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## ESTABLISHMENT OF THE FORESTRY CONTRACTOR CERTIFICATION MODEL

### USPOSTAVA MODELA POTVRĐIVANJA IZVODITELJA ŠUMSKIH RADOVA

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The paper presents the parts of the research necessary for the establishment of a licensing model of forest operations in Croatia. The present state of the issue has been estimated on the basis of a comprehensive analysis of the contractors and the accomplished work in the period 1998 – 2002. The estimate says that the present forest service and the completed forestry operations, notwithstanding their considerable proportion in the achievement of the productive tasks, are neither organised, nor qualified, and are thus not a stable partner in the production area of the Croatian forest management. Based on the assessed situation and the profiles of the service staff, and considering the developed forestry experience, a model for confirming the forestry contractors has been suggested, in order to enable the creation of the first formally authorised and qualified contractors. The suggested model is used to assess the possible licensors, the minimum conditions for entering the assessment procedure, the protocols and the participants in the assessment process, the legislations and the legal mechanisms (documents, administration process, etc.), the specialist institutions, and bodies involved in the licensing.

The model suggests the implementation of the assessment procedure in two phases:

1. Authorisation of the forest contracting;
2. Licensing, i.e. the assessment of qualifications and capabilities for carrying out forest operations.

In order to win the licence that makes them qualified for the forestry contractor competition, besides the formal ones, in both phases the following additional conditions have to be fulfilled: special technical-technological, special-

ist/staff, economical/organisational, and ecological. Along with the licence, the mark of the business ability level is also acquired – Licence I, II, or III.

The suggested model relies on the criteria, bodies, institutions and procedures that would assure objective evaluation and unbiased affirmation of the operators' qualifications, as a guarantee for expert, good, timely and economically successful performance of the forest operations.

**Key words:** forestry, forestry contractors, entrepreneurship, licensing, Croatia

## INTRODUCTION

### UVOD

Since their first appearance on the market, forestry contractors have been observed differently. To ones they presented a symbol of efficiency and modern business models, to others they were "Cinderellas", to which the crumbles were left from forest operations! Others still accepted them as a hazard to forest work – as insecure, unskilled and clumsy. However, over time forest operators became important links between forest owners and wood industry. In the last twenty-five years, in most countries forest offices, the companies in charge of state forest management, and other forest owners have rather relied upon independent forestry contractors. In some countries, therefore, independent contractors became crucial factors in forest exploitation, while the number of workers and devices multiply decreased in forestry companies. Independent contractors have thus become a regular feature of the Croatian forestry, as well as in the forestry of other countries.

The employment of forestry contractors and the transition to contract work entail many advantages. These are mainly higher flexibility, better financial results, and higher-quality work due to the contractors' specialist skills. The economical reasons for including contractors are obvious. Under the conditions of limited supply of forest jobs and the great number of qualified contractors, the available jobs are given to those who are organised in the most rational ways and therefore able to offer the lowest prices. The choice of the most favourable contractor reduces the production costs within the whole cost chain. The forest owner as the investor and seller of wood products can thus expect higher profits at the same selling prices of wood assortments. The weak parts of the contract work are the absence of investment into equipment and training, questionable qualification level of the operating staff, a low level of workers' safety, a dubious efficiency of workers' health protection, ineffective work supervision, etc.

The basic question related to the forestry contractors is, who and under what conditions can be a forestry contractor, and how to legalise this kind of entrepreneurship. While one part of the contractors are specially trained for the offered services,

i.e. have considerable experience in the jobs they carry out, there are too many contractors of dubious qualification with little or no experience. The latter remain on the market due to unrealistically low prices (dumping prices) for their services. They are able to offer such low prices by avoiding the legal obligations related to the workers' rights, social obligations and safety standards. The achieved economical effects in such cases may only at first glance be favourable to forestry. Such situation is sustainable neither in the short, nor in the long run.

How to provide expert, good-quality, timely and economically successful forest work performance – considering the present status and the profile of the contractors – is an issue the solution of which had to be investigated. The to date preliminary research on this issue (Vondra et. al. 1997, Martinić 1998) shows that the present forestry contractors are neither organised, nor sufficiently qualified and economically stable. They thus promise questionable production potentials in the Croatian forestry branch. The research has likewise shown that the conditions for the development of qualified and reliable forestry contractors, as well as a model that would assure the quality of their work, are as yet to be created.

## **SUBJECT AND AIM OF THE RESEARCH**

### **PREDMET I CILJ ISTRAŽIVANJA**

Over the last decade, «Hrvatske šume», the company for the management of the Croatian national forests, has greatly relied on forestry contractors for the activities of cutting, processing, hauling and transportation. It was believed that the market mechanisms would create a selection of the best contractors that would turn into reliable and efficient executors of forest services. However, there is little evidence of such results.

After the change of registration to trade company («Hrvatske šume» Ltd. of April 8<sup>th</sup> 2002), it is expected that the types and quantities of the jobs carried out by contractors would further increase. Many issues, however, still remain to be solved in terms of the contractors' profiles, and the basic qualifications required for high-quality forestry work. These conditions relate to the aspects of professionalism/technique, organisation/safety, and economics/law. While the countries with developed forestry largely take care of these conditions, our forestry practice lacks even a preliminary concept for the solution of this issue.

A crucial prerequisite for professional and quality forestry work is a qualified and capable contractor. Such attributes are acquired either by strictly legislative provisions (laws, regulations, statutes), or by exactly defined models. Accordingly, this paper discusses three main instruments for the certification of a contractor in terms of business capability, i.e. the programmes of acknowledging their activities:

- *Registration*
- *Certification*
- *Licensing*.

The term *registration* contains the registration of an individual, a trade company, or an entrepreneur into the Registry kept with trade courts, with all the data defined by law.

*Certification* is the identification of an individual with certain qualifications, including the work experience and training programmes. It is given as an attribute status to those who fulfil the required conditions.

*Licensing* is the authorisation for carrying out certain activities, among others forestry jobs. It is exclusive, i.e. the lack of a licence means that an individual may not carry out the activities that are subject to licensing.

Table 1 Advantages and disadvantages of registration, certification and licensing of forestry contractors (McKay 1995)

Tablica 1. Prednosti i nedostaci registracije, certifikacije i licenciranja izvoditelja šumskih radova (MacKay 1995)

| Improvements – <i>Prednosti</i>  | Problems – <i>Nedostaci</i>   |
|--|---|
| Image of forestry – <i>Imidž šumske industrije</i>   | Resources for program enforcement and administration are limited – <i>Ograničena sredstva za provođenje programa</i>  |
| Environmental protection – <i>Zaštita okoliša</i>  | Standards for recognition by program are arbitrary – <i>Proizvoljni kriteriji za priznavanje izvoditelja</i>  |
| Compliance with regulations – <i>Poštivanje zakonskih propisa</i>                            | Standards fail to measure ability to conduct safe and effective operations – <i>Kriteriji ne uspijevaju mjeriti sposobnost sigurnog i učinkovitog obavljanja radova</i> |
| Operator safety – <i>Sigurnost šumskih radnika</i>   | Operating cost to contractors is increased – <i>Povećani troškovi izvoditelja radova</i>  |
| Continuing education participation – <i>Sudjelovanje u kontinuiranoj izobrazbi</i>           | Contractor mobility between states or provinces is constrained – <i>Ograničena mobilnost izvoditelja radova između država i provincija</i>                              |
| Business management activities – <i>Aktivnosti poslovnog menadžmenta</i>                     | Entry to forest contracting business is restricted – <i>Ograničen ulaz u posao davanja šumarskih usluga</i>   |
| Promptness of payment to landowners <sup>a</sup> – <i>Brzina plaćanja zemljoposjednicima</i> | Forest contractor numbers are reduced leading to higher consumer costs – <i>Smanjeni broj izvoditelja vodi višim cijenama usluga</i>                                    |

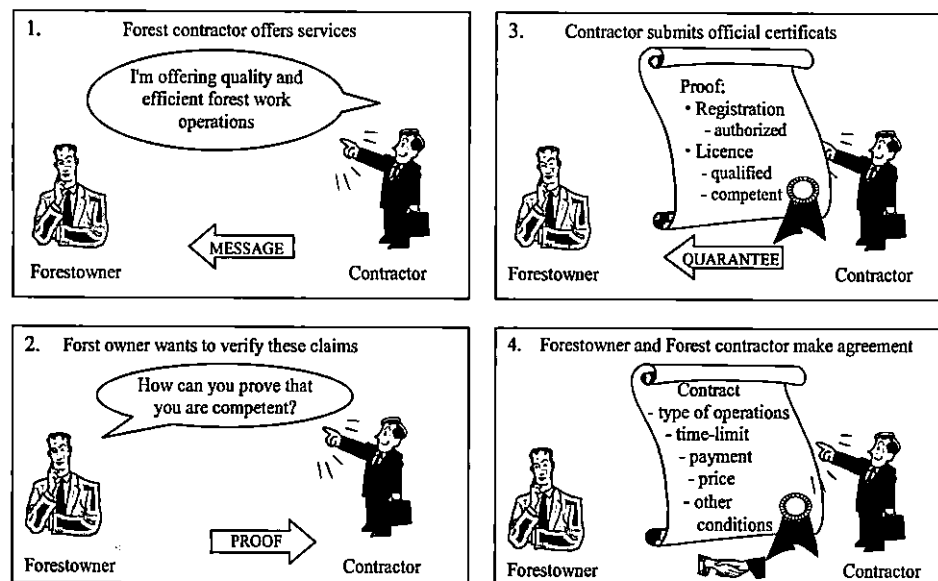
<sup>a</sup> In cases when forest contractors act as purchasers and timber merchants themselves  
*U slučajevima kada izvoditelji šumskih radova kupuju drvo na panju i prodaju ga na tržištu*

Experience tells us that an individual program of registration, certification and licensing is ruled by several factors. Among others, there are the questions of voluntary or obligatory implementation of institutional enforcement, financial investment levels into the programme, financial resources, etc. In addition, the choice of the programme may depend on the desired influence of the government on the forestry contractors. However, unlike other programmes, the licence guarantees the good quality and the professionalism of the forest jobs, primarily because it is exclusive, i.e. it can be withdrawn if the contractor does not fulfil certain qualification conditions.

Registration and licensing are of primary interest of the forestry contractors, whose target is to establish themselves as professionally capable, while certification comes next. The establishment of a model that would include registration and licensing as obligatory programmes would ensure the reliability between the contractors and investors.

Figure 1 Roles and relations in the process of making a contract on forestry services

Slika 1. Uloge i odnosi u postupku ugovaranja izvođenja šumskih radova



The absence of licensing contributes to the extensive use of *bargaining* – whereby the job is given to the one that will do it at the lowest price, which is undoubtedly a bad option for the forestry of any country. On the other hand, licensing will necessarily result in the increase of the service prices of the contractors in proportion with the skill, technical equipment, safety measures, social standards, etc. However, if the target is to have or develop qualified contractors, licensing becomes the imperative in forestry policy.

The aim of this article is to find models that will – by taking into consideration all characteristics of the present state of forestry operations in Croatia – enable the occurrence of the first formally authorised and qualified forestry contractors. The model should rely on the criteria, bodies, institutions and procedures that would insure objective evaluation and unbiased confirmation of contractor's qualifications, as a guarantee of professional, quality, timely, and economically successful execution of the work. A scientific approach should assess parameters of mandatory conditions, and suggest a certification model that would be acceptable for Croatian forestry.

In relation to the overall forest management, the results of the research should contribute to better quality in making decisions on employing forestry contractors. In view of economics, they would increase the efficiency and lucrativeness of the forest work and its safety as well. A considerable contribution may be expected in the reduction of the forest ecosystem damage.

## RESEARCH METHODS

### METODE ISTRAŽIVANJA

The research target entailed the following steps:

- ☐ Review of the to date research;
- ☐ Analysis of the forestry contractors employed by «Hrvatske šume»;
- ☐ Review of foreign models and licensing experience;
- ☐ Analysis of the criteria for registration and licensing of the contractors as the certification model framework;
- ☐ Suggestion of certification model establishment.

Besides investigating the research issue in domestic and foreign specialist literature, the relating offices and organisational units of «Hrvatske šume» were contacted for the necessary data.

The review of foreign models and experience has been made on the basis of the online database *Current Contents*, *ForestScience.info*, *Cab Abstracts*. The web pages of significant forestry institutions (faculties, research centres, expert associations, etc.) were referred to. The research involved the forestry entrepreneurship of the European countries, the procedure of forestry contractor certification, qualifications and criteria for contractors, certification bodies, etc.

## SOME ASPECTS OF THE EUROPEAN FORESTRY ENTREPRENEURSHIP

### UVID U NEKE ASPEKTE PODUZETNIŠTVA U ŠUMARSTVU EUROPE

Most enterprises that offer forestry services in Europe are small family firms, which, besides family members, employ one or two additional persons (Kastenholz 2000).

Contractors with a two-figure-staff appear only exceptionally. An average number of staff in a firm ranges between two and five persons. An exception is the Czech Republic, where large wood and paper companies are also included in the calculation. (Table 2).

