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INFORMATION

Final documents of forest management regulation in the Slovak Republic and their possible interdepartmental use for environmental impact assessment

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ABSTRACT: Until now documents of the forest management regulation have been considered and used almost exclusively as materials of the particular sectors. Regulation No. 465/1991 of Ministry of Finance of the SR permits their effective use also in the sectors of finance and justice. Further important interdepartmental use of forest management regulation documents follows from Act No. 127/1994 on the environmental impact assessment. The aim of this paper is to demonstrate the assessment process on a concrete example – a plot belonging to the forest land fund. Besides maps, observation results, verbal description of stands and numerical records, the documents also contain coded data that most users of these documents cannot understand without decoding keys. In environmental impact assessment, however, namely these data have the most valuable descriptive value. The effectiveness of the envisaged Act (Regulation) on the loss of property following from prohibitive and other conditions in the forest management focussed on public interest (Kundrík et al. 1999) will considerably increase the importance of the use of final documents of the forest management regulation.

Keywords: information science; information technologies; exact forest management

Act No. 127/1994 on environmental impact assessment defines procedures for comprehensive, professional and public assessment of planned constructions, equipments and activities specified by this Act before the final decision is made on their allowance as well as for the evaluation of proposals of certain development concepts and generally valid regulations from the aspect of their expected environmental impact.

The aim of the assessment is to identify and evaluate the assumed environmental impacts already in the stage of preparation of the given activity, to propose the necessary measures for limiting and lowering the pollution and damage to the environment, and to understand and compare the merits and shortcomings of the proposed intention with a special consideration of ecological and environmental aspects.

The assessment of the environmental protection performed already in the preparatory stage, comprehensive assessment of all possible impacts on the environment in cooperation with a number of stakeholders – the public at large and specialists included, can provide a base for transparent and optimum decisions on the permission (Hraško 1997).

Possible use of final documents of forest management regulation for environmental impact assessment

The following text has a very specific character – it explains the abbreviations of special terms used in Slovak forestry terminology. To avoid the confusion, the original Slovak abbreviations are presented in brackets together with their English equivalents.

Forest management plans (FMP = LHP) are drawn up for the highest management-regulation units in the spatial arrangement of forests (SAF = JPRL)

– forest management units (FMU = LHC). They provide a comprehensive picture of the present state of forests; and try to set, based on the recent scientific knowledge and technological progress, the goals and aims of management of forests are set primarily from the aspect of forest cultivation and protection, protection and creation of the environment (natural environment), wood production and other forest functions. They provide a tool for targeted management of forests focussed on improving their functions and also a base for planning the forest production (Hladík 1992).

The forest management plan consists of:
– general description,
– plot table,
– description of forest stands and planned management measures,
– survey tables and graphs,
– forest maps,
– record files.

The aim of this paper is to point out – on a real example – the possibilities of using the final documents of forest management and regulation and also the possibilities of automatic processing of information (Hoschek 1972, 1973, 1974a,b) to draw up "proposals" and "evaluation reports" for environmental impact assessment in case the relevant plots belong to the forest land fund (FLF = LPF). Apart from maps, survey reports, verbal description of stands and records, the final documents of forest management regulation also contain coded data accessible to persons (not very numerous among forest workers) familiar with appropriate decoding keys. In environmental impact assessment namely these data have the highest descriptive value for the given ecosystems.

Evaluation of forest ecosystems on the basis of the coded stand description data

Possibilities of using the coded stand description data for environmental impact assessment according to Act 127/1994 are evident on the example of forest stand No. 255 from the FMU Demänová (Table 1). On this example, we demonstrate the decoding and transformation of coded data (Kolektív 1992, 1995, 1996a,b) to an easy-to-understand verbal form.

Stand No. 255 is classified as belonging to the forest stand group (FSG = HS) designated as 63OV 130: O = special purpose, V = high forest with rotation period of 130 years and the number of FSG 63. From the survey on the forest stand groups in terms of management (FTGM = HSLT) and forest vegetation tiers (FVT =LVS), we see that the number 63 means spruce management on acid sites in mountain zones in the sixth spruce-beech-fir forest vegetation tier.

Apart from FSG, the first line of the stand description also contains data necessary for the environmental impact assessment. The case is mainly the type definition in terms of:
– function,
– protection,
– technology,
– phenotype.

Stand No. 255 is classified as belonging to function type 6 – "nature protection – production".

The protection type means that the forest stand in question is in immission zone A, damage degree 2.

