



Jaroslav Uglis²⁶, Magdalena Kozera-Kowalska²⁷

DEVELOPMENT OF THE SOCIAL FUNCTIONS OF FOREST AREAS KRUCZ FOREST DISTRICT CASE STUDY

Abstract: The article presents the development of the non-productive functions of forest areas, with particular consideration of social functions, which include educational, tourist and recreational activity. The development of these functions has been presented using the example of the Krucz Forest District. The authors point to the visitors' growing interest in the development of infrastructure and forms of activity. They emphasize that, the forest's social functions in the forest district in question balance its productive (commercial) functions.

Key words: tourist and educational functions of forest areas, sustainable development, forestry educational infrastructure

INTRODUCTION

Forest areas are the most complex land ecosystems on Earth, consisting of plant and animal organisms which coexist, forming the biocoenosis. Exploiting the forest is considered to be one of the oldest forms of human activity. As the wildlife habitat, forests are the source of wood and undergrowth (mushrooms, blueberries and blackberries), which sustain local communities, as well as a reservoir of natural resources used in food industry. Forest areas undoubtedly perform various, often complementary functions, either in a natural way or as a result of human activity. The literature on the subject provides descriptions of over 100 such functions [Mandziuk, Janeczko 2009]. The possibilities of performing individual functions by forest areas largely depend on their natural conditions (the area, state, habitat and species-age structure of the forest stand), as well as on the amount of non-productive infrastructure, which is the effect of human activity (tourism and recreation infrastructure).

The article presents the Krucz Forest District as a district making up "The Noteć Forest Promotional Complex". It is an attempt to evaluate the realisation of the social functions and tasks by the Krucz Forest District.

The authors used the case study method, assuming that the past situation analysed with reference to this particular case is the same or similar to the situation concerning other cases [Wójcik 2013]. The authors also made a review of the literature on the subject and the studies conducted by other authors, using the desk research method. They used source materials provided by the Krucz Forest District, concerning the creation and development of the forest educational infrastructure – reports on the educational activity run in 2012-2016. They were supplemented with State Forests data regarding forest promotional complexes created in Poland.

THE PLACE OF THE EDUCATIONAL FUNCTION IN THE DEVELOPMENT OF FOREST AREAS

The total area of Polish forests cover 9.2 million hectares, and the forestation level comes to 29.5%²⁸, which makes Poland one of the European leaders in this respect. In a report devoted to studying the function of forests, Poles were asked whether going to the forest was a purpose in itself for them, or whether it was incidental (happened, e.g., while going on holiday, on a weekend trip, to

²⁶ Poznań University of Life Sciences, Department of Rural Tourism, Wojska Polskiego 28, 60-637 Poznań, uglis@up.poznan.pl

²⁷ Poznań University of Life Sciences, Department of Management and Law, Wojska Polskiego 28, 60-637 Poznań, mkozera@up.poznan.pl

²⁸ According to the National Forestation Program, in 2020, forests are to make up 30% of the country's area, and in 2050 – 33% [see Jalinik 2016, p. 314].

visit the family or on business). The majority of respondents chose the first answer²⁹. The same study sheds light on the behaviours and needs of Poles visiting forests. It shows that they choose national parks and nature reserves rather than other forest areas, mostly due to safety reasons and the fact that they do not know the rules of staying in forest areas, which confirms the common opinion that regardless of their incomes, Poles willingly visit forest complexes. However, this starts a discussion about the economic sense in developing this aspect of using forests, usually treated as a profitable component of the national economy [Piekutin, Superson 2008].