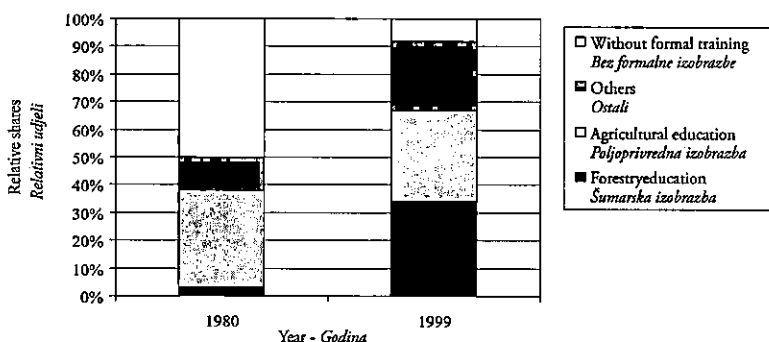
Table 2 The number of staff in forest service companies (Kastenzolz 2000)

Tablica 2. Broj zaposlenika u poduzećima za pružanje usluga u šumarstvu (Kastenzolz 2000)

| Country – Zemlja    | Number of employees – Broj zaposlenika |       |                | Total employment in all enterprises<br>Ukupan broj zaposlenih u svim poduzećima |
|---------------------|--|-------|----------------|---|
|                     | min                                    | max   | mean – srednji |   |
| Bulgaria (BG)       | 60                                     |       |                | 240   |
| Switzerland (CH)    | 1                                      | 30    | 2-3            | 500   |
| Czech Republic (CZ) | 25                                     | 800   | 300            | 20 000  |
| Germany (D)         | 1                                      | 25-40 | 3-5            | 590   |
| Denmark (Dk)        | 1                                      | 15-20 | 3              | 150   |
| France (F)          | 1                                      | 30    | 2-3            | 2 000   |
| Finland (FIN)       | 1                                      | 50    | 4              | 4 500   |
| United Kingdom (GB) | 1                                      | 40    | 8              | 6 000   |
| Ireland (IRL)       | 1                                      | 26    | 6              | 600   |
| Lithuania (LT)      | 3                                      | 50    | 20             | 700   |
| Luxemburg (L)       | 3                                      | 35    | 6              | -   |
| Latvia (LV)         |  |       |                | 4 562   |
| Netherlands (NL)    | 1                                      | 25    | 5              | 450   |
| Norway (N)          | 1                                      | 65    | 3-4            | 500   |
| Sweden (S)          | 1                                      | 25    | 3-5            | 3 000   |

Figure 2 Professional qualifications in forest service companies in Lower Saxony (Geske 2000)

Slika 2. Profesionalne kvalifikacije u poduzećima za pružanje šumarskih usluga Donje Saske (Geske 2000)



In almost all European countries there are business firms that offer forestry services. They are mainly young associations with low levels of organisation and insufficient financial resources. Most of them were established in the 1980ies and 1990ies, with the



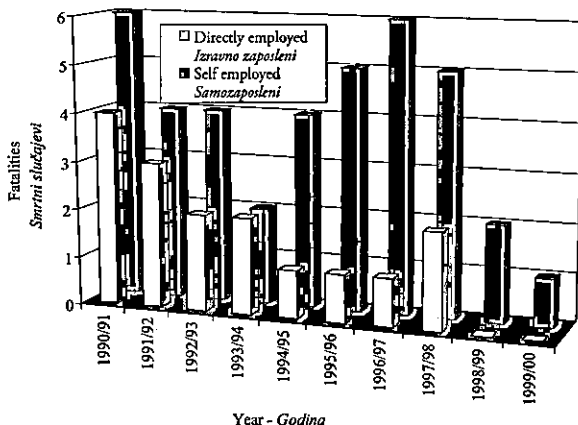
basic tasks of representing the interests of their clients vis-à-vis big forest owners, and the protection of the members against unfair competition through low prices.

In European forestry, the demand for basic training is significant (Fig. 2). The improvement of the basic skills may be carried out in short courses, but also in well-developed formal programmes for professional training. North Europe and the countries where German language is spoken offer formal specialist training to forestry workers. However, even in these countries, forestry contractors and their staff do not always possess adequate skills (Kastenholz 2000). Expert associations often play an important role by enabling the contractors' training without long absence from work. Therefore mobile courses are offered, say, in France and Switzerland, where workers can practice during working hours. The aim of such training is rarely the acquisition of formal qualifications, but primarily the one of skills.

The increased numbers of forest contractors are having adverse impacts upon the work safety and health protection in forestry, the areas that have so far been inadequate anyway. The vaguely defined legal obligations of the contractors toward their employees and the inefficiency of the work supervision are the factors responsible for the neglect of the basic safety standards. Small contractors often cannot afford to finance training and development, they are short of qualified workers, and have a high proportion of accidents at work (Fig. 3).

Figure 3 Fatality trends with directly employed and self-employed forest workers in Great Britain (Craig 2000)

Slika 3. Trendovi smrtnih slučajeva među izravno i samo-zaposlenim šumskim radnicima u Velikoj Britaniji (Craig 2000)



According to Kastenholz (2002), the main result of his research on the legal and formal preconditions for forest contract labour is the fact that in most European countries these preconditions do not exceed the routine requirements for any other

job. This includes the registration with the authorities for taxing and social security. Only in a few countries there are provisions on necessary qualifications of forestry contractors (France, Great Britain, Netherlands, Sweden, etc.).

## **DATA AND METHODS FOR THE ANALYSIS OF THE CONTRACTORS EMPLOYED BY «HRVATSKE ŠUME»**

### **PODACI I METODE ZA ANALIZU IZVODITELJA ANGAŽIRANIH OD STRANE «HRVATSKIH ŠUMA»**

The data on contractors collected by the Production Service of «Hrvatske šume» have been analysed in order to evaluate the profile and status of the forestry contractors in Croatia. The data were collected from 538 contractors that offered their services at contests between 1998 and 2002. The data on individual contractors include the name and address of the firm, or name, surname and address of the craftsman, number of workers and engineers, number and type of work devices, and (if necessary) a comment on the kind of organisation, staff, or working posts.

The significance of the forest contractors was evaluated according to the work they completed for «Hrvatske šume» in the time period 1998 – 2002. The data on the contracting was used in the process of evaluation, and the following was analysed: tape, volume and value of the contract jobs; organisation and management units where the work was done; terms and the registered and chosen contractors.

The used database contains the required limitations (time period of monitoring, indices contained in the bases, etc.) and other disadvantages. This primarily refers to the irregularity of both the input and updating of the data. Therefore, prior to the data analysis, the necessary adjustments were carried out in order to simplify and accelerate the process of browsing.

Another significant disadvantage is the absence of unified data that would precisely describe the results of the completed work. The presented databases do not tell anything about the quality of the work performed, the damage done, etc., while these data are extremely significant for the evaluation of the contractors' quality and the justification of their employment.

An additional help in the evaluation were "Business reports of «Hrvatske šume»", the reports of the Production Service on the yearly money amounts for the contract work, and the annual reports on production.

The mathematical/statistical processing of the collected data was carried out using a PC with the programme package *Microsoft Excel 97*. The processing was aimed at establishing the basic characteristics of domestic contractors by frequency data analysis, followed by a rough evaluation of the development degree of forestry contractor groups in Croatia. The used data frequencies were absolute and relative, and the results are presented in tables and graphs.

## RESEARCH RESULTS REZULTATI ISTRAŽIVANJA

### ANALYSIS OF DOMESTIC FORESTRY CONTRACTORS ANALIZA DOMAĆIH IZVODITELJA ŠUMSKIH RADOVA

The analysis included the structural characteristics of the contractors (seat, staff number, work means, etc.), market properties of forestry services, and the features of the assigned/completed work.

#### Some structure indices of the contractors Neki pokazatelji strukture izvoditelja



Figure 4 Relative proportions of forestry contractors in Croatian constituencies

Slika 4. Relativni udjeli izvoditelja šumskih radova po županijama

The analysis of the territorial distribution of the contractors was carried out according to the firm seat or the place of business registration. The analysis result shows that there is a high concentration of the forestry contractors on the territory of central Croatia, Gorski Kotar and Lika. On the other hand, there are small numbers of contractors in Slavonia and north Croatia, while in Istria and Dalmatia they do not appear at all (Fig. 4).

The most numerous group of contractors (about 64%) is the one without regularly employed workers (Fig. 5). The group with regular employees has the highest proportion of those who em-

ploy one or two workers. The contractors with many employees are mainly the firms to which forestry is not the chief field of activity.

The employment of forestry engineers is even less favourable. Only 2%-3% of contractors say that their foresters have high specialist education. These are mainly the firms with one engineer, while only three firms said that they employed more than one forestry engineer (Fig. 6).

Figure 5 Distribution of contractors per number of employed workers

Slika 5. Raspodjela izvoditelja po brojnosti zaposlenih radnika

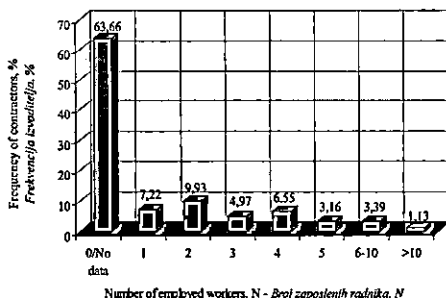
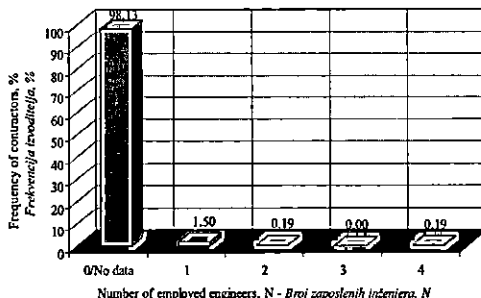


Figure 6 Distribution of contractors per number of employed university graduated forestry engineers

Slika 6. Raspodjela izvoditelja po brojnosti zaposlenih dipl. ing. šumarstva



Forestry contractors' outfit with work devices is presented by the number of machines and tools reported in applications to public contests. The most frequent work device is the chain saw, owned by slightly less than half of the contractors (38.3%). The most numerous are the contractors with only one chain saw (20.4%). Only 49 (9.1%) contractors have three or more saws. Based on experience, we assume that 'Stihl' chain saws are the most frequent trademarks with the contractors, same as with «Hrvatske šume».

Figure 7 Adapted agricultural tractors – common, though not always satisfactory device

Slika 7. Adaptirani poljoprivredni traktori, poznata i ne uvijek zadovoljavajuća radna sredstva



Contractors' outfit for mechanised timber hauling is observed through their distribution in terms of the number and type of adapted agricultural tractors and forwarders (Figure 9). It has been established that more than 75% of the contractors do not possess specialised forestry mechanisation. A firmer orientation in terms of inclusion into forestry is certainly seen with those fifty-three contractors that possess two or more typical items of forestry mechanisation (9.9%). The commonest mechanical devices are the LKT tractors, owned by 44.9% skidder owners.

The situation is better as to the adapted agricultural tractors owned by around 30% of the contractors. These are mainly the IMT tractors, followed by other types (Zetor, Ursus, and Torpedo). The proportion of the contractors with one tractor is the highest (16.2%). Figures 8 and 9 do not contain the contractors that did not report the number of their work devices.

Figure 8 Distribution of contractors per number of chain saws

Slika 8. Raspodjela izvođačija po brojnosti motornih pila

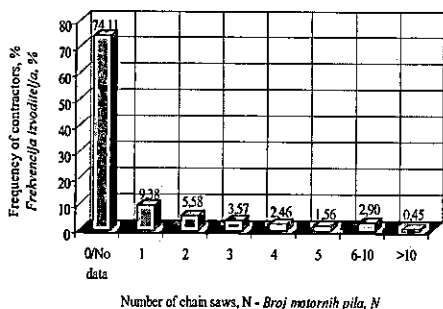
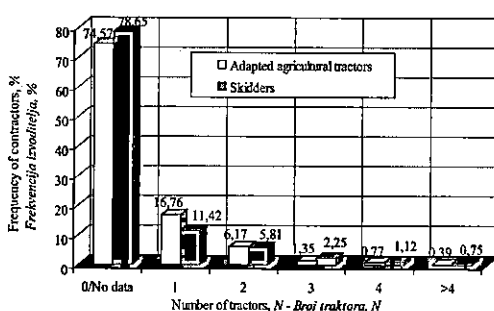


Figure 9 Distribution of contractors per number of forest tractors

Slika 9. Raspodjela izvođačija prema brojnosti šumskih traktora



The list of forestry work devices shows that the contractors failed to introduce new technological solutions, or the new devices into their work. Only eight contractors use forwarders, while only two of them have cable transporters.

A relatively higher number of horses (Table 3) account for a long tradition of private contractors used to hauling and skidding by horses (named *samaras*). Among the contractors that use horses, the group with 6 to 10 horses is the commonest (26.6%). The highest number of horses per contractor is sixteen.

