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Evaluation of the commitment of the Krakow Regional Directorate of State Forests and its organizational units to the development of recreational and tourist forest functions*

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Abstract. Forest management affects the scope of various functions provided by forests. Considering the increasing expectations of the society about utilizing non-productive forest, it is important to investigate the commitment of the State Forest units to the development of forest functions. The study's aim was to evaluate the activity of particular organizational units, namely forest districts of the Regional Directorate of State Forests in Kraków (RDSF Kraków), in adapting forests to serve tourism and recreation. Our analysis covered data from the years of 2005–2009, which was obtained from forest management plans, financial statements and department reports of the RDSF Kraków as well as a questionnaire survey. Both direct and indirect additional costs incurred in order to adapt forests for their recreational function, were included in the analysis. We also attempted to estimate the potentially lost profits. The zero unitarization method was used to identify units showing the greatest and lowest commitment.

In the area of the RDSF Kraków, a total of 1 765 500 PLN was spent on tourism management and activities supporting recreation. Average direct costs amounted to 1.24 PLN/ha/year, while the workforce expenditure for maintenance of tourist infrastructure and historical buildings was estimated to be 60 700 PLN. Expenses incurred for cleaning up litter in forests attained 629 800 PLN in the considered time period. Profits potentially lost due to the lack of management in the protected zone 'A' surrounding health resorts, reduced by the costs of timber harvesting and extraction, were estimated to total 58 200 PLN. Our study indicates that during the analyzed period, forest districts differed in their commitment to the development of recreational and tourist forest functions. The synthetic measure of commitment varied between 0.114 and 0.694 in the State Forest units. The greatest additional costs were incurred by forest districts with towns and areas of high natural and landscape value. The Directorate of State Forests took the financial responsibility for adjusting forest complexes to tourist and recreational needs, but should nevertheless seek external financial and specialist support. The issue of internalization of the positive outward effects of forest management also needs to be discussed.

Keywords: tourist and recreational forest functions, activity of forest districts, direct and indirect costs, alternative costs

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1. Introduction and aim of the study

With the development of cities and improvements in society's standard of living, there is greater pressure to use forest resources for non-productive purposes. The need for a forest to respond to social functions is also associated with the amount of forest area per resident, while demand for these functions is related to a society's level of civilisation, tradition, culture, and many other natural and economic conditions. Non-productive forest functions are derived from the impact of natural forces and human activities, with the multiple functions of the forest being carried out simultaneously to varying degrees (Szramka et al. 1999). The social and protective functions of forests can be developed through methods of forest management (Klocek 1998; Rykowski 2006).

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Social functions are manifested in the creation of favourable conditions for health and recreation, an enriched labour market, and in serving the development of culture, education and science and the environmental education of society.

To a certain extent, forest management influences the level of the non-productive functions provided by forests. Given this, it seems important to identify the actions taken by the State Forests National Forest Holding (SFNFH) to adapt forest areas to enable these functions to be realised. The aim of the study is to analyse and evaluate the effects of activities carried out by organisational units - the forest districts of the Regional Directorate of State Forests (RDSF) in Kraków - to develop the recreation and tourist functions of the forest. The study was performed from 2005–2009. The basis for assessing the level of involvement in the process of developing these forest functions was to identify the activities as well as the investments made by individual districts for such services.

2. Study methods

To assess the activities of the forest districts in the Kraków RDLP in managing forests for tourism and recreation, we used forest district management plans (elaborated) and data from the report 'Annual information of the Kraków RDLP on protecting the forest environment, forest protection, waste and trash removal, tourist management of the area' as well as reports on factors harming the forest. Economic data was obtained from financial and management reports of the forest districts and Kraków RDLP.