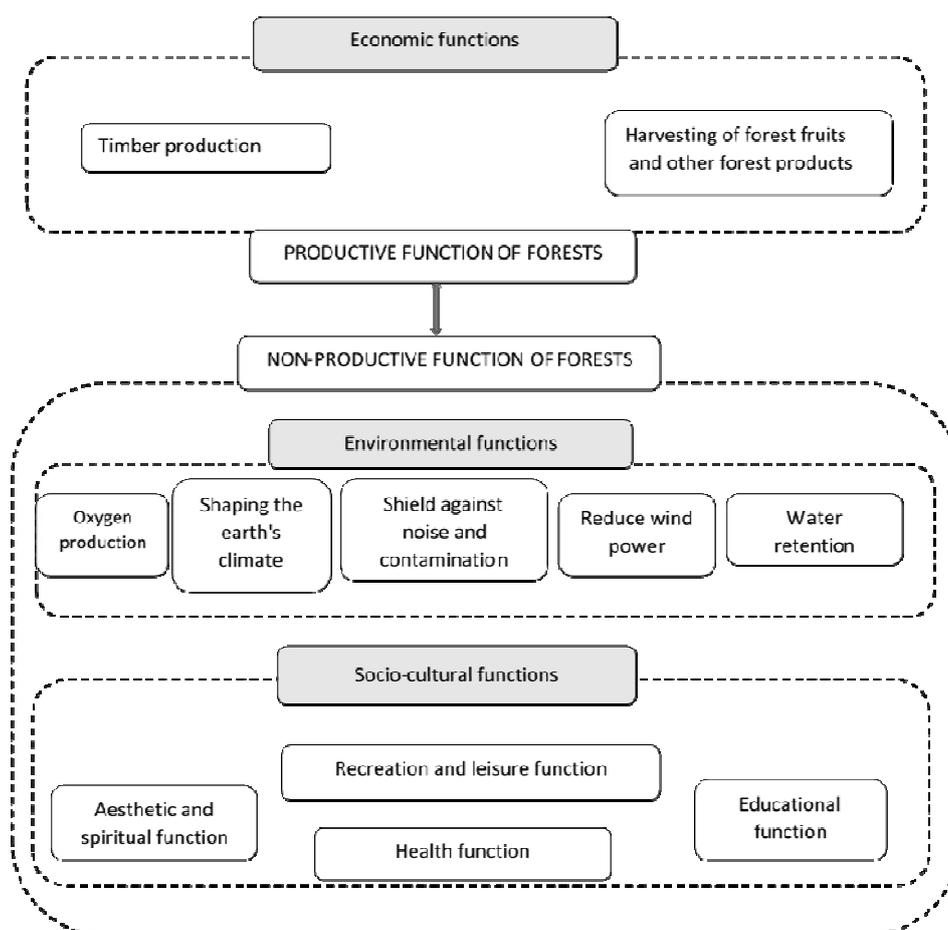


Figure 1. Productive and non-productive functions of forest areas

Source: author's elaboration

²⁹ The study was carried out on the sample of 1.000 inhabitants of Poland, who declared that in the past 12 months they had visited a forest in Poland at least once and for recreational purposes [more Żylicz, Giergiczyński 2013].



Many typologies of forest functions refer to its commercial and non-commercial use. Other classifications refer to using the forest's universal material and immaterial natural resources [Drozdowski 2008]. They are usually used non-commercially and serve educational and promotional purposes. At the same time, they make it possible to implement the rules of sustainable development in forest areas, taking the needs of the economy, environment and people into consideration [Rykowski 2002, Siry et al. 2005, Bettinger et al. 2017]. The tourist function of the forest is an aspect of its non-commercial use and sustainability. It also opens relatively new or so far unpopular opportunities for people, such as silvotherapy (tree healing), aesthetotherapy (healing through sensual experience) or kinesiotherapy combined with relaxation classes [Przezbórska 2010]. Although nearly every forest function arising from the wish to achieve different goals (economic, environmental or social) assumes caring for its endurance and future, a particular role is played by the educational function, supported by the tourist and recreational functions. It is worth mentioning, however, that recreational activity has changed from passive to more active [Wilkes-Allemann et al. 2017], which additionally predestines it to supporting educational activities run in forests and for their benefit.

Given the common implementation of sustainable development, it seems that the discussion on the classification of forest functions is not a major problem, which is obvious if we just list these functions (Figure 1). They clearly show that the whole forest management will be affected by the economic, environmental and social (socio-cultural) functions alike.

A comprehensive look at the forest functions, especially from the point of view of sustainable management, requires considering the economic benefits of forest management not from the perspective of, e.g., a single forest sub-district, but a superior unit - in this case - a forest district. Thus, the diversity of the resource and forest management should be rationally correlated: the benefits brought by the productive functions should be maximized where the benefits due to social and protective functions are smaller than average and the other way round [Żylicz, Giergiczny 2013].

In recent years, we have observed a growing interest in and demand for nature-forest education. Since 2004, the educational function of forests has been planned and its purpose has been to popularize the knowledge about forest environment and sustainable forest management, and in this way to increase people's awareness as regards rational and responsible use of forest products. It appears that the Krucz Forest District puts this rule into practice.