Since 1998 the whole wood transport has been subjected to public contests, instead of being dealt with by contractors as before. Accordingly, the analysed databases did not contain any information on the trucks and building mechanisation commonly used by suppliers of services. It also does not contain the data on the age and expiry date of the mechanisation, but it is assumed that this corresponds the ones of "Hrvatske šume". Considering the unsatisfactory condition of the mechani-

Table 3 Forestry contractors according to the number of used horses

*Tablica 3. Izvoditelji šumskih radova prema brojnosti konja*

| Number of horses<br><i>Broj konja</i> | Frequency of contractors<br><i>Frekvencija izvoditelja</i> |        |
|---------------------------------------|--|--------|
|                                       | N  | %      |
| 0 / no data                           | 444  | 82.53  |
| Dubious number<br><i>Upitan broj</i>  | 41   | 7.62   |
| 1                                     | 1  | 0.19   |
| 2                                     | 6  | 1.12   |
| 3                                     | -  | -      |
| 4                                     | 15   | 2.79   |
| 5                                     | 2  | 0.37   |
| 6-10                                  | 25   | 4.65   |
| More than 10<br><i>Više od 10</i>     | 4  | 0.74   |
| Total – <i>Zajedno</i>                | 538  | 100.00 |

sation of “Hrvatske šume”, as described by Vondra et al. (1997)<sup>1</sup>, the question is to what degree such mechanisation contributes to the achievement of positive production, financial and business results.

According to the reported data on work devices and staff, the contractors have been divided into four groups (Table 4). In the Group *No employees and no work devices* there are frequent comments: “workers when required” and “equipment available on requirement”, because in Croatian entrepreneurship (not only the forestry one) workers are often employed for occasional jobs.

<sup>1</sup> Vondra et al. (1997) describe the condition and the exploitation of the machines owned by „Hrvatske šume“ as follows: „The average age of the main observed groups of working devices (and/or chain saws, tractors, trucks, buses, personal cars) is above eight years. Accordingly, most devices have been used for the time period that is above the limit of an efficient term of exploitation. It is known that the expiry of the term of exploitation means functional and technological obsolescence and economically unjustified intensive and expensive maintenance. This is connected with numerous difficulties in carrying out the production tasks (delays in bio-technological terms, increased costs, reduced motivation of staff, etc.). The production under such conditions results in abrupt fall of economical efficiency, reduction of production ability, and lower wages. The most significant result is the reduction of the revenue.”

Table 4. Basic outfit structure

Tablica 4. Osnovna struktura zbirke

| Group – Grupa  | Frequency of contractors<br><i>Frekvencija izvoditelja</i> |        |
|--|--|--------|
|  | N  | %      |
| Contractor has staff and work devices<br><i>Izvoditelj ima zaposlenike i radna sredstva</i>  | 197  | 36.62  |
| Contractor has staff, but has no/does not report work devices<br><i>Izvoditelj ima zaposlenike, nema/ne navodi radna sredstva</i>                                | 61   | 11.34  |
| Contractor has no/does not report staff, but has work devices<br><i>Izvoditelj nema/ne navodi zaposlenike, ima radna sredstva</i>                                | 130  | 24.16  |
| Contractor has no/does not report staff, and has no/does not report work devices<br><i>Izvoditelj nema/ne navodi zaposlenike i nema/ne navodi radna sredstva</i> | 150  | 27.88  |
| Total – Zajedno  | 538  | 100.00 |

A little more than one third of the registered contractors (36.6%) have both regularly employed workers and their own work devices. These are mostly small contractors with a staff of one or two and modest equipment. However, they present a healthy base for creating steady and reliable forestry contractors.

Table 5 shows the total number of the employed staff and work devices included in the service sector of the Croatian forestry, with the average values related to all registered contractors (*Average 1*), and those referring only to the contractors that have staff, i.e. individual work devices (*Average 2*).

Table 5 Data on the employed staff and work devices of forestry contractors

Tablica 5. Podaci o zaposlenicima i radnim sredstvima izvoditelja šumskih radova

| Category - Kategorija                  | Staff/device number, N<br><i>Brojnost, N</i> | Average 1<br><i>Prosjek 1</i> | Average 2<br><i>Prosjek 2</i> |
|--|--|-------------------------------|-------------------------------|
| Staff – Zaposlenici                    | 998  | 1.86                          | 3.90                          |
| Workers – Radnici                      | 977  | 1.82                          | 3.82                          |
| Engineers – Inženjeri                  | 21   | 0.04                          | 1.62                          |
| Work devices – Radna sredstva          |  |                               |                               |
| Chain saws – Motorne pile              | 608  | 1.13                          | 2.95                          |
| Stihl                                  | 10   | 0.02                          | 1.67                          |
| Husquarna                              | 2  | 0.004                         | 2.00                          |
| Unclassified – Nerazvrstane            | 596  | 1.11                          | 2.99                          |
| Ad. agr. tractors – Ad. polj. traktori | 230  | 0.43                          | 1.52                          |

Table 5 continued – *Nastavak tablice 5.*

|                                    |     |       |      |
|------------------------------------|-----|-------|------|
| IMT                                | 42  | 0.08  | 2.10 |
| Zetor                              | 9   | 0.02  | 1.29 |
| Torpedo                            | 9   | 0.02  | 1.50 |
| Steyr                              | 2   | 0.004 | 1.00 |
| Universal                          | 2   | 0.004 | 1.00 |
| Ursus                              | 2   | 0.004 | 2.00 |
| Unclassified – <i>Nerazvrstani</i> | 164 | 0.30  | 1.38 |
| Skidders – <i>zglobni traktori</i> | 215 | 0.40  | 1.82 |
| LKT                                | 91  | 0.17  | 1.72 |
| Timberjack                         | 23  | 0.04  | 1.53 |
| Unclassified – <i>Nerazvrstani</i> | 101 | 0.19  | 1.77 |
| Forwarders – <i>Forvarderi</i>     | 9   | 0.02  | 1.13 |
| Cable transporters – <i>Žičare</i> | 2   | 0.004 | 1.00 |
| Mini forwarders – <i>Ekipaže</i>   | 9   | 0.02  | 1.80 |
| Horses – <i>Konji</i>              | 591 | 1.10  | 6.29 |

One fifth of 998 employed are three firms to which forestry work is not the main activity. This means that the average 3.9 employed per one firm/entrepreneur (Average 2) may be somewhat smaller, and

Figure 10 Horses are still present in Croatian forestry

*Slika 10. Konji još uvijek prisutni u hrvatskom šumarstvu*



could correspond the average number of chain saws (around 3.0). Considering the total number of contractors, this average number could be considerably smaller, i.e. around 1.5, if three mentioned firms are not considered.

Adapted agricultural tractors prevail in forest mechanisation with an average of 1.5 (Average 2) and 0.4 (Average 1), as well as forest skidders with an average of 1.8 (Average 2) and 0.4 (Average 1) per contractor. The use of forwarders, cable transporters and other similar devices is very modest. Such status should be related to the beginnings of private entrepreneurship, when there was a risk in employing foreign capital (linked with the insecurity of contracting long-term big-volume jobs), so that service suppliers unwillingly decided on purchasing their own, infrequently expensive, mechanisation.



## Relation between service bidders and contractors

### Odnos nuditelji – izvršitelji usluga

Only thirty-five contractors have never been chosen at «Hrvatske šume» contests among the total number of them that offered their services (Table 6). It looks as if almost all have been regarded as capable of carrying out the given jobs. The question is, what criteria were used at selecting contractors, particularly if their staff and technical/technological insufficiencies are considered. The assumption that there were no firm criteria is justified.

Table 6 Number of bidders and contractors by years

Tablica 6. Broj nuditelja i izvršitelja usluga po godinama

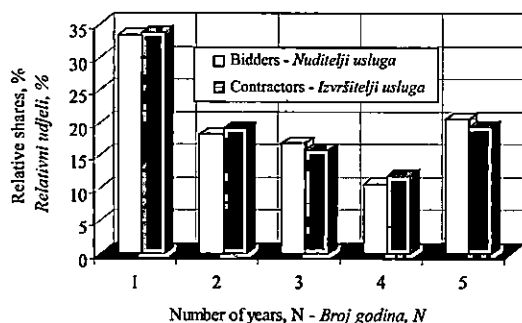
| Year - Godina                | Bidders - Nuditelji     | Contractors – Izvođitelji |       |
|------------------------------|-------------------------|---------------------------|-------|
|                              | Number, N – Brojnost, N |                           | %     |
| 1998                         | 366                     | 351                       | 95.90 |
| 1999                         | 324                     | 305                       | 94.14 |
| 2000                         | 305                     | 281                       | 92.13 |
| 2001                         | 276                     | 251                       | 90.94 |
| 2002                         | 254                     | 230                       | 90.55 |
| All 5 years<br>Svih 5 godina | 573                     | 538                       | 93.89 |

An average of three hundred contractors contested for job contracts every year. However, their number decreased from 366 in 1998 to 254 in 2002. We assume that those without competitive advantages did not survive. Such selection should lead

to increased competition among them, creating a group of high-quality contractors. The future will tell, whether this will really happen. Similar expectations in Europe have so far not been fulfilled.

Figure 11 Contractors by number of years of their practice in providing forest services

Slika 11. Izvođitelji prema broju godina u kojima su prisutni kao nuditelji/izvođitelji usluga



Most contractors display a short-term interest for employment in forestry (Figure 11). One third of the contractors are employed every year, though the number of those that enter is slightly smaller than the number of those that leave.

Contractors are mainly focused on the “central” Forest Office – the one that covers the territory of the contractors’ own activities (Tables 7 and 8). One fifth of the contractors exceed such territorial borders and appear as suppliers and/or contractors of services in up to four different forest management offices. However, even in such cases they deal with territorially neighbouring forest managements, so that the contractors of jobs continue to be linked with their seats of business.

Table 7 Contractors by number of forest administrations in which they are present as service bidders

*Tablica 7. Raspodjela izvoditelja prema broju uprava u kojima su prisutni kao nuditelji usluga*

| Year – Godina    |   | Number of forest administrations – Broj uprava šuma      |       |      |      | Together<br>Zajedno |
|------------------|---|--|-------|------|------|---------------------|
|                  |   | 1  | 2     | 3    | 4    |                     |
|                  |   | Frequency of contractors, N – Frekvencija izvoditelja, N |       |      |      |                     |
| 1998             |   | 331  | 30    | 5    | -    | 366                 |
| 1999             |   | 287  | 30    | 7    | -    | 324                 |
| 2000             |   | 271  | 29    | 4    | 1    | 305                 |
| 2001             |   | 249  | 24    | 3    | -    | 276                 |
| 2002             |   | 225  | 25    | 3    | 1    | 254                 |
| Whole period     | N | 458  | 83    | 25   | 7    | 573                 |
| Cijelo razdoblje | % | 79.93  | 14.49 | 4.36 | 1.22 | 100.00              |

Table 8 Contractors by number of forest administrations in which they are present as service providers

*Tablica 8. Raspodjela izvoditelja prema broju uprava u kojima su prisutni kao izvršitelji usluga*

| Year – <i>Godina</i>                    |   | Number of forest administrations – <i>Broj uprava šuma</i>      |       |      |      | Together<br><i>Zajedno</i> |
|---|---|---|-------|------|------|----------------------------|
|   |   | 1   | 2     | 3    | 4    |                            |
|   |   | Frequency of contractors, N – <i>Frekvencija izvoditelja, N</i> |       |      |      |                            |
| 1998                                    |   | 317   | 30    | 4    | -    | 351                        |
| 1999                                    |   | 272   | 26    | 7    | -    | 305                        |
| 2000                                    |   | 254   | 26    | 1    | -    | 281                        |
| 2001                                    |   | 226   | 22    | 3    | -    | 251                        |
| 2002                                    |   | 207   | 21    | 2    | -    | 230                        |
| Whole period<br><i>Cijelo razdoblje</i> | N | 433   | 78    | 22   | 5    | 538                        |
|   | % | 80.48   | 14.50 | 4.09 | 0.93 | 100.00                     |

Based on the job types advertised at public contests and the interested (applied) contractors, the following service types have been established:

|   |                             |
|---|-----------------------------|
| <b>SBR</b> – simple biological reproduction   | <b>TH</b> – tractor hauling |
| radovi jednostavne biološke reprodukcije      | izvoženje drva traktorom    |
| <b>EBR</b> – extended biological reproduction | <b>HS</b> – horse skidding  |
| radovi proširene biološke reprodukcije        | vuča drva konjima           |

|  |  |
|--|--|
| <b>F</b> – felling – <i>sječa</i>                                      | <b>TS</b> – tractor skidding – <i>vuča drva traktorom</i>  |
| <b>HH</b> – horse hauling<br><i>iznošenje drva samaricom (konjima)</i> | <b>TT</b> – truck transport<br><i>prijevoz drva kamionima</i>  |
| <b>CB</b> – cable hauling<br><i>iznošenje drva žičarom</i>             | <b>FOE</b> – forest order establishment<br><i>uspostava šumskog reda</i>   |
| <b>FH</b> – forwarder hauling<br><i>izvoženje drva forvarderom</i>     | <b>Other</b> – transport of tractors, students, seedlings etc<br><i>prijevoz traktora labudicom, prijevoz učenika na uzgojne radove, doprema sadnica</i> |

In the presentation of the number of services, the work on simple and extended biological reproduction was not classified in lower groups of work. Thus established number of services on the Croatian forestry market amounts to 12. When regarded individually, the jobs of both simple and extended biological reproduction, and those under «Other» would amount to 28 service types.