The forest districts located adjacent to the Kraków RDLP headquarters, that is, close to the urban agglomeration, which carry out multifunctional forest management activities, bear the costs of adapting forests to enable the implementation of tourism and recreational functions. These costs (defined as additional costs) include expenditures that are not derived from wood production, but are required to ensure an adequate level of both protective and social services of forest management (Janeczko 2004). Costs are divided into direct and indirect expenses. The value of the additional direct costs was determined on the basis of data from accounting records. These costs are recorded on a 510 synthetic account, which includes analytic records carried out according to MPK 276 (individual cost centres). The study did not include the cost of maintaining facilities used in nature education. It was not always possible to use accounting records to estimate the expenditures of the State Forests to develop non-productive functions of forests. This is why some of the expenditures were classified as indirect costs. The value of indirect costs was determined from the results of a survey on the work time spent by forest service (FS) employees on supervising tourist facilities and national historic sites.

The additional indirect cost of supervising tourist infrastructure (K_t) is the product of the average time spent on this activity by a FS employee, the number of FS employees in the forest district and the hourly cost of a FS employee's work in the (SFNFH). Calculations were performed using the formula (1):

$$K_t = t_r \cdot l_p \cdot k_j \quad (1)$$

where:
K_t – additional indirect cost of supervising tourist infrastructure, PLN
t_r – average time a forestry service worker spends on supervisory activities, h
l_p – number of FS workers in the forest district
k_j – hourly cost of a FS worker in the SFNFH, PLN

Indirect costs also included the cost of eliminating the consequences of human pressure on forests. They were defined on the basis of resources devoted to trash removal and the recorded financial value of damage rendered to the infrastructure devoted to tourism.

Forest areas heavily used by visitors for recreational purposes and various forms of physical activity require special management. According to the Act on health resort treatment, health resorts and health resort protection zones and health resort gminas (townships), forest and park trees cannot be felled in protective zones 'A' and 'B' except for sanitation cutting (Act of 2005). Considering the documentation made available by the Piwniczna Forest Inspectorate, in particular, the letter from the Ministry of Health concerning the interpretation of law in the matter of forest management in health resort protection zones and changes in the future law on health resort protection, the harvesting of forest trees is allowed in zone 'B' in accordance with the forest management plan (letter 2006; letter 2008). Justification for this position is associated with the need to preserve forest sustainability and to protect forests in health resort areas.

To estimate the losses incurred by the inability to harvest trees in health resort protection zone 'A', a correction factor method of the increase in volume was used, according to Rutkowski (1976). This method is used to adjust the useable size of forests having a complex form that are managed through a mix of clear-cutting and selective cutting together with gradual thinning. As a rule, the forests surrounding health resorts have such a complex, variously aged character.

The alternative cost (of lost opportunities) (K_a) corresponds to the size of the useable area. Calculations were performed using the following formula (2):

$$K_a = (E_y \cdot c) - (E_y \cdot k_{pz}) \quad (2)$$

where:
K_a – alternative cost (lost opportunities), PLN/m^3,
E_y – area of use in zone 'A' tree stands surrounding the health resort, m^3
c – average cost of wood harvested by the forest district during the 5-year study period, PLN
k_{pz} – cost of wood harvesting and extraction.

The involvement of forest districts in developing the recreational and tourist functions of forests was determined by using the zeroed unitarisation method (Kukuła 2000). This method allows a synthetic indicator to be determined, which replaces a large set of indicators describing the phenomenon under study.

Forest district activities undertaken to adapt their areas for tourism and recreation are described by the following quantitative indicators:

X_1 – indicator of infrastructure density expressed as the number of objects included in the inventory for forest tourism (LBT) by area, items/1000 ha,

X_2 – indicator of forest area within the administrative boundaries of cities, towns and health resorts, where forestry management has been subordinated to recreation and tourism, ha/1000 ha,

X_3 – indicator of RDLP forest area managed for tourism and recreation, ha/1000 ha (Rykowski 2006).

The financial commitment in developing the recreational functions of forests was estimated on the basis of the costs incurred by analysing the following indicators:

Y_1 – indicator of unit cost, which is the quotient of the cost of adapting an area for recreational purposes (investment cost, facility maintenance, the cost of removing the effects of human impact on forests, and the cost of tourist infrastructure supervision) and the area of a forest district, PLN/ha/year,

Y_2 – indicator reflecting the share of additional costs associated with adapting a forest district area to recreational use in relation to total forest district expenditures, %.