Technological type is determined on the basis of the terrain type (TT). TT is specified according to the terrain slope and opening. For stand No. 255 TT 4 was determined, which means that the parent rock under the stand has a high carrying capacity tolerating even heavy wheel tractors in any conditions. The size of terrain obstacles is smaller than 0.5 m, the distance is longer than 5 m. The terrain slope is 21–40%. Based on the terrain type and forest management method the stand was assigned to technological type 1 – according to the categorisation of stands from the aspect of logging conditions, representing skidding with universal wheel tractors (UWT) and horses in terrains open to 40%, primarily in tending felling and shelterwood system in forest management, extraction of trees or stems from the working field to transport lines is performed individually in most cases.

Categorisation according to the phenotype is performed on the basis of the phenotype category and stand origin. In our case it means that No. 12 represents the phenotype category II B – commercially valuable (selected, felled) stand of autochthonous origin.

Further coded data about the stand are in the first column, before the stand description. The following values are presented:
– management group (MG = PS),
– exposure and slope (EXP, SLOPE = SKLON),
– category (CAT = PK),
– degree of stock evaluation (DSE = SZZ),
– forest type (FT = LT),
– terrain category (TC = TT),
– property type (PT = D.VL.).

The first three digits in the code designate the forest type group in terms of management (FTGM = HSLT). The last two designate the classification of stand composition to management groups in terms of stand types (MGST = HSPT) (Lesoprojekt Zvolen, Ecological research, 1996a,b). According to

Table 1. Description of stand No. 255 in the forest management unit Demänová

Stand description																													
Forest stand group	Ownership	Compartment	Partial plot	Stand group	Tier	Actual area		Age	Stocking	Type			Species	Composition	Average stem			Yield class	Standardised volume curve number	Growing stock		Phenotype
															Height	Diameter	Volume			Per 1 ha	Per plot	
						(ha)				Function	Protection	Technology			(m)	(cm)	(m^3)			(m^3)	without bark	
63OV130	4	255				6.98		85	0.7	6	42	1	LHC: Demänová							386	2,694	
PS: 66515 EXP. SKLON (SLOPE): SZ 40% PK:E SZZ:1													SM (spruce)	100	25	28	0.64	28		386	2,694	12
LT: 6124 80%, 6123 20% TT:4 D:VL:4																						
Soil:																						
Soil cover: bilberries																						
Medium diameter, uneven-aged stand, of lower density on the slope by the valley; some trees are dry, broken, wind-thrown																						
National park																						
													Growing stock in conifers							2,694		
													Growing stock in broadleaved species							0		
Medium endangered stand																						

the handbook Categorisation of Forest Types to FTGM and Associated FTGM (AFTGM) (in Slovak, ZHSLT Lesoprojekt Zvolen, Ecological research, 1996a), in the case of stand No. 255 the first three digits – 665 mean that it belongs to the FTGM acid pine spruce forest on higher situated sites. The meaning of the following two figures is FTGM "spruce forest". This FTGM comprises the stands with a 90–100% proportion of spruce trees or the stands in the 7th forest vegetation tier (FVT) with a 50% proportion of spruce trees and a 50% or lower proportion of dwarf pine.

The exposure is coded with commonly used geographic abbreviations (N = S, W = Z, E = V, S = J). The slope is given in percents.

The significance of letters A–D in the category protection forest and A–G in the category special purpose forest is explained in the Methods of Forest Management (in Slovak, Lesoprojekt Zvolen 1995).

Protection forests are forests whose function follows from the actual natural conditions. Management in these forests is to be aimed primarily at improvement of this protective function.

As protection forests are declared forests belonging to the following specific categories:

a) forests growing on sites with extraordinarily unfavourable conditions: scree-woods, woods growing in ravines, on mountain ridges and on slopes with the denudated parent rock, on unconsolidated gravel slopes and deep peat bogs;
b) high mountain forests below the upper tree line, fulfilling the protective function for lower situated forests and lands; forests growing on strongly exposed sites, in general on mountain ridges under impacts of unfavourable climate and forests lowering the risk of the origin of snow avalanches;
c) forests in the dwarf pine vegetation belt;

d) other forests with dominant soil protection function.

Special purpose forests are forests with special purposes meeting specific important social requirements and with the corresponding forest management methods.

The special purpose forests have specific roles following from the crucial needs of the society. In general, they belong to the following categories:

a) forests in drinking water protection areas of the 1st and the 2nd degree – in the case of surface water sources when the spring discharge and quality can only be guaranteed by distinct forest management methods;
b) forests in protection zones of natural healing water sources and sources of natural mineral waters, spa forests and forests in healing and recreation resorts;
c) municipal forests and other forests with important public-health promoting and recreational functions;
d forests in certified game parks and pheasantries;
e) forests in protected areas and other forests important for nature protection;
f) forests under immission impacts, classified to individual risk zones according to Annex 2 of the Regulation;
g) forest sections for research purposes and education of forestry students and apprentices.