Figure 12 Forwarding among the forest contractors' services

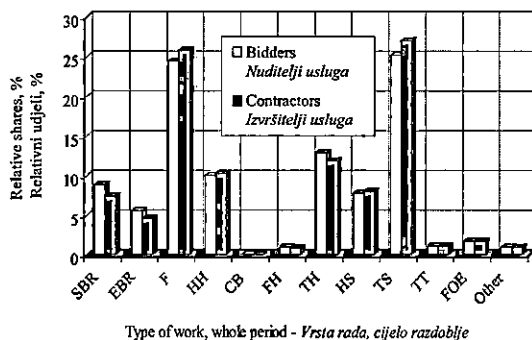
Slika 12. Izvoženje drva forvarderima među uslugama koje pružaju izvođači šumskih radova



Most contractors (1/4) offer the service of cutting and skidding by tractors (Fig. 13). These are followed by those that offer the service of hauling and/or horse skidding (10%). The possibilities of doing other services are closely connected with the owning of the required machinery. Thus, very few contractors, below 1%, offer hauling by cable transporters and forwarders.

Figure 13 Distribution of contractors by services they provide

Slika 13. Raspodjela izvođača prema uslugama koje pružaju



Most contractors (30.2%) offer two services out of twelve defined (Table 9). These are mainly felling and tractor skidding. A considerable part of the offer is given by the contractors that are capable of offering three different service types (23.0%). This service group mainly contains the following: felling, hauling and tractor skidding (38 contractors), and felling, horse skidding, tractor skidding (37 contractors).

Table 9 Contractors by years and number of services they provide

Tablica 9. Izvođači radova prema godinama i broju usluga koje nude

| Year<br><i>Godina</i>                        |   | Number of services – <i>Broj usluga</i>                       |       |       |       |      |      |      |      | Total         |
|--|---|---|-------|-------|-------|------|------|------|------|---------------|
|  |   | 1   | 2     | 3     | 4     | 5    | 6    | 7    | 8    | <i>Ukupno</i> |
|  |   | Frequency of contractors, N – <i>Frekvencija izvođačja, N</i> |       |       |       |      |      |      |      |               |
| 1998   |   | 119   | 139   | 75    | 23    | 7    | 3    |      |      | 366           |
| 1999   |   | 102   | 135   | 57    | 23    | 5    |      |      |      | 322           |
| 2000   |   | 105   | 120   | 50    | 21    | 6    | 2    |      |      | 304           |
| 2001   |   | 61  | 113   | 60    | 27    | 9    | 3    | 3    |      | 276           |
| 2002   |   | 48  | 98    | 49    | 31    | 17   | 7    | 3    | 1    | 254           |
| Whole time period<br><i>Cijelo razdoblje</i> | N | 124   | 173   | 132   | 82    | 29   | 18   | 13   | 2    | 573           |
|  | % | 21.64   | 30.19 | 23.04 | 14.31 | 5.06 | 3.14 | 2.27 | 0.35 | 100.00        |

A great number of contractors that offer only one service type (124 or 21.6%) proves that the desired trend of forming universal, all-round contractors is not taking place, or it does not happen fast enough.

### Jobs contracted/carried out through forest service suppliers

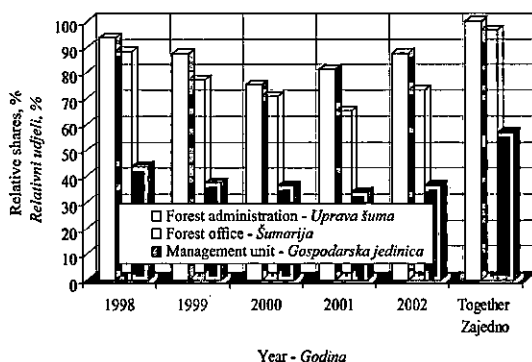
Radovi ugovoreni/izvršeni s davateljima šumarskih usluga

The jobs contracted between «Hrvatske šume» and forest contractors are described by the following indices: number of sites, type and volume of work, completion terms, and work value.

The establishment of the number of sites on which contractors are employed is based on the number of organisational units and the units of forest management division. It has been established that in the given time period the contractors carried out work in all of the sixteen forest administrations, in 165 (96.5%) forest offices, and 473 (56.6%) management units. On the average, they yearly carry out work in 128 (75%) forest offices, and all 314 (38%) management units (Figure 14).

Figure 14 Share of work contracting in all units

Slika 14. Udjeli ugovaranja radova u ukupnom broju jedinica

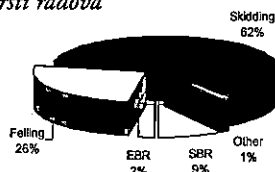


The number of sites is considered equal to the number of forest sections in which work has been contracted. The differences may be accounted for by the work that took place on several neighbouring sections, all being treated like one work site. Accordingly, in the course of five years, altogether 10,200 sites (determined conditionally by forest sections), on which contractors carried out forest jobs, were reported.

On most sites the services of skidding were used (Figure 15). These are followed by the sites of cutting and processing. In the past silvicultural work (SBR and EBR) was often organised through the establishment of a civil legal relation (CLR) with a high portion of temporary labour. With the absence of this possibility, «Hrvatske šume» must now employ (for a definite time period) workers for carrying out silvicultural work, or engage contractors. In future we may expect an increase in the contracts for this kind of work.

Figure 15 Number of work sites by type of works

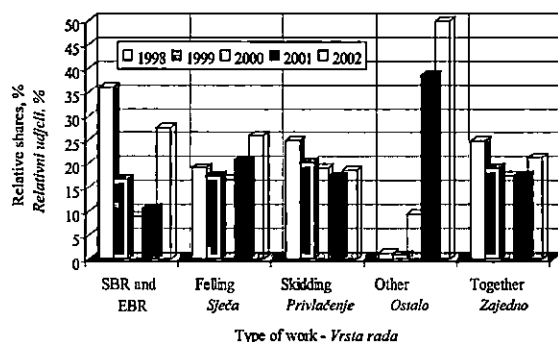
Slika 15. Broj radilišta prema vrsti radova



After analysing the contracted jobs, the money to be paid by «Hrvatske šume» for the completed work was calculated. The average amount paid yearly to contractors is KN 77,337,200. The value of all jobs contracted in five years amounts to KN 386,686,000. The proportion of skidding was the highest (KN 277,562, or 71.8%). The increasing trend of other contracted labour is mainly the result of inconsistency in recording timber transport (Figure 16).

Figure 16 The value of contracted jobs per work type and years

Slika 16. Vrijednost ugovorenih radova prema vrsti radova i godinama



After reviewing the values of the contracted jobs, it was interesting to establish the revenues of the forest service suppliers (Table 10). In every year, the highest number of contractors is the one related to the jobs worth KN 100,000. Their proportion ranges between 28.3% (2002) and 39.0% (1998 and 1999). The highest total value of the jobs contracted with individual contractor in one year is up to KN

Table 10 Distribution of contractors per year and the value of contracted jobs

Tablica 10. Raspodjela izvođača prema vrijednosti ugovorenih radova i godinama

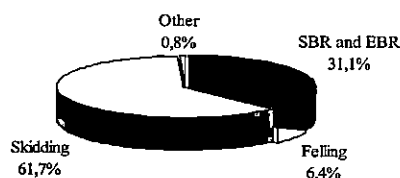
| Value of contracted jobs,<br>KN 10 <sup>3</sup><br><i>Vrijednost ugovorenih<br/>radova, 10<sup>3</sup> kn</i> | Year - <i>Godina</i>                               |      |      |      |      | Whole time period       |        |
|---|--|------|------|------|------|-------------------------|--------|
|   | 1998   | 1999 | 2000 | 2001 | 2002 | <i>Cijelo razdoblje</i> |        |
|   | Number of contractors, N – <i>Broj izvođača, N</i> |      |      |      |      | %                       |        |
| 0 – 100   | 137  | 119  | 105  | 86   | 65   | 139                     | 25.84  |
| 100 – 200   | 85   | 67   | 71   | 66   | 59   | 83                      | 15.43  |
| 200 – 300   | 45   | 41   | 38   | 36   | 23   | 58                      | 10.78  |
| 300 – 400   | 24   | 31   | 22   | 22   | 19   | 28                      | 5.20   |
| 400 – 500   | 15   | 12   | 14   | 13   | 16   | 28                      | 5.20   |
| > 500   | 45   | 35   | 31   | 28   | 48   | 202                     | 37.55  |
| Total, N – <i>Ukupno, N</i>   | 351  | 305  | 281  | 251  | 230  | 538                     | 100.00 |

5,500,000, i.e. up to KN 11,100,000 in a five-year-period. It has already been said that the mentioned values are the contracted prices of the jobs. The real revenue (profit) of the contractors is the difference between the presented revenues and all expenses to be covered by the work contractors.

With the assumption that the initial prices at a public contest present the cost level upon which individual jobs can be carried out individually, the comparison of the contracted prices established the subtracted amounts («savings») realised by «Hrvatske šume». The average annual difference between the initial and contracted prices amounted to around KN 2,156,000. These values ranged in reality between at least KN 1,272,715 (1999, 11.8%) to up to KN 3,034,666 (2001, 28.2%). The total financial effect, realised by «Hrvatske šume» over five years through contractors, amounts to KN 10,779,117 (Figure 17).

Figure 17 Distribution of a five-year financial effect (savings) per job type

Slika 17. Raspodjela 5-godišnjeg financijskog efekta (uštede) po vrstama radova



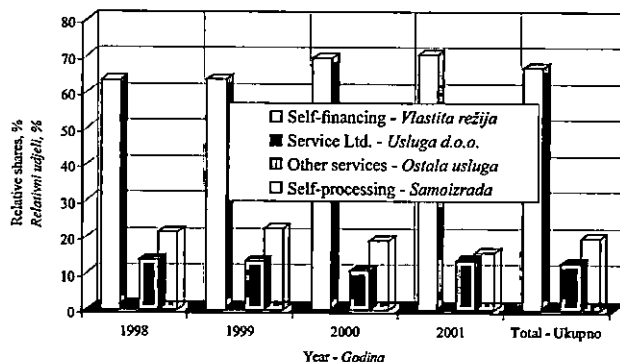
Forestry contracting is made every year on different terms that ranged between one day and one year. However, the short-term ones are the commonest. The average term was 50 days, while 38.8% of contracts were made with terms shorter than 30 days.

A review of the work per individual contractor was made using the Business Reports of «Hrvatske šume» and the Report on Production Realisation by the company's Production Department. Based on this, the proportion of contractors in the total volume of cuts and skidding was established. The said sources do not contain the data on the contractors that carried out work on biological forest reproduction, so that the respective proportion of contractors may be estimated only by assuming that the contracted and completed jobs were of the same size. Furthermore, the Review does not include the year 2002, as at that time reports were not required.

The proportion of contractors in cuts and wood processing («other services» in Fig. 18) ranges between 10.8% in 2000 to 13.7% in 1998. In the analysed four years, they are responsible for 12.8% cuts in the processed 1,698,740 m<sup>3</sup>. This is an annual average of 424,685 m<sup>3</sup>. The significance of the contractors is even somewhat higher when regarding industrial timber, though a little lower regarding stacked timber. In these two cases, the respective proportions are 13.8% and 11.7%.

Figure 18 Share of cutters by years

Slika 18. Udjeli izvršitelja sječe po godinama

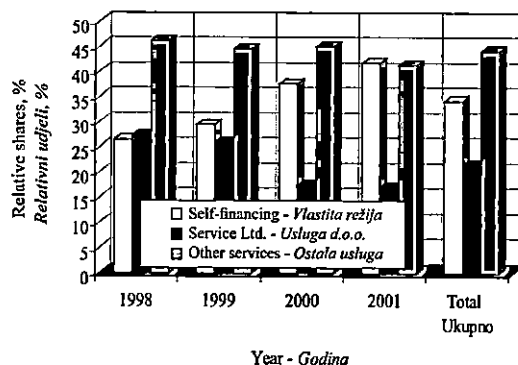


The proportion of self-processing (cutting and processing done by local population for their own needs) is particularly significant with the processing of stacked wood (40.7%). «Hrvatske šume» carried out 67.0% using their own capacities, or 67.7% if counting the participation of the *Services Ltd.* (former trade companies owned by «Hrvatske šume»).

In timber skidding between 1998 and 2001, contractors carried out for «Hrvatske šume» 44.2% of the total work (Figure 19). The highest proportion in skidding (46.2%) was at the beginning, the lowest (41.3%) at the end of the observed period. In four years, they hauled altogether 4,690,527 m<sup>3</sup>, which is an average of 1,172,632 m<sup>3</sup> every year. With a proportion of 57.6%, they hauled more than half the volume of stacked wood, i.e. 38.8% of roundwood.

Figure 19 Share of skidding operators by years

Slika 19. Udjeli izvršitelja privlačenja po godinama





The proportion of foreign contractors in the work on biological forest reproduction in Croatia is estimated according to the volume of contracted work. The proportion of the work on simple biological reproduction contracted with foreign firms in the given period amounts to 10.2%, while the extended biological reproduction amounts to 6.0% of their work.