The diagnostic variables considered include only the stimulants, whose increasing values are positively assessed in terms of the analysis of complex phenomena. The data presented as indicators were normalised. The value of a stimulus (Z_{ik}) was calculated by performing the normalisation according to the formula:

$$Z_{ik} = \frac{X(Y_{ik}) - minX_{ik}(Y_{ik})}{maxX_{ik}(Y_{ik}) - minX_{ik}(Y_{ik})},$$

$maxX_{ik}(Y_{ik}) \neq minX_{ik}(Y_{ik}), gdzie\ X_{ik}, Y_{ik}$ – baseline value of the k features of the i unit

Synthetic indicator (Z) was calculated according to the formula:

$$Z = \frac{\sum Z_{ik}}{k}\ (i = 1,\ldots,N)\ \text{(Kukuła 2000)},$$

where:

z_{ik} – normalised value of characteristic k in unit i,

k – number of diagnostic characteristics.

State forest organisational units are ranked on the basis of the obtained value of the synthetic indicator (Z) from highest to lowest value. All variables adopted for the analysis were reviewed in terms of their variance and level of correlation.

3. Study area

The study area included 16 forest districts within the RDSF Kraków. The forests of RDLP Kraków are among the most attractive to tourists in Poland. The terrain, natural diversity of the forests and unique landscape features are the basis for the development of ecotourism. In addition to its many singular natural features, this area also includes historic sites, which are among the tourist attractions of southern Poland. Each year, several million tourists visit Małopolska (Lasy... 2000). The Małopolska Voivodeship ranked first in the country in terms of collective accommodation facilities for tourists (872,000), and third place among voivodeships in terms of the number of beds. Accommodation facilities in the forests of the RDLP Kraków area include conference-training centres, guest rooms and hunting lodges. RDLP Kraków has at its disposal 238 beds in facilities of varying quality standards.

4. Results

The RDLP Kraków forest district allocates its own funds to expand and maintain tourist infrastructure in forests, in particular, to build parking lots, parking spaces and other facilities used by visitors to forests: huts, roofed shelters, camping sites. The total direct cost of tourist activities in the RDLP Kraków area for 2005–2009 was 1,075,000 PLN.

Additional indirect costs reflect the commitment of the FS in activities related to supervising facilities for tourism and recreational purposes, as well as national remembrance sites (historically significant sites located in forests). Direct interviews were used to obtain information on the amount of time devoted by the FS to such activities. The survey conducted on a sample of 174 persons shows that during the analysed period, a RDLP Kraków FS employee spent an average of approximately 2.7 h on supervising the infrastructure made available to the public. The average cost of an hour of a state forest employee's work in the SFNFH during the analysed period was 46.1 PLN/hour. Total expenditures of work time spent supervising tourist infrastructure and historic sites during 2005–2009 were estimated to be 60,700 PLN.

Additional indirect costs also include expenses incurred by the state forests in eliminating the effects of human impact on forests. Forest districts bear the cost of trash removal from the forest and occasionally of damage to the tourist infrastructure caused by its users. Losses due to damage to tourist and recreational facilities were estimated to be 19,100 PLN. In addition to their own funds, FSs also allocated resources obtained from the forest fund amounting to 607,900 PLN to contend with the effects of human pressure on forests. These funds were used primarily to purchase trash containers. During the analysed period, the total cost of trash removal from forests was

1,237,700 PLN (Table 1). It is likely that some of the trash removed from forests was not included in the records (as evidenced by incomplete source data); therefore, the values presented below should be considered underestimated.

