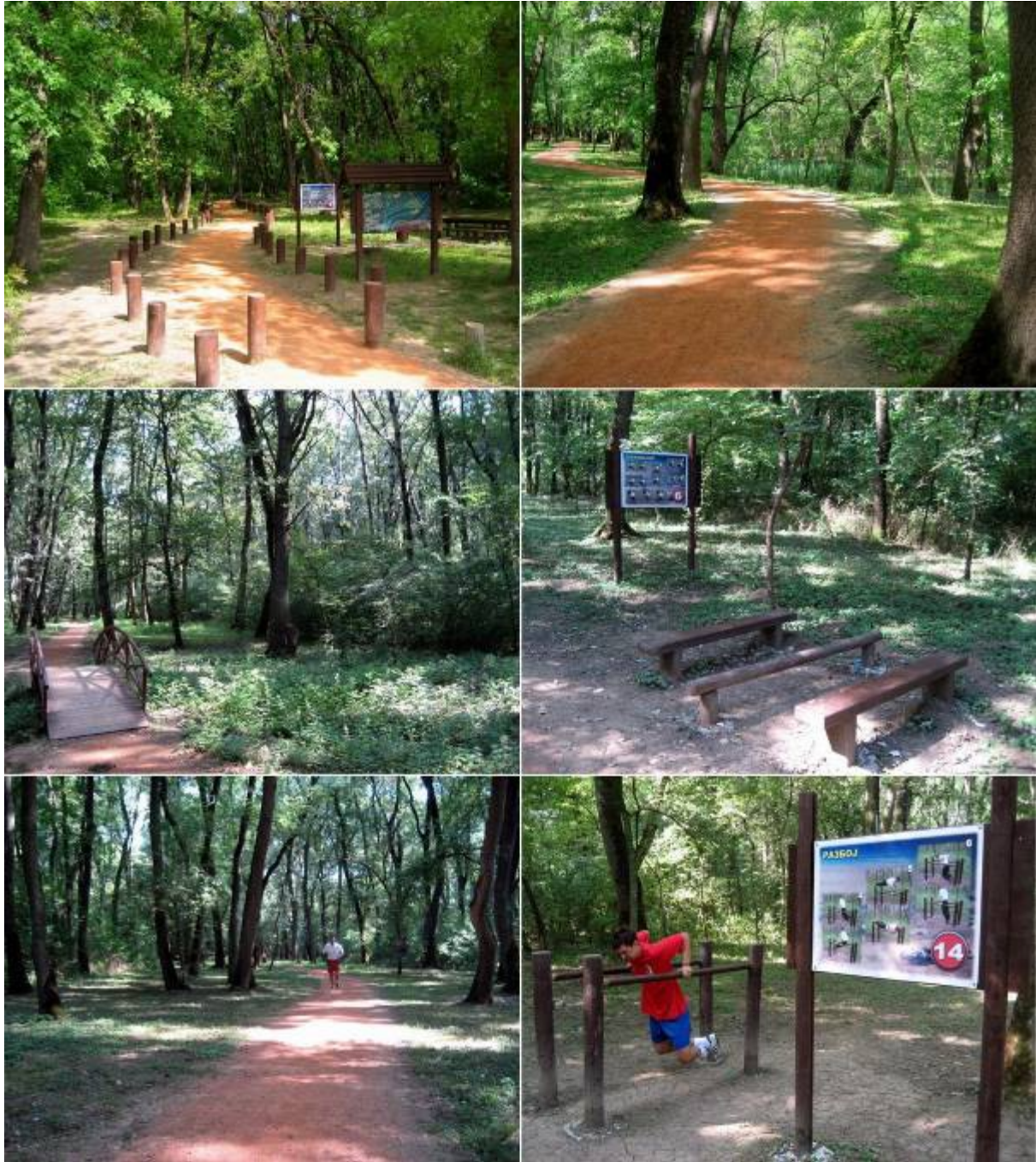
The trim trail, as shown on the picture above, has several layers and was produced by people from FE “Beograd” the following way:

- 20 cm of surface soil was removed.
- 5 cm of excavated soil was returned, compressed and planed with 4% slant to the side on which the drainage is.
- Drainage channel was dug out and filled with gravel (30-60 mm) and outlets were made on every 50 m.
- 10 cm of finer pebble was compressed and planed with same angle over that.
- 5 cm of sand mixed with soil (2:1) was compressed and planned over gravel.
- Another 2 cm of tennis clay were added on top of that, compressed and planed with same angle.

Such construction of the trail gave it hardness that is optimal for everyday training. At the end and the beginning of the trail are information boards. Also, on every workout station there is board with directions how to perform exercises. Unfortunately due to recklessness of some motorized visitors, parts of the trail had to be protected with wooden posts to prevent them from trying to park their cars around the trim.