### **Estimate of forestry contractors**

#### **Ocjena izvoditelja šumskih radova**

Forestry contractors in Croatia are small, poorly equipped family firms, often without any regularly employed staff, with no typical, or frequently without any, forestry work devices. Only 36% of the contractors have regularly employed workers and their own work devices. Only 15% of them employ more than three workers, while between 2% and 3% employ forestry engineers. Most firms engage in forestry as a short-term activity. The firms are generally short-lived, and their fluctuation is high. Only 20% of them are active in offering services in forestry for more than five years. Most (30%) may offer services in only two work types (cuts and tractor skidding). Their significance, however, is in the volume of work they perform. Every year they carry out an average of 13% of cuts and 44% of skidding. With a proportion of 10%, they annually participate in the work on biological forest reproduction, and with 60% in wood transport.

Martinić (1998a) considers that *a solid and qualified* contractor is the one that owns at least two typical forest mechanisation devices (forwarder, skidder train) and at least three regularly employed workers. Accordingly, out of 538 analysed contractors, only 1/5 could be regarded as such. The remaining 4/5 contractors (Profile: occasional workers without typical work devices, even without any basic forest work devices) should be taken as temporarily engaged in forestry as occasional, temporary, additional and short-term activity. This means that in the given period, in the field of service entrepreneurship there have been no improvements, and the independent forestry contractors are still not qualified, stable and good-quality components of Croatian forestry.

The biggest supplier of forest work, «Hrvatske šume» has no efficient mechanisms for selecting reliable and responsible forestry contractors, controlling that the work is done timely and properly, and sanctioning the contractors' behaviour that is against the regulations. The absence of an overall system of information on the suppliers of forestry services is a serious shortcoming for both a proper analysis of the situation and the improvement of the issue. Under such condition it is inevitable that the qualifications and business capabilities of contractors are confirmed in order to insure an acceptable quality level of forestry work. A complete certification would

secure market priority to the authorised and licensed contractors and also guarantee professional and timely execution of work.

## THE PRINCIPLES USED IN THE DEVELOPMENT OF THE CROATIAN CERTIFICATION MODEL

### NAČELA RAZVOJA HRVATSKOG MODELA POTVRĐIVANJA

The certification of forestry contractors is a procedure by which the qualifications and capabilities of safe, efficient, and proper forestry work are assessed. At the end of this procedure, contractors acquire a *certification – licence*, which makes them qualified for the contests in Croatian forestry. In order to acquire the attribute «qualified», contractors must meet the requirements of registration, staff qualifications, corresponding obligatory levels of social, safety, organisational/technical, and environmental work aspects. Later priorities for thus qualified contractors should consist of the rights of contesting – which is felt at the moment when unqualified contractors are prevented from contesting for such jobs.

The idea is that by the certification of contractors it is possible and necessary to secure the work in compliance with the regulations of forestry profession. The aims of certification are as follows:

- ☐ Insurance of proper and professional forest work as a significant public interest in the management of this important natural resource;
- ☐ The guarantee to the supplier that the ordered work will be carried out professionally and timely;
- ☐ Contractors' obligation of permanent improvements in all aspects of their activities in accordance with transparent professional criteria.

Contractors' certification is considered a good way of regulating the relations and settling the situation on the market of forestry services. This measure is beneficial both for forest owners/forest job suppliers and contractors. To suppliers, it presents a guarantee for professional, proper, timely and economically efficient forest work, and simplifies the decisions on selecting and engaging contractors. To contractors, the certification is an advantage in terms of limiting the possibilities of unfair competition. Thus, the certification is a filter for excluding those contractors that cannot meet the criteria that are the subjects of licensing (safety, social, technological/organisational, etc.).

The certification of contractors will inevitably result in higher prices of their services. It is, however, unavoidable, if the aim is to increase the quality of forest work – which is impossible with the frequently applied principle of «as cheap as possible». Total forest management effects will certainly exceed the investments into

the implementation of the licensing model. Instead of considering it as costs, this should be regarded as a long-term multiply lucrative investment. The expenses of establishing the system should also be participated by the Ministry of Forestry through various programmes, financial support and credit lines, e.g. for the purchase of more adequate and modern mechanisation and other equipment. Among others, «Hrvatske šume» should be a participating party.

### The criteria relevant for acquiring the licence

Relevantni kriteriji za dobivanje licence

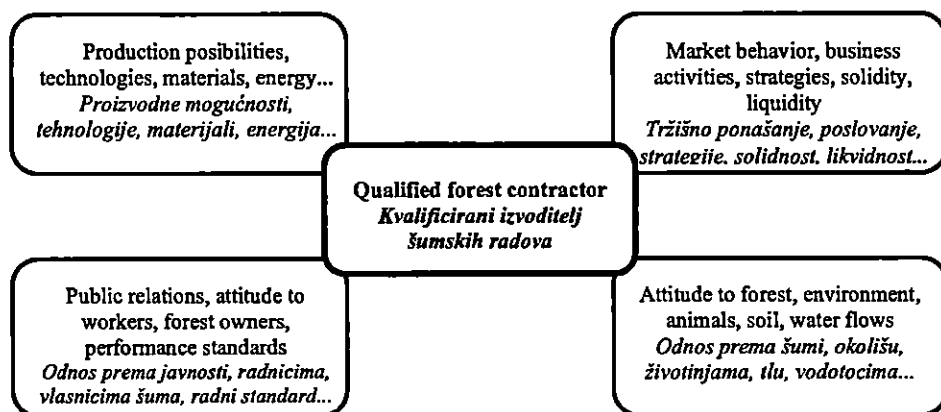
The following questions should be answered in the process of selecting qualified forestry contractors (primarily the ones for forest exploitation and forest road building), and acquiring the licence in Croatia:

- ☐ Which particular unit should be confirmed?
- ☐ What should be tested as the qualification condition?
- ☐ What and which are the proofs of fulfilled conditions?

In finding the answers to these questions, the current aspects of forest work were considered (environmental consideration, work humanisation, etc.), as well as the protection of the employees' rights, and the development of entrepreneurship as a significant part of today's and future forestry. In doing this, we used numerous domestic and foreign sources of forest services companies and their organisation, environmental suitability, work safety and other aspects significant for evaluating contractors' qualifications.

Figure 20 Areas for assessing the competence of forest contractors

Slika 20. Područja prosuđivanja kvalificiranosti izvoditelja šumskih radova



The suggested contractor certification model is based on the evaluation of qualification in terms of four basic groups of factors. A qualified contractor is the one that fulfils the conditions at the level of all of the four subject fields:

1. *Technical/technological field* – types, volume and value of the work for which individual contractors are engaged, and their production possibilities. The production possibilities are directly linked with the number and qualification of the staff, and the number and condition of machinery they possess. Accordingly, the technical and technological suitability of the contractor to the basic technologies and categorisation of the terrain includes the testing of the following two aspects:

- ☐ Type, number, and technological level of the equipment;
- ☐ Age of equipment.

The first task in this phase is to establish the production possibilities of the contractor in terms of particular work types, i.e. which production phases he can accomplish with his own staff and work devices. All is defined by the degree of independence, which is a significant indicator of business capability, and a guarantee of his operating ability.

2. *Profession/staff field* – undoubtedly deciding in licensing a contractor. With equally good work preparation, the contractor with higher education level of his staff may carry out the job at a higher quality level than the one with lower education. Higher qualification level means higher level of work technique, which results in higher efficiency and lower costs due to injuries or organisation losses. Health and safety of workers cannot be separated from the professional capability of a forest contractor. To every person these factors present a basic value of the working and living standard.

For these reasons, the professional/staff field includes the necessity of satisfying the minimum conditions of formal professional qualification for the following individual work groups:

- ☐ Number and professional education of the work manager;
- ☐ Number and professional education of the workers;
- ☐ Qualification for safe work;
- ☐ Outfit with safety means;
- ☐ Work standard care;
- ☐ Relation towards ecological aspects of work.

3. *Economical/organisational field* – The following are some aspects the valuation of which is required for establishing the economical/organisational qualification of a forestry contractor:

- ☐ Level of company organisation;
- ☐ Permanent supervision of work quality – system of responsibility;

- ☐ Technical means for acting in case of injury/accident at work;
- ☐ Business solidity.

The size of the organisation and the sections that execute the individual business functions is not important. Significant are the presence and the organisation of these functions as integral parts of the management. If the bearer of any production/business function does not work alone but in collaboration with others, or with occasionally engaged workers (subcontractors), this is accepted with a certain reserve, and cannot be valued as entirely satisfactory. It is necessary to establish, whether the responsibilities and rights of the individual business function bearers have been clearly defined, and whether they have been mutually coordinated. A great attention should be paid to the organisation and implementation of the operative production preparation as a significant guarantee of quality and timely execution of the given tasks.

In order to estimate the business solidity, it is particularly important whether the contractor timely fulfils the contracted tasks. It is also significant to estimate, whether the contractor has been organised so as to secure adequate revenues to the supplier, with simultaneously considering the quality and terms of delivery.

4. *Ecological field* – Forestry contractors are increasingly faced with the requirements of ecological considerations during their work. A part of their business strategy should also be recognizable, e.g.:

- ☐ Strategy of minimum damage to stands and soil;
- ☐ Prevention of environmental pollution by oils, etc.;
- ☐ Workers' training in practical environmental measures;
- ☐ Establishment of stimulation systems for environmental care;
- ☐ Establishment of relationships with interest groups (associations, societies that take fight for public interests related to the protection of nature and environment;
- ☐ Accessibility and readiness for the application of new, environmentally friendlier technologies, materials and products.

If a forest contractor wishes to acquire the qualification in this licence segment, he must firstly prove that he obeys the legally prescribed measures of environmental protection. The current inefficiency of supervision and sanctioning of ecologically unacceptable behaviour does not mean that this aspect is unimportant.

In the field of ecological protection, the environmental suitability of the technology, the characteristics of the work devices, and the workers' qualifications are evaluated. Particularly interesting are the preventive activities at using the technologies, and the awareness and consistency at removing the caused damage in the environment. Proven events of this are more important than declarative readiness of the contractors to commit such tasks. Some of the preventive activities are the following: use of fast-disintegrating oils; protection of trees from damage (at cuts, upon hauls, at

storing wood, etc.); putting up signs or giving additional instructions to workers for the protection of extremely susceptible environments (sources, animal habitats, etc.).

### SUGGESTED CERTIFICATION MODEL PREDLOŽENI MODEL POTVRĐIVANJA

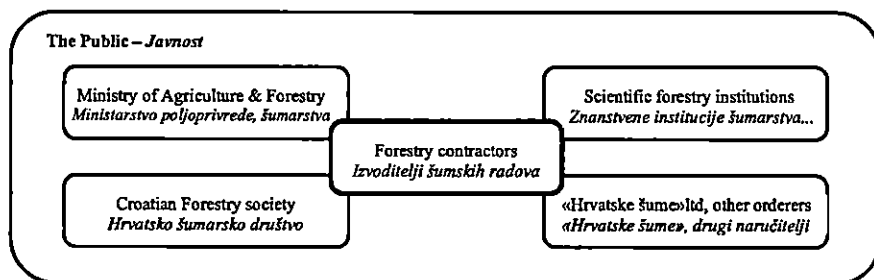
The certification model contained in this study, which will be suggested for the use in the forestry of the Republic of Croatia, includes the following:

- ☐ Establishment of the possible bearers of licence;
- ☐ Determination of the minimum conditions for the entrance into the licensing procedure;
- ☐ Establishment of the protocol and participants in both licensing phases;
- ☐ Defining the legal frame and mechanisms (document types, law procedure, etc.), and
- ☐ Costs of licensing procedure.

The certification of forestry contractors should not be incidental, and even less should be biased. It therefore cannot be carried out by the forest owner, or work supplier, but by an independent, qualified group of experts/evaluators in an acknowledged specialist organisation or association. It is important that this organisation has no direct business relations with the contractor that is the candidate for licensing. In Croatia there is today no institute for certification of forestry contractors. Likewise, there is no legislative regulation of this issue, nor any authorised institutions, bodies and work groups. All this is yet to be established. Significant discussions on the most acceptable model for Croatian forestry should firstly be expected. For the first time in Croatian forestry science, this study suggests a *draft of the model of forestry contractors' certification*. It includes the choice of the government bodies, institutions and institutes that should be included into the procedure, i.e. that should be the bearers of particular activities and tasks in the authorisation and licensing.