Table 1. Costs of cleaning up forests within RDSF Krakow in the years of 2005–2009

Sources of funding	Costs of cleaning up forests [thousands of PLN]					
	2005	2006	2007	2008	2009	Suma Total
Forest fund	300.8	222.7	13.5	70.9	0.0	607.9
Own funds of forest districts	0.0	0.0	173.5	268.8	187.5	629.8
Total	300.8	222.7	187.0	339.7	187.5	1237.7

Source: Own calculations based on data of RDFS Krakow
RDSF: Regional Directorate of State Forests

Forest complexes devoted to tourism and recreation require special management. In relation to such a designation, forest districts also have to appropriately manage the tree stand through relevant cultivation activities, in addition to assuming the expenditures for developing and maintaining the tourist infrastructure. They also frequently incur alternative costs due to the need to reduce the acquisition of timber from tourist and recreational areas. After studying forest management plans, we could not find restrictions on logging operations in recreation and tourist areas. Such costs are likely to be incurred, but are not required to be recorded, therefore, only health resort protection areas were included in the analysis. Alternative costs due to restrictions on logging operations in zone 'A', surrounding health resorts affected Piwniczna and Łosie forest districts. The forests of these districts were categorised as special management areas. There was no subdivision of the forest indicating a zone 'A' surrounding health resorts in the 'Forestry management plan of the Łosie forest district for 1999–2008'. This was also true for Gorlice forest district, where forestry management activities were carried out according to their plan in both zones 'A' and 'B'. However, only zone 'C' functioned in the health resort forests of Piwniczna forest district in 1999–2008. In 2009, new forest management plans were developed for Piwniczna and Łosie forest districts, where zone 'A' was designated to the nearest subunit. On the basis of data obtained from forest management plans, the correction factors method was used to calculate alternative costs related to the inability to conduct logging operations in the tree stands surrounding health resorts.

The volume of unharvested wood in the Łosie forest district was estimated to be 138.6 m³, while for the Piwniczna forest district, it was 619.6 m³ (Table 2). The total value of lost profits due to the inability to use protection zone 'A', after deducting the cost of harvesting and extraction, was estimated to be 58,200 PLN.

The direct costs of tourist management are associated primarily with developing and maintaining tourist infrastructure. The highest expenditures incurred for this purpose are by forest districts that have urbanised areas with a high population density within their administrative borders. The highest direct costs in the analysed 5-year period were found for Gromnik (4.58 PLN/ha/year) and Nowy Targ (4.04 PLN/ha/year) forest districts (Table 3). Indirect costs primarily reflect cash expenditures incurred to dispose of trash from the forest as well as expenditures of time (expressed in monetary units) spent by the FS to supervise the infrastructure and recreational areas. The highest indirect costs were found for Myślenice (2.57 PLN/ha/year), Gromnik (2.17 PLN/ha/year) and Nowy Targ (1.56 PLN/ha/year) forest districts, while the lowest costs were incurred by Łosie forest district (0.06 PLN/ha/year) (Table 3). The average total cost of the recreational and tourist functions of the forest within RDLP Kraków was 2.16 PLN/ha/year.

Additional direct costs of 57% predominate in the structure of costs incurred by RDLP Kraków to adapt forests to tourism–recreation functions (Fig 1). Additional indirect costs accounted for 40% of the total incurred for this purpose. In contrast, the lowest share of 3% was for alternative costs.

To assess the commitment of RDLP Kraków forest districts to developing the tourist and recreational functions of the fo-

Table 2. Profits potentially lost due to functioning of protected zone "A" around health resorts in the Łosie and Piwniczna Forest Districts in 2009

Forest district	Area of the health-resort zone 'A'	Volume of unharvested timber	Average price of timber (1 m³) in 2009	Harvest costs	Potentially lost rofits
	[ha]	[m³]	[PLN/m³]	[PLN/m³]	[thousands of PLN]
Łosie	34.4	138.6	151.8	60.2	12.7
Piwniczna	164.3	619.6	150.4	77.0	45.5
Total	198.7	758.2	151.1	69.1	58.2

Source: Own calculations based on data of RDFS Krakow
RDSF: Regional Directorate of State Forests

rest, the indicators comprising the set of diagnostic variables were used. Despite the strong correlation between variable Y_1 and Y_2, they were included in the analysis because they conveyed different information. Analyses show that the greatest number of tourist facilities in the managed forests is in the districts of Gorlice, Myślenice, Stary Sacz and Krzeszowice, while the least number is in Brzesko forest district (Table 4).