The following are some pictures from the trim trail:

- Top-left: Beginning of the path (Ecofund, April 2007).
- Top-right: Part of the trail close to drainage channels (Ecofund, April 2007).
- Middle-left: One of the wooden bridges over depressions (Grubić, July 2007).
- Middle-right: Exercise station #6 for sit-ups. (Grubić, July 2007).
- Bottom-left: A man jogging on the trial (Grubić, July 2007).
- Bottom-right: Young man exercising on high parallel poles (Grubić, July 2007).



Picture 9: Trim trail in forest “Zabran”.

2. Analysis of actors network and of the innovation process:

1.4. Actors involved

Major actors involved for this innovation are SE “Srbijašume” and Fund for Environment Protection of Obrenovac Municipality which is both public administration institutions. SE “Srbijašume” was represented by FE “Beograd” and FAU “Lipovica” in whose area is forest “Zabran”. Other actors contacted by Ecofund are Institute for civil engineering and Mr. Bane Novitović as renowned local expert.

1.5. Coordination and cooperation of actors and flow of information

Ecofund initiated regulation of “Zabran” forest for visitors. Part of the plan was the trim trail. First Ecofund got scheme how the trim trail cross section should look like from Institute for civil engineering. Then they contacted FE “Beograd” as legal user of the forest with proposal how the trim path should look like. By contract FE “Beograd” produced trail of desired profile by the path projected by own engineers in their forest. According to this contract SE “Srbijašume” also provided two wooden bridges and two information boards for the beginning and the end of the trim trail. Second contract obliged SE “Srbijašume” to provide equipment for exercise stations and information boards for them. People from Ecofund in cooperation with Mr. Bane Novitović made exercise programme for visitors and photo shot with model that performed exercises for purpose of creating panels for information boards.

1.6. Business cooperation within SE “Srbijašume”

Official contacts about this matter for SE “Srbijašume” went through FE “Beograd” as legal representative for local FAU “Lipovica”. Engineers from FE “Beograd” did project of the path for the trim trail, but mechanization and labor force for production of the trim trail were provided by FAU “Lipovica”.

1.7. Sources of financial means

Whole innovation was financed by Ecofund. Basically Ecofund paid SE “Srbijašume” to create the trim trail in state owned forest that is in SE custody. So from the aspect of SE “Srbijašume”, financing was external and it was very important fostering factor. If there was no initiative and funding from Ecofund the trim would have never been made.

3. Evaluation of the innovation:

1.8. Objectives of the innovation

Good position of the “Zabran” forest on confluence of two rivers makes it very valuable for recreation. Goal is to provide kids and youth with place to run and exercise because streets and roads are sometimes, especially on weekends, very busy and dangerous. In this way local population will use the beautiful forest which is the only green haven in polluted Obrenovac (From Ecofund Proposal for Offer to SE “Srbijašume”).

1.9. Economic outcomes

Altogether, for production of the trim trail, information boards, wooden bridges and panels, and wooden post SE “Srbijašume” got 4,736,100 RSD (or 4,013,644 when 18% VAT is deducted) or approx. 59,200 € (50,170 € without VAT) from Ecofund.

1.10. Results and outcomes of the innovation

People from Obrenovac now have open air place where they can run and exercise for free. Number of people visiting the forest for recreational purposes has increased

on day to day basis, not just for weekends and holidays. Users of the trim trail I met when I visited are very pleased and appreciate fact that they have such facility in vicinity of their homes.

There is problem of reckless people who destroy inventory or try to leave their cars in places that are not supposed for parking. Unfortunately vandalism of certain individuals can not be prevented by only one forester who is in charge for observation of “Zabran” forest. Such things usually occur on holidays when number of visitors drastically increases.

1.11. Challenges and problems

First challenge was to create sturdy and durable running path, due to fact that building site is close to river, has high underground water and the soil is soft. This problem was solved by the way trim trail was constructed with appropriate drainage system.

One unexpected challenge is moles. For some reason they like to make their burrows in soil that was dug out and returned around the path. This is partially solved by conscious visitors who flatten bumps created by moles around the trim.

Problem of unconscious parking is partially solved by wooden posts that prevent such attempts, but more of them are needed to protect the whole “Zabran” forest.

There is also problem of barbeque fires on holidays. People who come on picnic often want to grill their own meet on fire. Lighting fires in forest is forbidden by our Forest Law, but very difficult to enforce on such occasions. Because it is prohibited by law it is not possible for SE to equip forests with places for such use. This is only one small example weaknesses of our legislature.