Figure 21 Interested parties in the licensing procedure

Slika 21. Interesne strane licenciranja



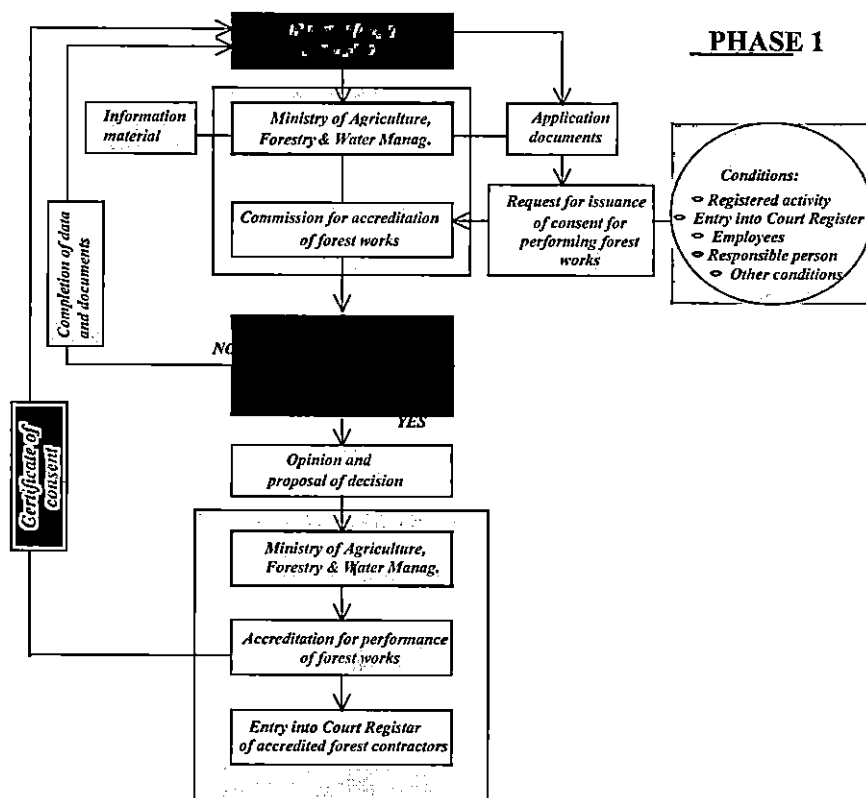
Based on the assessed situation and the profile of a forest contractor, and considering the experience of developed countries, it is suggested that the certification model should be carried out in two phases:

1. Authorisation of forest work;
2. Licensing – evaluation of qualifications and capability for forest work.

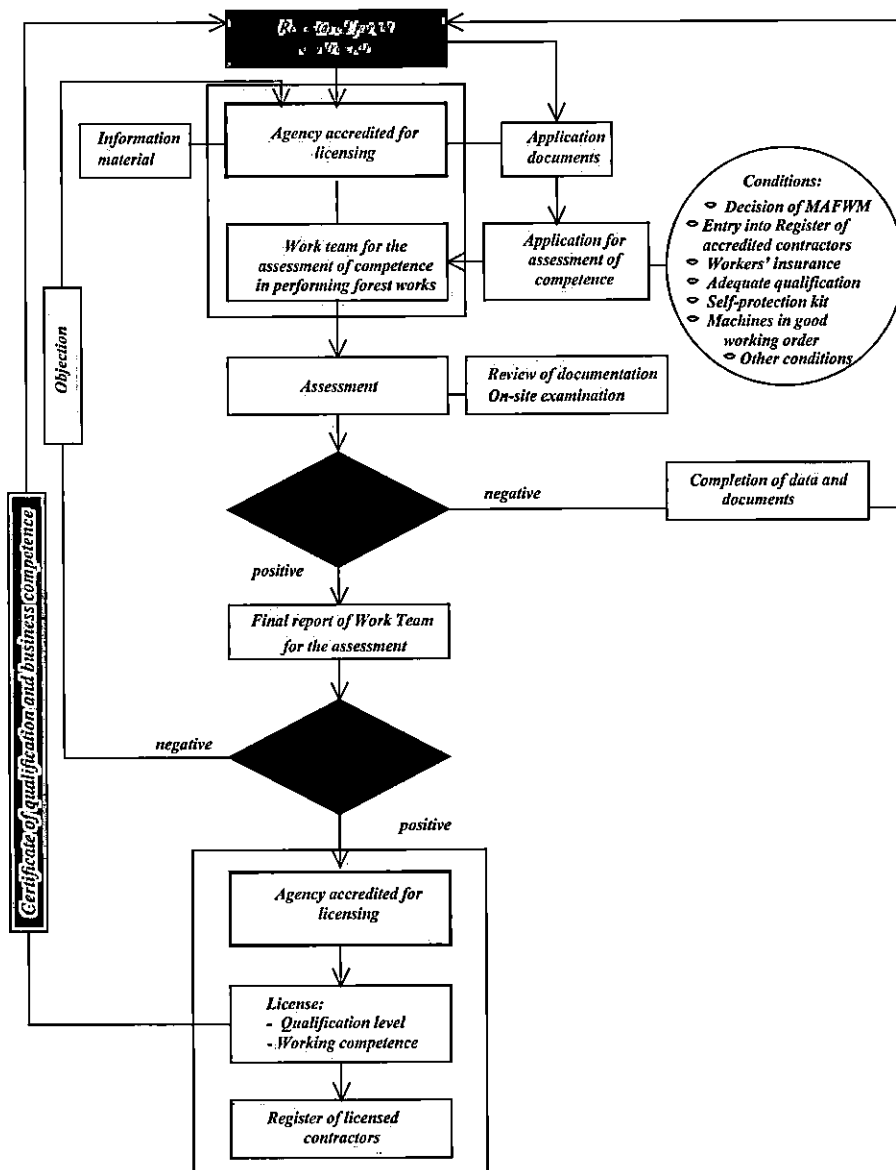
Figure 22 shows the model scheme with the certification procedures and bodies. The Croatian licensing system should be established according to the expert criteria and the legally assessed transparent body. The basic normative act for issuing authorisations and licensing is in any case the new *Forest Law*. It is expected that this law will solve the principal issues linked with licensing, and sub law acts should settle them in detail – through the provision of the Croatian government, or by the statutes in accordance with the *Forest Law*. The bearer of this will be the Ministry

Figure 22 Diagram of the proposed model for licensing forest contractors

Slika 22. Shema predloženog modela potvrđivanja izvoditelja šumskih radova



## PHASE 2



of Agriculture, Forestry and Water Management. The sub law acts should precisely assign the bearers and ways of licensing, the contents and the form of the relating documents and forms, etc. In the course of carrying out these jobs, the Ministry



and the Croatian Forestry Society will form operation bodies for implementing the authorisations and licensing. A special task of the Ministry will be to inform the licensees on all essential issues linked with licensing. By informing its contractors on the new obligation, «Hrvatske šume» can greatly contribute to the success of this part of the task.

### **Authorisation for forestry contracting**

#### **Ovlašćivanje izvođenja šumskih radova**

According to the suggested model, the authorised ministry of forestry (MAFW) would carry out forestry contracting. The Commission carries out the procedure of establishing the conformity of the applicant with the prescribed conditions for Authorisation. The Ministry assigns the Commission, which should consist of the representatives of the Ministry, private forest owners, «Hrvatske šume», independent contractors, acknowledged forestry scientists, and non-government associations.

The authorisation of forestry contractors necessarily includes the procedures prior to the submitting and processing of the application, i.e. before the process of confirming the contractor. This entails the advertising and information material, presentations, interviews, and other activities of including the contractors into the process of certification.

The application for authorisation is submitted to the Ministry of Agriculture, Forestry and Water Management. After the inspection, and in case of negative opinion, the Commission returns the documentation to the applicant with explanation and instructions for supplementation; in case of positive opinion, the Commission directs its opinion and suggestion for approval to the MAFW. Based on the opinion and suggestion, the Minister issues the certificate on compliance with the forestry contracting. The applicant is delivered the certificate and he is booked in the Register of authorised contractors.

It is very important that Forest Law defines the authorisation for forestry contracting as mandatory, with the provision that only authorised and licensed firms may be forest contractors. This should equally apply to both state and private forests. It is indispensable to allow the possibility that forest owners may carry out certain non-risk and simple jobs on their own.

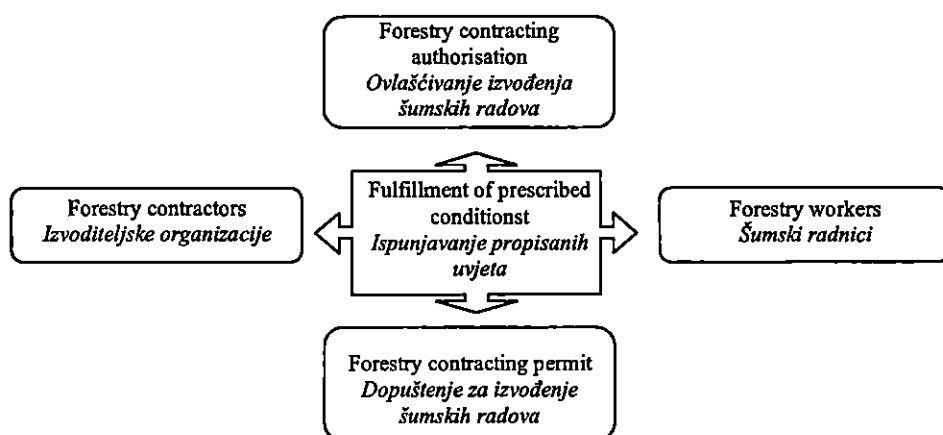
The authorisation of contractors and their registration into the central Registry will introduce discipline in this field of activity, particularly regarding their obligations toward the employees and the government. Likewise, the government receives the insight into the number and status of forestry contractors, and the possibility of efficient mechanisms for stimulation their work and business.

Subjects, objects and applications for authorisation  
*Subjekti, predmeti i zahtjevi ovlašćivanja*

Authorisation is the allowance of contracting based on the fulfilment of certain prescribed conditions. The subjects of authorisation are legal persons that have registered their field of work together with the jobs that are specific of forestry. Figure 23 shows the objects and subjects of authorisation.

Figure 23 Subjects and objects of forestry contracting authorisation

Slika 23. *Subjekti i predmeti ovlašćivanja za izvođenje šumskih radova*



A legal person may carry out forestry contracting jobs only on the basis of the certificate issued by MAFW s. The application for the certificate is submitted to the Ministry with the following documents:

- Verified copy of the certificate issued by the Court of Commerce on the registration in the authorised court of commerce, whereby it is evident that the legal person is registered for the work in forestry contracting;
- Name, surname and personal identity number of the person responsible for managing the legal body's affairs;
- Evidence that the person responsible for the authorised legal body has not been sentenced for criminal deed against the Republic of Croatia;
- List of staff;
- Verified copies of staff's health and pension insurance certificates;
- Act of systemising the work posts of the staff with the prescribed specialist qualifications and the description of the tasks with each individual work post;
- Certificate on paid administrative tax.

Another condition included in the suggested model requires that only authorised workers within the authorised legal body may carry out forest work. The application for the authorisation is submitted to the MAFW together with the documents certifying that the applicant

- is a Croatian citizen;
- is 18 year of age;
- has mental, physical and health capabilities;
- has not been sentenced for criminal deeds against the Republic of Croatia, or a criminal deed against life and body, or against other's property, or other criminal deeds with elements of violence, greed, or base instincts;
- is qualified for safe work;
- is qualified for giving first aid;
- is qualified for direct forest work (cutter, tractor driver, etc.).

The fulfilment of each of the listed conditions required from the contracting firm and the persons included in forestry work is proved by documents (certificates) issued by authorised institutions.

The Ministry will issue decisions on withdrawing the authorisation issued to the contracting firm and/or workers employed in such organisations in the following instances:

- if they do not meet the requirements contained in this model of forestry contracting authorisation;
- if the authorisation has been obtained on the basis of false evidence;
- if they carry out forestry work against the regulations established by special prescriptions;
- if there are the reasons that may result in threats to the life and health of humans, and the environment and property.

The authorising institution clearly differentiates the authorised from unauthorised contractors. The advantage of the former becomes thus recognizable and acknowledged on the market. It also removes unfair competition on the market of services, which is beneficial to all, the licensed contractors, suppliers, and the forestry as a whole.

Authorisation is an instrument of achieving the 'first order selection', which puts all contractors to equal position in terms of their legal position, rights and obligations. It presents the first step towards the certification of forestry contractors, and it relates only to the formal and legal premises necessary for carrying out forestry work. A significant part of authorisation is the preparation of the contractors for the second step – licensing.