In the case of a conflict of interests, the forest is declared as a protection or special purpose one on the basis of prevailing limitations to methods and goals of its management.

The letter E means that stand No. 255 belongs to a protected area or a forest part important for the nature protection. The special purpose is coded by the number of the forest stand group.

The degree of stock evaluation is designated with an integer from 1 to 4. Using the key for determining this value in the Methods for Forest Management we obtain that the number 1 represents using yield tables not distinguishing between the individual stock levels.

The numerical codes for forest types and their verbal description can be found in the above cited handbook Categorisation of Forest Types to FTGM and AFTGM. The number 6124 for stand No. 255 means bilberry spruce-fir forest, higher situated, belonging to acidophilous (acid) order A, FTG *Piceatum abietinum* comprising 80% of the plot. Forest type 6123 representing the remaining 20% is stony spruce forest with admixed fir – a higher degree of the identical forest type group. We omit the word description here – rather extensive and published in the literature (Hančinský 1972).

The number of the terrain category is necessary for the determination of the technological type – already explained in the preceding text.

According to the property type, we distinguish between ten types of property of forested land, numbered from 0 to 9. According to the valid standards and laws used by state institutions the forested land with unspecified property type is assigned the number 0. The other property types and owner types are identical. The number 4 for stand No. 255 means that the stand is both owned and used by the Land and Duties Register and the so called Composesorat.

Based on the numerical symbols used for the description of groups of forest types and primarily for the individual forest types, it is possible to find extensive (up to several pages) detailed descriptions of relevant phytocoenoses in the literature (Hančinský 1972). Associated forest type groups in terms of management are summarised in Table 2.

We have not found any substantial differences between the results of our personal observations and the descriptions published in special typological literature based on detailed typological survey on biogeocoenoses according to the typological school worked out by Zlatník (1959, 1976). This school distinguishes among 183 FTGM, 53 FTG, 451 FT and 77 MGST in Slovakia. Such a categorisation provides a sufficiently detailed description of biogeocoenoses for the environmental impact assessment (Bublinec et al. 1998).

This classification provides, however, only a piece of theoretical information if the country uses another typological system.

Other possibilities of using final products of forest management regulation

Changes in the social and political situation after 1989 triggered also changes in forestry policies: primarily the transformation of ownership and user relations, privatisation of property and of certain activities in forest management, changes in legislation in all the branches of the national economy. According to Regulation No. 465/1991 of the Ministry of Finance of the SR on prices of buildings, lands, permanent stands, payments for setting the real properties and personal use of the land and payments for temporal use of the land, the documents of the forest management have come to use also in the sectors of finance and justice.

Table 2. Forest stand types (natural forest types) represent basic unification in Slovak forestry. Based on the forest management affinity, these units are grouped to groups of forest types according to management and associated groups of forest types according to management. The nomenclature consists of natural cover name (predominant tree species is at the first position) and site characteristic if necessary. Cumulated management sets of forest site types

FT	Nomenclature
01	Extreme sites
02	Forests below alpine tree limit
03	Mugho (dwarf) pine
04	Forests necessary to secure soil protection
11	Oakwoods with seasonal water deficit (on drought-prone soils)
13	Relatively well-growing pine-oak woods on eolian sands
15	Oakwoods on rich-based soils
17	Oakwoods on moist soils
19	Floodplain woodlands
21	Oak-beech woods with seasonal water deficit (on drought-prone soils)
23	Acid oak-beech woods
25	Oak-beech woods on rich-based soils
27	Oak-beech woods on gley soils
29	Black alder-ash woods
31	Vulnerable beech woods (sometimes with oak)
33	Acid beechwoods (sometimes with oak or fir)
35	Beech-oak woods on rich-based soils
37	Beech-oak woods on gley soils
41	Vulnerable beech woods (sometimes with fir)
43	Acid beechwoods (sometimes with fir and oak)
45	Beechwoods (sometimes with fir) on rich-based soils
47	Beechwoods on gley soils
51	Vulnerable beech-fir-spruce wood
53	Acid spruce woods with fir, beech or pine
55	Beech-fir-spruce woods on rich-based soils
57	Beech-fir-spruce woods on moist soils
59	Waterlogged spruce woods with pine or fir
61	Vulnerable spruce woods (sometimes with fir and beech)
63	Acid mountain spruce woods (with fir, pine or beech)
65	Spruce-fir-beech woods on rich-based soils
67	Spruce-fir-beech woods on moist soils
69	Waterlogged spruce woods (sometimes with pine or fir)

In the final documents of forest management regulation on stand assessment mainly general introduction, stand description, forest maps and production tables are useful. These works can be used as the background material to acquire the input data (Tutka 1992; Ďurkovič 1992) for the evaluation of the following items:

– basic price of the forest ground,
– price of the position factor of the forest ground,
– basic price of the forest stand,
– price of the stand position factor,
– cost reduction owing to the stand damage.