THE EDUCATIONAL, TOURIST AND RECREATIONAL INFRASTRUCTURE OF THE KRUCZ FOREST DISTRICT

The Krucz Forest District, together with the Międzychód, Oborniki, Potrzebowie, Sieraków and Wronki forest sub-districts, make up the Noteć Forest Promotional Complex (established on the strength of Decree 62 of the Director General of State Forests, of 14th October 2004, on the Noteć Forest Promotional Complex). The complex, situated in the drainage basin of the Warta and Noteć Rivers occupies an area of over 137,000 hectares. It shows considerable topographic diversity, with relatively homogenous stand (the majority are pure and single-storey stands). The aims of a promotional forest complex include promoting multifunctional and diversified forest management, perfecting forms of cooperation with the society as regards forest management, as well as perfecting the system of the Forest Services and education of society³⁰. The Krucz Forest District has been striving to achieve these aims for years by propagating nature protection combined with forest tourism and agritourism. The infrastructure of the Krucz Forest District has been oriented towards four groups of activity, including walking, cycling, kayaking and horse-riding.

³⁰ <http://www.puszczanotecka.lasy.gov.pl/>



One of the first large-scale³¹ educational activities, however, was the opening of a nature-forest path in the Kruczlas sub-district in 2013. The path has the shape of a loop, about 3.5 km long. Its beginning and end are in the immediate vicinity of the forest district buildings, at the, so called, Educational Canopy. It includes a place for a bon-fire, near a pond, a “green classroom” with many outdoor exhibits, and an educational room, where, depending on the needs and weather conditions, classes for children and teenage students are held. Approximately at the same time, in the area of Ciszkowo and Hamrzysko, some trails intended for walking or cycling tourism were prepared (a 15 km long path).

The forest districts financed many educational activities themselves³². Some other activities were also possible due to effective search for external funding, such as the subsidies from the Wojewódzki Fundusz Ochrony Środowiska i Gospodarki Wodnej (the Regional Fund for Environmental Protection and Water Management) in Poznan.

In 2016, it resulted in completing two tasks: creating two nature-ecological paths in the Goraj forest sub-district (“Morena Czarnkowska” / “Czarnkowska Moraine”, and “Z biegiem Natury” / “In the course of Nature”)³³, as well as an educational path called “The Forest teaches Us” in the Kruczlas forest sub-district. The money was spent, among other things, on teaching aids (educational games, such as nature and ecology dice, Forest Jump Records, a guessing game, Wooden Fruits), building the path gate, installing educational boards in wooden cases, signposts, welcoming boards, buying educational toys, etc.

In 2016-2010, the Krucz Forest District is planning to carry out the tasks of a national project entitled “A comprehensive project of adapting forests and forestry to climatic changes – small retention and preventing water erosion in lowland areas”. The financial sources in this case will be mostly EU funds. The plans include building two water reservoirs (for the purpose of increasing retention) and restoring functionality to the marshes area by building melioration amenities.

FORMS AND ECONOMIC ASPECTS OF EDUCATIONAL ACTIVITIES

As regards forest education, the Krucz Forest District takes advantage of elements directly connected with forest management (such as the tree stand, small retention objects, a nursery), as well as those which are not closely related (cultural sites, tradition, a garden, a dendropark / an arboretum). An important role is played by the forest education centre, including the forest educational canopy (the green classroom), as well as two educational paths.

Educational activity involves many forms of teaching, such as field classes and guided excursions, lessons in the green classroom, competitions, educational campaigns, exhibitions, festivals or workshops. The analysis of available data (Table 1) shows that the largest number of participants using those forms of education was recorded in 2013 – over 6,800 people. The most popular were campaigns and events held in the forest district in question. Other very popular forms of education were field classes and guided excursions, attended by nearly 1000 people in 2015. The number of people taking part in various forms of education in the Krucz Forest District in the studied period reached over 31,700 people, half of whom (52.7%) participated in theme-oriented educational forms.

³¹ Fully financed from the State Forests means and the state budget

³² In a great majority of forest districts in Poland, the educational activity is financed by the districts themselves [see Ankudo-Mankowska, Starosta-Grala 2016; Czarnecki et al. 2016].

³³ A path created as a part of the Regional Centre of Forest Education in Goraj Castle, the area of the Krucz Forest District.