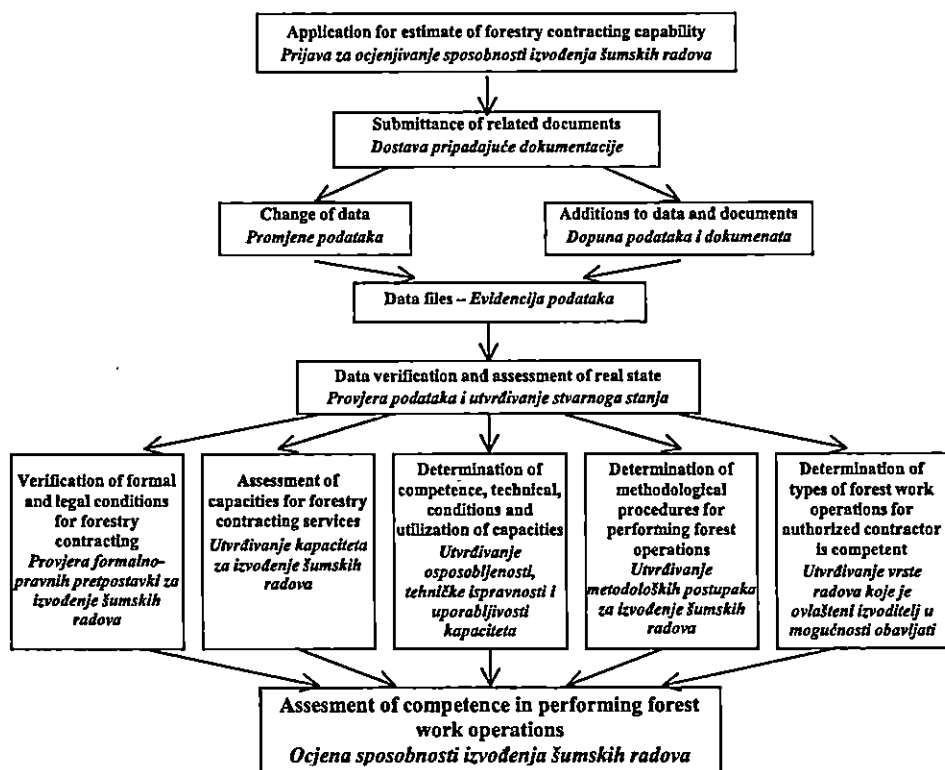
## Licensing *Licenciranje*

Croatian Forestry Society (or, alternatively, the future Forestry Chamber) has been suggested as the major licensing institution. An independent and acknowledged specialist association would guarantee professional, unbiased and reliable estimates of forestry contracting capabilities. In terms of this, a special work group for licensing consisting of respectable forestry experts and scientists would be formed within the CFS. The licensing procedure can also be organised through several territorially dislocated work groups.

Authorised forestry contractors apply to the licensing procedure upon acquiring the approval from the Ministry, or after the expiry of the previously issued estimate. Figure 24 presents the procedures of capability estimate for forestry contracting.

Figure 24. Procedures of evaluating the capabilities of carrying out forestry contracting services

Slika 24. Postupci ocjenjivanja sposobnosti izvođenja šumskih radova



In order to have their capabilities of carrying out forest services assessed, contractors must submit the related documentation. They must fill in all required data in the prescribed forms, verify them with other documents and submit to the Croatian Forestry Society. Contractors are obliged to report all changes (number of staff, status of work devices, equipment, etc.) that may be relevant for capability of carrying out the work.

Upon inspecting the received data and documents, if needed, the work group invites for their supplementation. By direct insight, the work group assesses the existence of formal and legal presumptions for carrying out forestry work, qualifications, technical correctness and the usability of the capacities. It is particularly important that the members of the Work Group are persuaded whether the contractor is qualified and economically capable for all types of forest work he wishes to carry out.

Based on the findings, the Work Group writes the report and issues the suggestion and evaluation. The opinion and suggestion contained in the decision is delivered to the Presidency (managing body) of the CFS, which makes the conclusion on issuing the certification – the licence on qualification and business capability of the legal body for carrying out forestry services.

In case that the application is refused and the licence not issued, the applicant may file complaint within a prescribed term, enclosing explanations and evidence on which the complaint is based. If the complaint is justified, the evaluation procedure will be repeated.

The licence is issued for a definite time period. The suggested time period in case of the first licence is five years. It is subject to control, and may be withdrawn if the minimum conditions have disappeared. The issued document of licensing (certificate, identity card) must, among others, contain the basic data on the contractor. It is particularly important to list the types of service for which the licence has been issued, i.e. for which the contractor is regarded as capable and qualified.

The changes and additions to the licence is made in cases of significant changes in the capacities of the contractor, the introduction of new equipment, validity expiry of the available outfit, change of staff number, expired date of renting validity, and other changes that have impacts upon the capability of carrying out forest services. The changes should be reported to CFS with the related data and documents required for assessing whether the licence should be supplemented or changed. Likewise, CFS retains the rights of changing a licence whenever it has been established by a single case of inspection of report that the changes in capacities, equipment and other devices are of such nature that may significantly impact the capability of carrying out forest services.

### Minimum conditions for issuing the licence *Minimalni uvjeti za izdavanje licence*

While in the first certification phase formal and legal conditions do not differ essentially from the requirements for any other administrative procedure, licensing is a specialist certification whereby the fulfilment of minimum conditions may suffice for the acquisition of the licence. Taking into consideration all aspects of forest work, the common opinion of the science and profession is that the minimum criteria for every type of forest work should include the following conditions:

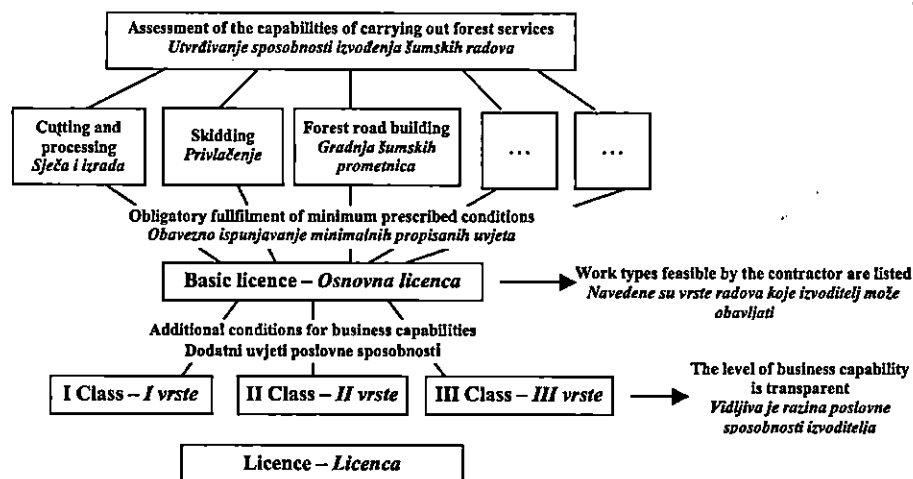
- ☐ Technical and technological,
- ☐ Staff qualification,
- ☐ Economical and organisational, and
- ☐ Ecological/environmental.

This study is presenting the approach that the basic (elementary) unit of certification should be the wholeness of entrepreneurship consisting of at least one specific work device and one regularly employed worker. There is no reason for refusing the licence to such contractor, if he fulfils all other formal and legal professional criteria and conditions. Such contractor is capable, although his business capability is reduced to small-size forest services.

On the other hand, compared to those with more work devices and bigger staff number, a smaller business capability of such contractors should not be neglected. The same licence to all contractors would lead to their economical equalisation re-

Figure 25 Principle of assessing the capabilities of carrying out forest services

Slika 25. Princip utvrđivanja sposobnosti za izvođenje šumskih radova



gardless of the capacities they possess. It is therefore necessary that, along with the elementary professional qualifications (separating qualified and unqualified contractors), the licensing should be supplemented with another dimension, which would be given to the supplier as the *information on the level of business capability of the contractor*. The presented model of certification suggests that this could be obtained by introducing several levels (categories) of licence.

Mechanised work in forest exploitation as the most significant area of forestry contractors' activity, and the commonest subject of «Hrvatske šume» public contests, should be the first subject of licensing and, as the initial phase of certification, they should present a specific training for further development and application of the model. Accordingly, this article suggests the minimum conditions for making a positive evaluation of the capabilities for carrying out forest services in the case of cutting, processing, and skidding.

• *CUTTING AND PROCESSING/SKIDDING – minimum conditions:*

According to the certification model, a forestry contractor will be regarded as capable for cutting and processing and/or skidding, if he proves that

- he is authorised for forest work;
- he is registered for forestry work;
- he is entered into the Registry of authorised forestry contractors;
- he has at least one employed person that is authorised by MAFW for the work on cutting and processing and/or skidding;
- he insured the staff that is included into the work on cutting and processing/skidding against the case of death or injuries caused while working on these jobs;
- he owns at least one specific work device; chain saw for cutting and processing; adapted agricultural tractor or forwarder for mechanised skidding; one pair of horses for horse skidding;
- his specific work devices used for cutting and wood processing/skidding are technically correct and usable;
- he owns at least one set of specialist equipment, technical devices and tools used for cutting/processing (axe, wedge, gravity cable, turning hook), and skidding (winch, protecting structure, horse ropes, etc.), per person directly included into the operations of cutting and processing/per each specific work device for skidding;
- the specialist equipment, technical devices and tools for cutting and processing/skidding are technically correct and usable;
- he owns at least one set of safety equipment (helmet with protection net, antiphons, gloves, boots, overalls, etc.) per person directly included into cutting and processing and/or skidding;

- the safety equipment is technically correct and usable;
- he has an organised function of safety at work according to regulations;
- he can independently carry out the jobs of cutting and processing/skidding;
- he has the documents/provisions that regulate the ways and procedures of planning, carrying out, and expert supervision of cutting and processing/skidding;
- his previous work did not cause unacceptable stand damage;
- he has not been in frequent and serious conflicts with the organisations that take care of public interests related to environmental protection.

By fulfilling these conditions, the contractor acquires the licence for carrying out cutting and/or timber skidding. The fulfilment of the conditions is proved by required documents issued by authorised institutions and institutes. Among others, these are the following:

- Staff registration with the institute of pension and health scheme, and the authorisations for forestry work issued by MAFW – *number and qualifications of regular workers*;
- Insurance policies in case of death and injury of the workers included directly into the carrying out of forest work – *staff insurance*;
- Certificates on the compliance of the tractors with the conditions prescribed by the Statute on basic requirements for tractors used in agriculture and forestry (NN No. 75/01 of April 2002); the certificates of the authorised institutions for the testing of noise and vibrations of the chain saws, or the certificate that the age of the chain saw is below three years – *technical correctness and usability of specific work devices*;
- The possession of at least half of the registered devices on the basis of ownership, and regular employment of at least half of the registered staff – *capability of independent carrying out of forest services*;
- The certificate issued by the Ministry of Home Affairs on the absence of punishment or processes due to endangering the environment; recommendation of previous suppliers of services, and the certificates of the organisation that care for public interests related to the frequent and serious conflicts – *environmental consideration*.

### **Types of business capability as a component part of the licence**

Vrste poslovne sposobnosti kao sastavni dio licence

The licensing confirms which of the forest services can be carried out independently by the contractor, who, based on the fulfilment of the minimum conditions,



acquires the licence. On the other hand, based on the total evaluation results (particularly in the area of staff qualifications and technical/technological relations), the contractor gets additional mark of the level of business capability. Such selection of the licensed contractors enables a specific rating, which is important for the supplier in case that he needs a particular level of qualification and capacity of the contractor. This equally applies to the creators and bearers of the policy of promotion and development of forestry entrepreneurship, as it highlights the business subjects that should be particularly respected. The motivation effect is also significant of this additional classification, as it initiates positive competition on the market of forestry services.

The certification model contains the selection of the licensed contractors into categories with the following grades of business capability:

- 1) *I Class Licence* – A forestry contractor is given this licence category if he fulfils the prescribed minimum conditions for carrying out a particular type of forest operations at the level of the least number of staff and the least number of work devices.
- 2) *II Class Licence* – A forestry contractor acquires this licence category if he, besides the minimum conditions, fulfils the following additional ones:
  - He employs regularly at least five workers authorised by MAFW for carrying out forest work;
  - He employs regularly at least one person (specialist job manager) with secondary specialist education in forestry (forestry technician);
  - He owns at least three specific forestry devices (regardless of the job type);
- 3) *III Class Licence* – A forestry contractor acquires this licence category, if, besides the minimum conditions, he fulfils the following:
  - He employs regularly at least 10 workers authorised by MAFW for carrying out forest work;
  - He employs regularly at least one person (expert work manager) with high specialist education in forestry (graduated forestry engineer);
  - He owns at least 8 specific work devices for the work in forestry (regardless of the type of work).

The level of business capability is assessed cumulatively for the total number of staff and work devices, whereby it is important that each type of work requires the minimum number of staff and work devices.

#### **«HRVATSKE ŠUME» LTD. IN THE PROCESS OF LICENSING** **HRVATSKE ŠUME d.o.o. U PROCESU LICENCIRANJA**

«Hrvatske šume» Ltd. Zagreb is a trade company with a mandate of managing the national forests and forestlands in the Republic of Croatia. This includes the

responsibility for organisation and carrying out of all forest management operations. The maintenance of qualification and work safety, with a staff of over 4,500 directly employed in forestry production, are significant features of the company. This firstly includes the following:

- ☐ Standardisation of the work capability and safety at work (statutes, standards);
- ☐ Organisation of the work safety system with the central department of work safety;
- ☐ System of previous selection of future production staff;
- ☐ Internally continuing and/or occasional training of production staff;
- ☐ Programme of introducing new workers;
- ☐ Supply of ergonomically more suitable work devices (tools, machines and devices);
- ☐ Financial support to monitoring and research.

With meeting all legal conditions related to the social and other rights of their staff, in relation to their forestry contractors, «Hrvatske šume» fulfils all prerequisites for correct and professional carrying out the work using its own staff.