The problems connected with forest evaluation are broadly discussed in the "Forest assessment – study material for the professional preparation for the special competence in the topic" (Kolektív 1992).

At present preparatory works are done on the Act (Regulation) on the loss of property follow-

ing from prohibitive and other conditions in the forest management focussed on public interest (Kundrík et al. 1999). If the Act comes into force, the importance of the use of final documents of the forest management regulation will increase considerably.

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Finálne dokumenty týkajúce sa regulácie lesného hospodárenia na Slovensku a možnosti ich medzirezortného využitia pri posudzovaní environmentálneho impaktu

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ABSTRAKT: Dokumenty týkajúce sa regulácie hospodárenia v lesoch sa prakticky až dodnes považovali za materiály, týkajúce sa skoro výlučne len jednotlivých odborných rezortov. Na základe Vyhlášky Ministerstva financií SR č. 465/1991 ich možno efektívne využívať aj v rámci rezortov financií a spravodlivosti. Ďalšie významné medzirezortné využitie týchto dokumentov vyplýva zo Zákona č. 127/1994 o posudzovaní environmentálneho dopadu. Cieľom práce je demonštrovať proces posudzovania na konkrétnom príklade – ploche patriacej do lesného pozemkového fondu. Okrem máp, výsledkov pozorovania, slovných popisov a súborov numerických údajov, týkajúcich sa jednotlivých porastov, obsahujú tieto dokumenty aj kódované údaje, ktoré pre väčšinu užívateľov nie sú zrozumiteľné bez využitia dekódovacích kľúčov. A práve tieto posledné údaje majú pri vyhodnocovaní environmentálneho dopadu najvyššiu výpovednú hodnotu. Po nadobudnutí platnosti pripravovaného zákona (vyhlášky) o strate vlastníctva, vyplývajúcej

z prohibitívnych a ďalších podmienok v lesnom hospodárstve v súvislosti s presadzovaním verejno-prospešného záujmu (Kundrík et al. 1999), významne vzrastie dôležitosť využitia finálnych dokumentov týkajúcich sa regulácie hospodárenia v lesoch SR.

Kľúčové slová: informatika; informačné technológie; hospodárska úprava lesov

Zmeny spoločenských pomerov v Českej a Slovenskej republike po roku 1989 vyvolali zmeny aj v lesníctve SR, a to hlavne transformáciu vlastníckych a užívateľských vzťahov, privatizáciu majetku a niektorých činností v lesnom hospodárstve, ale aj zmeny v legislatíve vo všetkých odvetviach národného hospodárstva. Nadobudnutím platnosti Vyhlášky Ministerstva financií SR č. 465/1991 Zb. o cenách stavieb, pozemkov, trvalých porastov, úhradách zo zriadenia práv a osobného užívania pozemkov a náhradách za dočasné užívanie pozemkov sa diela HÚL začali využívať aj v rezorte financií a spravodlivosti.

Z výsledných diel HÚL pri oceňovaní porastov využijeme najmä všeobecnú časť, opis porastov, lesnícke mapy a plochovú tabuľku. Uvedené diela HÚL je možné využiť ako podklady pri získavaní vstupných informácií (Tutka 1992; Ďurkovič 1992) pre určenie:

– základnej ceny lesného pozemku,
– ceny faktora polohy lesného pozemku,
– základnej ceny lesného porastu,
– ceny faktora polohy porastu,
– zrážky z ceny lesného porastu v dôsledku jeho poškodenia.

Problematikou oceňovania lesov sa podrobne zaoberá študijný materiál pre odbornú prípravu k osobitnej spôsobilosti pre oceňovanie lesov (Kolektív 1992). Z uvedeného dôvodu sa tým v tomto príspevku hlbšie nezaoberáme.

V súčasnosti sa pripravuje zákon (vyhláška) o majetkovej ujme vyplývajúcej zo zákazov a iných podmienok pri obhospodarovaní lesov vo verejnom záujme (Kundrík et al. 1999). Prijatím tohto zákona sa využitie diel HÚL ešte zvýši.

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