There were also ideas and proposals of some people owning private business to create tennis courts or courts for group sports (soccer, basketball) in “Zabran” forest. Such offers were not acceptable for SE due to fact they would require removal of large areas of forest vegetation. The trim trail is very good solution because it was projected through previously existing walking path that was spontaneously formed by visitors. That way forest was not damaged, and for maintenance it required only removal of bush and now, only occasional grass trimming.

1.12. Fostering and impeding factors

Main fostering factor for creation of the trim in “Zabran” forest was need of Ecofund to invest in such project according to their work plan. Important thing is that “Zabran” was already popular among people from Obrenovac for picnic and recreation activities.

Only impeding factor for recreational use of this forest is its current bad health condition due to coppice origin and lack of tending. Considering that tending age has passed, only solution now is to do sanitary cuts when obvious treats for people occur.

1.13. Future plans

Further plans of SE “Srbijašume” considering the trim trail are to maintain it in contracted period of 2 years. Idea to make similar trim trail on “Ada Ciganlija” island in cooperation with SE “Ada Ciganlija” was mentioned during the interview with Mr. Slavko Ivanović, Head of FAU “Lipovica”. Part of the forests on that island is state owned and the island and lake on Sava River is very popular recreation and relaxation site for citizens of Belgrade. On the peak of the season during summer up to 300 000 people visit the lake and island daily, to swim, sunbath, drive bicycle or rollers or play other sports.

Ecofund is working on project of regulation of area between Obrenovac and the “Zabran” forest. They are planning to buy private grounds and to afforest them and place different sport and recreation facilities in that area. Aforestation project is being made in cooperation with prof. dr. Vasilije Isajev from Faculty of Forestry, University of Belgrade and most probably will be done by SE “Srbijašume”.

4. Conclusions - Lessons learnt and recommendations:

If there was no impulse from Ecofund and their funding, this innovation would have never occurred in “Zabran” forest. The trim trail it self is very well built by people from FAU “Lipovica” and is on excellent location. It is highly appreciated by most of citizens of Obrenovac and they are using it regularly.

SE “Srbijašume” should maintain the trim and the “Zabran” forest appropriately, as recreational, not a production forest. They should also try to improve health of the forest and include measures for that in future management plans.

This innovation case is can be categorized as product/service innovation, but problem for further description is fact that this is not marketable innovation – since there is no charge for using the trim trail. SE earned money for creation of trim trail in own forest, but there is no further income. As previously stated, in this case external impulse and funding were decisive factors for promotion of this innovation. Societal demand and natural resources factors are represented by the fact that this forest was already popular picnic place among citizens of Obrenovac. Fund for Environment Protection of Obrenovac Municipality might be considered to be institutional factor in this innovation case.



Confluence of Kolubara and Sava rivers (photo by Miladin Čolaković)

III) Information sources and literature

Interviews:

- 1) Ms. Anđelka Jevtovic and Mr. Miroslav Tešić, horticultural engineers, “Green Engineering”, FE “Beograd”, 29.05.2007.
- 2) Mr. Vojislav Janković, forestry engineer, Executive manager of Sector for Development and International Cooperation in SE “Srbijašume” General Directorate, 05.07.2007.
- 3) Mr. Slavko Ivanović, forestry engineer, Head of FAU “Lipovica”, 17.07.2007.
- 4) Ms. Jelena Tucaković, forestry engineer, forestry associate in Ecofund, 06.08.2007.

Visit to the researched object on 18.07.2007. and informal talk about it with locals exercising on the trim trail and accidental meeting and conversation with Mr. Vojin Nestorović from Ecofund (<http://www.ekofond.org.yu>).

Documents:

1. Reports on activity analysis from the project “Participatory Development for a Plan to Implement Srbijasume’s Restructure”:

- a) Working Plan 2221 - Organisational structure;
- b) Working Plan 2225-1 - Wood production;
- c) Working Plan 2225-14 - Silviculture and afforestation;
- d) Working Plan 2225-2 - Real-estate business;
- e) Working Plan 2225-3 - Hunting and Fishing;
- f) Working Plan 2225-4 – Non Wood Forest Products;
- g) Working Plan 2225-12 - Management of protected areas;
- h) Working Plan 2225-5 - Services for private owners;
- i) Working Plan 2225-6 - Nursery production;
- j) Working Plan 2225-7 - Tourism and accommodation services;
- k) Working Plan 3209 - Green engineering.

2. The official power point presentation of SE “Srbijašume” – PPT.

3. The official web site of SE “Srbijašume” – www.srbijasume.co.yu

4. Contracts between SE “Srbijašume” and Ecofund concerning the project, provided by Ecofund.

5. “Study of current vegetation and project of regulation of park forest Zabran in Obrenovac” by prof. dr. Lazar Tomanić.

6. Pictures provided by Mr. Vojin Nestorović during my visit to Ecofund.

7. Pictures I took during my visit to the trim trail.