Where is the position of the forestry work teams within «Hrvatske šume» in the process of licensing suggested for forestry contractors? The following should be underlined:

- ☐ A trade company which runs business on the basis of profit, «Hrvatske šume» as forestry work operator is a participant of market contesting, with permanent need of rational production and economically efficient business transactions;
- ☐ All to date evaluations of the company's levels of realising the work organisation functions, working techniques, work efficiency, and safety at work (Vondra, Martinić, Zdjelar, etc.) have shown a very low level of organisation and realisation of all these functions.
- ☐ One part of today's forestry contractors once worked in «Hrvatske šume». It is likewise certain, that this process will increasingly continue in near future;
- ☐ In everyday production of «Hrvatske šume», many of the quality indices in forestry operations are either not being sufficiently monitored, or they are being entirely ignored.

According to all that was presented above, it is of crucial importance to determine the way in which the suggested licensing model would encompass «Hrvatske šume» with its staff – the bearers of forest work operations. While I studied and developed this paper, I never thought of any kind of privileged position for the em-

ployees of «Hrvatske šume». However, the alarming state in the area of supplying forest work to other contractors must be taken into consideration, since almost half of the significant forestry work volume has been carried out without basic professional regulations, principles and criteria. It is clear that «Hrvatske šume» is considered as a more systemised part in the hierarchy of forestry production.

The forest work operators of «Hrvatske šume» should also be submitted to the obligation of licensing, the procedure of which will be simpler, and the formal and professional criteria more organised and easier to obtain. The level of satisfying each of the criteria will be about the same for both sides – anything else would be damaging for the general progress.

Being directly responsible for all aspects of forest management in Croatia in the section of carrying out forestry operations – which is very significant for the public perception of the forest management benefits - «Hrvatske šume» will undoubtedly be extremely interested in such transparent procedure as licensing. It will thus gain a significant confirmation of its correct and responsible work in forestry.

## DISCUSSION

### RASPRAVA

Forestry service suppliers have become an avoidable factor in the forest management in the whole world. Accordingly, forest service contractors with all attributes that guarantee professional, timely and economically successful work are desirable and needed in Croatian forestry. The expected development of this entrepreneurship area in Croatia has not taken place. Service contractors are characterised by organisational inconsistency, staff shortcomings, and poor technical provision, all of which result in technologically low levels of the work carried out. Lower labour costs offered by service contractors are enabled by omitting many technological, methodological and safety procedures (the costs of which should be included in the service prices), which are tolerated, i.e. not sanctioned. Under the conditions with the highest proportion of temporary staff, contractors often lack workers of satisfactory qualifications and outfit, while the business of many of them is of short life, and the service types they offer are very limited. The proportion of such contractors in accidents at work is extremely high, and the staff most often does not have any safety or health insurance.

In spite of the scepticism in the evaluation of forest contractors, their significance in Croatian forestry is unquestionable and great. Above all this refers to the work volume they carry out. However, the appearance of forest service contractors of many different types is an uncontrolled and chaotic process. In 1995 contracting services reached the proportion of 50% of the volume planned by the year 2000 by

the *'Development Programme of «Hrvatske šume» 1991-2025*). If this process remains uncontrolled during the economic re-systematisation of the whole country, forestry included, the result may prove unfavourable for forestry.

The biggest user of services, «Hrvatske šume» should be among the most interested in the achievement of capable and economically acceptable service contractors – partners. As long as their task is the overall management of national forests and the seller of timber, «Hrvatske šume» should stimulate the development of the desired profile of contractors. The basic task of the expert teams of «Hrvatske šume» related to the development of entrepreneurship should encompass the following:

- Middle-term and long-term defining of the contents and volume of the jobs that will be carried out as contracted service;
- Development of contest elaborates encompassing organisational, technical, and technological preparation;
- Development of the methods for control, supervision, and evaluation of the carried out work;
- Development of the tariff system of service prices;
- System of contract clauses and supervisions;
- Designing of the system of stimulating and sanctioning forestry contractors.

In further division of the roles in the development of qualified forestry entrepreneurs at national level, it is important that MAGW suggests and supports government projects for development of entrepreneurship in forestry by way of credit arrangements, subsidies, tax exemptions, etc. Such incentives would be investments into the outfitting and organising/training of forestry contractors.

In near future the forestry institutions of high and secondary education should offer programmes for permanent education and training to service contractors and their staff. It is equally important to achieve stronger inclusion of forestry engineers into this field of forestry, since they are the ones that have specialist knowledge on all parts of forestry work. This should be in compliance with the European trends of profiling those contractors that will be able to offer a wide range of services, such as planning, preparation, carrying out work, supervision, etc. The absence of forestry engineers in the staff structure threatens the realisation of the desired profile of a contractor. The professional level of the work carried out by 'newly recognised' contractors may then also become questionable.

It is possible to overcome this unfavourable situation and to settle the forest service market relations by organising the whole system of forestry contractor's certification. Certification is the measure of establishing the relations of trust on the market of production and services in forestry. It presents an independent and unbiased evaluation of contractors' qualifications by the institutes that carry out measuring, testing, and supervision by acknowledged expert criteria. This is the basic technical

infrastructure of the quality of forestry work, ensuring recognition, acceptance and acknowledgment of forestry contractors.

The certification of qualification and business capability of forestry contractors is one of the chief supports in the development of the Croatian market of forestry services. The proving of compatibility of services, equipment and procedures with the regulations, provisions, standards, and contracted technical specifications are the prerequisites of competition capabilities on the demanding domestic (and possibly international) markets. The high requirements related to the quality and warranty of security, reliability and timely delivery mean higher responsibility to the contractors for the products/services they offer on the market. When proving their rating, contractors should also use the services of the professional and technically equipped laboratories/evaluators and certification bodies as the principal institutes of trust in the carried out testing and certification.

The basic normative act that prescribes the obligation of authorisation and licensing should be the *Forest Law*. It is to be expected that this law will define the principle questions related to licensing. The same should be defined in detail by sub-legislative acts – the provisions of the Government of Croatia, or the statutes based on the *Forest Law*. The bearer of this should be MAFW. The sub-legislative acts must precisely define the bearers and the manner of authorisation and licensing, the contents and the form of the related documents, forms, etc. The whole system of certifying forestry contractors in Croatia must be established according to the professionally accepted criteria, and on the basis of transparent, legally determined model.

In view of the presented tasks, the MAFW and CFS should form operation bodies for the implementation of authorisation and licensing. A special task of the Ministry will be to inform the candidates about all essential questions related to authorisation and licensing. «Hrvatske šume» may greatly contribute to the success of this part of the task by informing its forestry service contractors on their obligation. It is also necessary to determine a transitory period before the final implementation of the certification and selection of the contractors.

Furthermore, it is necessary to enable the contractors the following: more suitable and modern mechanisation and equipment obtainable through subsidy credit lines of the Ministry; adequate training courses and programmes for achieving practical business skills; regular payment of completed services, and the supply of other projects and actions for promotion of forestry contracting (credit arrangements, subsidies, tax exemptions, etc.).

The expenses related to the achievement of qualified forestry contractors should be covered by the Ministry of Agriculture, Forestry and Water Management and many other parties, among others «Hrvatske šume» as well.

## CONCLUSIONS

### ZAKLJUČCI

1. Regardless of their increasing presence and a considerable proportion in the forestry production labour, forestry services contractors are neither organised, nor qualified, and as such are not a stable subject in the production sphere of the forest management in Croatia.
2. The biggest user of the services, «Hrvatske šume» Ltd. have not shown much interest and readiness for the settlement of the situation, and the promotion of entrepreneurship, although this should be among the strategic interests of this company. This relates to the attitude of the company toward the contractors in view of supply of services (type, volume, work locations); payment terms (prices); poor selection of contractors; insufficient records on contractors, etc.
3. By implementing special law acts that regulate the conditions required by independent forestry contractors, the European developed countries have a positive experience related to the registration programme, certification and/or licensing of forestry contractors. These processes have successfully acted as filters, classifying the insufficiently qualified and incapable contractors from the qualified and economically capable ones.
4. As regards the needs for professional regulation of forestry services in Croatia, the registration and licensing are of primary interest. The suggested two-phase model of forestry contractors' professional acknowledgement includes registration and licensing as obligatory programme, i.e.
  - ☐ Authorisation for forestry contracting – registration, and
  - ☐ Evaluation of qualification and the capability of carrying out forestry work – licensing.
5. The authorisation of forestry contractors brings them all to the equal position in terms of their legal status, rights and obligations. In addition, their work is submitted to financial discipline, particularly regarding their obligations toward their staff and the state.
6. The evaluation of qualifications and capabilities for carrying out forestry work, i.e. the licensing according to the professionally established criteria, are the methods of assessing contractors' capabilities of efficient and proper carrying out forestry work;
7. Considering all aspects of forest work, it is a common opinion that the minimum criteria for authorisation and licensing for every type of forest work should include the following conditions:
  - ☐ Technical/technological;
  - ☐ Professional;

- ☐ Economical/organisational, and
  - ☐ Ecological.
8. The basic (elementary) unit of certification should be the wholeness of entrepreneurship consisting of at least one specific work device and one regularly employed worker. Besides the fulfilment of other minimum conditions (prescribed/suggested technical/technological, professional, economical/organisational, and ecological conditions), contractors acquire a *professional certificate – licence*, which makes them qualified in the contests for forestry work in the Croatian forestry.
  9. Besides the elementary professional qualification (classification of qualified and unqualified contractors) by certification, it is indispensable to assess the level of contractors' business capability through the following additional licence marks:
    - ☐ *I Class Licence* – A contractor fulfils the minimum conditions for carrying out forestry services (1 employed person + 1 typical work device)
    - ☐ *II Class Licence* – Besides the minimum conditions, a contractor fulfils some additional ones (5 employed persons + 3 typical work devices + professional work manager: forestry technician)
    - ☐ *III Class Licence* – Besides the minimum conditions, a contractor fulfils additional ones (10 employed persons + 8 typical work devices + professional work manager: forestry engineer).
  10. The suggested model relies on the criteria, bodies, institutions and procedures that would assure objective evaluation and unbiased affirmation of the operators' qualifications, as a guarantee for expert, good, timely and economically successful carrying out of forest operations.
  11. The final form of the model suggested in this paper requires elaboration and testing. It is therefore indispensable to get down to work, everyone in his own area (legislation, legal status, implementation, training programmes, etc), in order realise this model as soon as possible, as a significant step forward in the Croatian forestry practice.

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## USPOSTAVA MODELA POTVRĐIVANJA IZVODITELJA ŠUMSKIH RADOVA

### SAŽETAK

U radu su istraženi elementi važni za uspostavu modela licenciranja izvoditelja šumskih radova u Hrvatskoj. Postojeće stanje ocijenjeno je na osnovi obuhvatne analize o izvoditeljima i obavljenim radovima u razdoblju od 1998. do 2002. Ocjena je da postojeći uslužni izvoditelji šumskih radova, bez obzira na njihov značajan udio u izvođenju proizvodnih zadaća, nisu ni organizirani, ni kvalificirani, a time ni stabilan partner u proizvodnom dijelu gospodarenja šumama u Hrvatskoj. Na osnovi utvrđenog stanja i profila uslužnih izvoditelja, ali i iskustava zemalja razvijenog šumarstva predložen je model potvrđivanja izvoditelja šumskih radova koji će osigurati nastanak prvih formalno ovlaštenih i kvalificiranih izvoditelja šumskih radova. Predloženim modelom utvrđuju se mogući nositelji licence, minimalni uvjeti za pristup postupku potvrđivanja, protokoli i sudionici u postupku potvrđivanja, pravni okvir i pravni mehanizmi (vrste dokumenata, upravni postupak i dr.), stručne institucije i tijela uključena u licenciranje i dr.

Modelom se predviđa provođenje postupka potvrđivanja u dvije faze:

1. Ovlašćivanje izvođenja šumskih radova
2. Licenciranje tj. ocjenjivanje kvalificiranosti i sposobnosti izvođenja šumskih radova

U obje faze određeni su, osim formalnih i posebni tehničko-tehnološki, stručno-kadrovski, ekonomsko-organizacijski i ekološki uvjeti koje izvoditelji moraju ispunjavati da bi stekli strukovnu potvrdu – licencu koja ih čini kvalificiranim u natjecanju za izvođenje šumskih radova u hrvatskome šumarstvu. Uz licencu izvoditelju se dodaje i oznaka razine poslovne sposobnosti:

- *licenca I vrste* - izvoditelj ispunjava samo minimalne uvjete za izvođenje šumskih radova (1 zaposleni + 1 tipično radno sredstvo)
- *licenca II vrste* - izvoditelj pored minimalnih uvjeta za izvođenje šumskih radova ispunjava i dodatne uvjete (5 zaposlenih + 3 tipična radna sredstva + stručni voditelj posla u zvanju šumarski tehničar)
- *licenca III vrste* - izvoditelj pored minimalnih uvjeta za izvođenje šumskih radova ispunjava i dodatne uvjete (10 zaposlenih + 8 tipičnih radnih sredstava + stručni voditelj posla u zvanju šumarski inženjer)

Predloženi se model oslanja na kriterije, tijela, institucije i postupke koji će jamčiti objektivno vrednovanje i nepristrano potvrđivanje kvalifikacija izvoditelja - kao

jamstvo za stručno, kvalitetno, pravodobno i ekonomski uspješno obavljanje radove u šumarstvu.

Ključne riječi: šumarstvo, izvoditelji šumskih radova, poduzetništvo, licenciranje, Hrvatska