The largest area of forest land used for tourism and recreation were in the forest districts of Gorlice, Krościenko, and Krzeszowice, and the lowest in the districts of Nawojowa, Stary Sacz, and Łosie. The Piwniczna, Krościenko, and Niepołomice forest districts are characterised by the highest share of protected forests surrounding health resorts and cities, while the lowest share of these features was located in the Nawojowa forest district (Table 4). The highest share of forest tourist management costs per total expenditures was in the districts of Gromnik, Nowy Targ and Myślenice. The forest

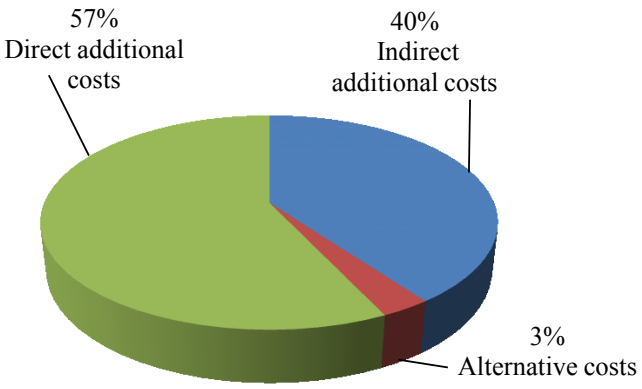

Figure 1. Structure of costs incurred on the development of the recreation-tourist function in forests of RDSF Krakow in the years of 2005–2009
Source: Own calculations based on data of RDFS Krakow
RDSF: Regional Directorate of State Forests

Table 3. Additional and alternative costs associated with the development of tourist and recreational functions in forest districts of RDSF Krakow in the years of 2005–2009

Forest district	Costs associated with the development of tourist and recreational forest functions			
	direct	indirect	alternative	total
	[PLN/ha/year]	[PLN/ha/year]	[PLN/ha/year]	[PLN/ha/year]
Brzesko	0.00	1.21	0.00	1.21
Dąbrowa Tarn.	1.60	0.57	0.00	2.17
Dębica	1.12	0.44	0.00	1.56
Gorlice	0.66	0.64	0.00	1.30
Gromnik	4.58	2.17	0.00	6.75
Krościenko	0.44	0.27	0.00	0.70
Krzeszowice	0.40	1.08	0.00	1.48
Limanowa	1.01	1.06	0.00	2.07
Łosie	0.83	0.06	0.15	1.03
Miechów	0.25	0.93	0.00	1.18
Myślenice	1.75	2.57	0.00	4.31
Nawojowa	1.29	0.47	0.00	1.76
Niepołomice	2.70	1.21	0.00	3.91
Nowy Targ	4.04	1.56	0.00	5.60
Piwniczna	0.27	0.31	0.69	1.26
Stary Sącz	0.88	0.61	0.00	1.49
Total	1.24	0.86	0.00	2.16

Source: Own calculations based on data of RDFS Krakow
RDSF: Regional Directorate of State Forests

districts of Krościenko, Piwniczna, Brzesko, and Łosie had the lowest share of these costs. During the study period, the Krościenko forest district secured funds for the tourist management of nature reserves from the sale of admission tickets. Using the normalised diagnostic variables, we calculated the synthetic indicator reflecting the level of activities and expenditures of the forest districts related to carrying out the tourism and recreational functions of the forest (Fig. 2).

Forest managers make efforts to provide accessibility to the forest, which is associated with additional responsibilities on the part of the FS, as well as increased spending on tourist management and mitigating the effects of human pressure on the forest. The synthetic indicator calculated values of 0.114 to 0.694 (Fig. 2) for the forest district units during the study period. On the basis of the analyses, we found significant differences in the level of financial and organisational commitment among state forest units in carrying out the recreational functions of the forest. In making decisions regarding the development of tourist infrastructure, state forest management staffs are guided by local needs in this area and the availability of funds.

5. Discussion

Managing forests, and in particular, developing fragments of the tree stand for tourism and recreation, is an important task required of the state forests. Evidence of a commitment to such activities is seen in the development and maintenance of tourist infrastructure, as well as in the subordination of the principles of forest management to tourism and recreational objectives in numerous forest com-

Table 4. Diagnostic variables being a measure of commitment to recreation-tourist management in RDSF Krakow in the years of 2005–2009

Forest district	X_1	X_2	X_3	Y_1	Y_2
	[pcs./1000ha]	[ha/1000 ha]	[ha/1000 ha]	[%]	[PLN/ha/year]
Brzesko	1	323	2.6	0.14	1.21
Dąbrowa Tarn.	11	633	3.5	0.22	2.17
Dębica	8	568	3.6	0.16	1.56
Gorlice	18	619	7.6	0.21	1.3
Gromnik	11	2152	1.6	0.6	6.75
Krościenko	2	3942	4.8	0.09	0.7
Krzeszowice	13	1877	4.3	0.29	1.48
Limanowa	5	322	1.8	0.27	2.07
Łosie	5	2875	0.6	0.15	1.03
Miechów	5	836	1.5	0.19	1.18
Myślenice	16	2350	2.6	0.5	4.31
Nawojowa	6	128	0.3	0.29	1.76
Niepołomice	12	3416	2.7	0.55	3.91
Nowy Targ	9	958	2.4	0.33	5.6
Piwniczna	6	4766	1.3	0.09	1.26
Stary Sącz	14	637	0.5	0.17	1.49
Arithmetic mean	9	1650	2.6	0.27	2.36

Source: Own calculations based on data of RDFS Krakow

RDSF: Regional Directorate of State Forests

Explantation: X_1 – indicator of thickening the infrastructure, X_2 – rate of the area of forests in administrative boundaries of cities, around cities and area of the health-resort zone in which the forest management stayed subordinated to the recreation and the tourism, X_3 – indicator of areas of RDSF Krakow forest lands developed for the purposes of the tourism and the recreation), Y_1 – indicator of the unit cost, being a quotient of the cost of adapting area to the recreational forest function and the area of the forest district), Y_2 – indicator reflecting the share of additional costs associated with adapting the area of the forest district to the recreation in all-in costs of the forest district

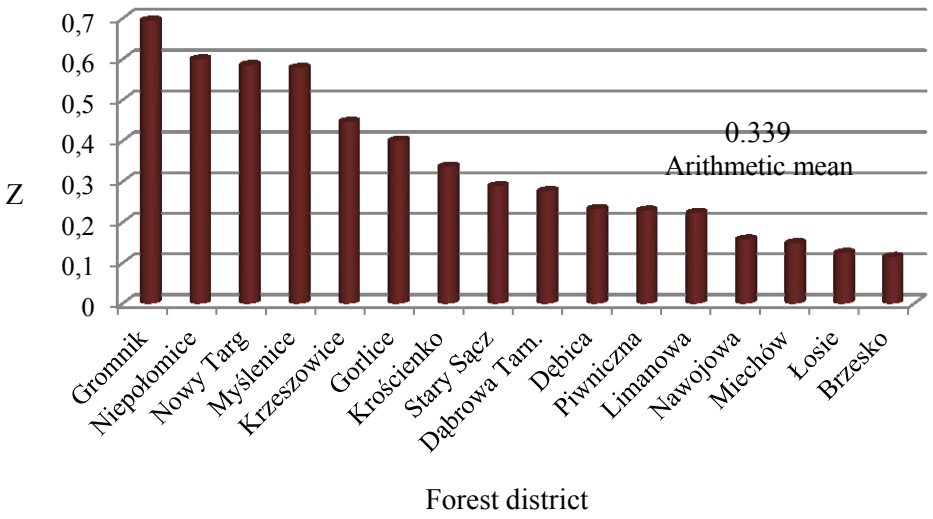

Figure 2. Financial and organizational commitment of forest districts in adaptation of forest areas to their recreation-tourist function in the years of 2005–2009. Z – synthetic indicator.
Source: Own calculations based on data of RDSF Kraków
RDSF: Regional Directorate of State Forests

plexes. The additional costs of tourism development within the RDLP Kraków were approximately 0.3% of total costs. State forests also incur alternative costs, but data is lacking in the management plans and records kept by forest districts on the profits lost due to limitations on the acquisition of wood, as well as in specially managed stands along marked hiking trails, bicycle paths and horse trails.

The tourist management of forests within RDLP Kraków is very diverse, which is also a consequence of the social needs in this area. The greatest pressure to manage and channel tourists is in districts that have cities and a high population density within their boundaries, as well as in areas of high scenic and natural value. Tourist amenities are increasing in forests; currently, RDLP Kraków offers more than 140 amenities managed for tourism (Janusz 2010). Surveys conducted in the area of the Promotional Forest Complex of the Beskid Sądecki Forests showed that approximately 65% of respondents believe that tourist infrastructure amenities are needed in the forests (Janusz 2011).

Forests located in the vicinity of large cities are more frequently and intensely visited by people, and therefore, need to allocate larger amounts of funds to manage the area, as well as to increase the time FS workers must spend to supervise facilities and protect the area. These areas are also more vulnerable to human pressure, primarily littering. The state forests administration, and especially the Forest Guards, are primarily responsible for maintaining cleanliness in the forests. Either the owner or manager is responsible for trash found in the forest, regardless of its type and origin (Kapuscinski 2004). The cost expended by RDLP Kraków to clear the forest of trash from 2005–2009 amounted to 629,800 PLN.

According to Grzywacz (2009), districts are not required by law to build and equip car parks, parking spaces and develop tourist infrastructure in the forest. If they do so, it is done for their own needs, at their own discretion and expense. State forests attempt to raise funds by renting/leasing tourist infrastructure facilities to legal entities or private persons. During the study period, only three tourist infrastructure facilities within RDSF Kraków were leased. Revenues from leasing were marginally important compared to the expenditures for tourism management of the area. The Olsztyn RDLP also leases tourism amenities under long-term contracts. Income from leases exceeded incurred costs in only two of the RDLP Olsztyn districts; in the remaining ones, costs were greater than income (Pampuch 2001).

Non-productive functions of forests limit timber production, which is the main source of income in forest management (Klocek, Płotkowski 2010); for this reason, solutions should be implemented with the aim of internalising the positive external effects of forest management. The process of tourist management of forests needs to include local government authorities and other entities, which indirectly profit financially from such endeavours, such as owners of lodgings and companies offering various types of activities in the forest. Charging modest admission fees to the most attractive and frequently visited reserves is worthy of consideration. Aside from the economic benefits from such fees to forest districts and the Regional Directorate for Environmental Protection, this would also have an educational effect, promoting the development of responsible social attitudes in

relation to natural resources, currently treated as free goods. According to Referowska-Chodak (2009), it is important to promote a model of ecotourism that is safe for nature and raises social awareness about the need to respect its resources.

6. Conclusions

The study shows that there are differences among individual forest district units in their commitment to the process of developing the recreational and tourist functions of the forest. In terms of spatial intensity and incurred expenses for this purpose, the highest engagement in the RDLP Kraków area was noted for the forest districts of Gromnik, Niepołomice, Nowy Targ and Myślenice, while the lowest was in Brzesko and Łosie.

In addition to direct costs, forest districts incur indirect costs related to the expense of mitigating the impact of human pressure on forests, as well as supervising the tourist infrastructure. The highest additional costs were incurred by forest districts with municipalities located nearby and with areas of high natural and landscape value.

We identified the need to develop a system enabling indirect costs to be recorded, in particular, alternative costs (lost profits) of forest management related to its adaptation for tourist and recreational functions.

The RDLP Kraków forest districts assumed financial responsibility for adapting the forests for tourism and recreational purposes. Therefore, financial resources and professional support should be sought to support such activities from outside of the organisation. There is also a need to discuss the issues related to internalising the positive external effects of forest management.

Conflict of interest

None declared.

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Author's contribution

A.K. – concept, preparation of methodology, literature review, data collection, preparation of data sets, data calculations and analysis, preparation of tables and charts, preparation of the text for publication, corrections, translation; M.P. – language corrections, verification of the data presented in the tables; M.K. – preparation of data sets, verification of data presented in the tables.

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