Table 1. Forms of forest education implemented by the Krucz Forest District and attendance in 2012-2016

Form of education	2012	2013	2014	2015	2016
	No of participants (No of classes)				
Field classes and guided excursions	742 (17)	794 (19)	880 (21)	998 (20)	659 (13)
Classes in the forest education room	169 (4)	175 (5)	141 (4)	165 (5)	125 (3)
Meetings with a forester in schools and kindergartens	205 (3)	186 (6)	182 (5)	118 (3)	156 (2)
Forest competitions (knowledge, art, literature, etc.)	276 (4)	297 (5)	266 (6)	490 (5)	325 (4)
Campaigns, events	1298 (5)	1358 (5)	1490 (5)	1380 (5)	1260 (4)
Educational exhibitions	560 (2)	612 (2)	490 (2)	493 (2)	420 (2)
Other, e.g. festivals, fairs, workshops, etc.*	3 300	3 400	3 000	2 900	2 400

*estimates

Source: author's elaboration, based on the Krucz Forest District data

Considering the expenses per one participant of education at the Noteć Forest Promotional Complex (12.69 PLN) in 2015, it is possible to estimate expenses incurred for the educational function by the Krucz Forest District at over 83 thousand PLN. In order to estimate the non-productive benefits, particularly those drawn from recreation and tourism in the Krucz Forest District, the travel cost model was applied. Assuming that the average cost of travel for one participant is 20 PLN [after: Bartczak et al. 2008], the forests of the Krucz Forest District generate a stream of recreational-tourist benefits worth over 128.000 after tax, annually.

CONCLUSIONS

In recent years the society has become increasingly interested in recreation and tourism, as well as education in forest areas. Forests are perfectly suitable for practicing both these forms of activity. They have many natural assets which attract enthusiasts of active recreation in the open air, as well as tourists. Aware of the growing interest in forests, forest districts develop and modernize tourism and education infrastructure, setting new educational paths, and walking, cycling and horse-riding trails. At present, there are 20,000 km of walking trails, 4,000 km of cycling trails and 7,000 km of horse-riding trails in Poland, prepared for tourists. They are supplemented with 500 camping sites, 300 bon-fire sites and over 200 designated campsites. In order to make the forests more available, 3,000 parking spaces and 87 forest car parks have been established.

The activity of the Krucz Forest District is the response to the increasing public demand for recreational-tourist and educational infrastructure. At the same time, it is an example of practical implementation of complementarity, which means developing the educational and tourist-recreational infrastructure in areas of lower economic value, and at the same time intensively using areas of high economic value. In this way, the forest management in the Krucz Forest District is optimized, which means maximizing total economic benefits. Optimization partly results from realizing the non-productive functions of the forest. It is worth stressing that the economic benefits of the educational activity of the forest district surpass the incurred costs.



REFERENCES

1. Andruszko, L. (2010), Wartość dodana jako instrument rynkowy polityki leśnej w ochronie środowiska naturalnego. *Наукові записки Львівського університету бізнесу та права*, (4), 49-56.
2. Ankudo-Jankowska A., Starosta-Grala M. (2016), Czasowa i przestrzenna analiza wewnętrznego finansowania edukacji przyrodniczo-leśnej w Lasach Państwowych. *Acta Sci. Pol. Silv. Colendar. Ratio Ind. Lignar.* 15(4), 203-213.
3. Bartczak A., Lindhjem H., Ståle N., Zandersen M., Żylicz T. (2008), Valuing forest recreation on the national level in a transition economy: The case of Poland, *Forest Policy and Economics*, 10(7), 467-472.
4. Bettinger P., Boston K., Siry J.P., Grebner D.L. (2017), *Forest Management and Planning*. Second Edition, Academic Press
5. Czarnecki J., Glura J., Ankudo-Jankowska A. (2016), Koszty nadleśnictwa a zadania ustawowe. *Acta Sci. Pol. Silv. Colendar. Ratio Ind. Lignar.* 15(4), 215-221.
6. Drozdowski S. (2008), Leśne obszary funkcjonalne—założenia ideowe. *Studia i Materiały Centrum Edukacji Przyrodniczo—Leśnej*, R. 10. Zeszyt 3 (19), 11-20.
7. Jalinik M. (2016), Obszary leśne w rozwoju turystyki. *Ekonomia i Środowisko*, 3 (58), 313-323.
8. Mandziuk A., Janeczko K. (2009), Turystyczne i rekreacyjne funkcje lasu w aspekcie marketingowym. *Studia i Materiały Centrum Edukacji Przyrodniczo-Leśnej*, R. 11, Zeszyt 4(23), 65-71.
9. Piekutin J., Superson M. (2008), Ekonomiczne aspekty ekologizacji gospodarki leśnej na przykładzie zwalczania gradacji kornika drukarza w Nadleśnictwie Białowieża. *Zarządzanie Ochroną Przyrody w Lasach* 2, 165-182.
10. Przezbórska, L. (2010), Produkty terapeutyczne i lecznicze w agroturystyce i turystyce wiejskiej. *Studia Periegetica*, nr 5 Turystyka w kraju i za granicą—wybrane problemy, 233-251.
11. Rykowski K. (2002), Co znaczy trwały i zrównoważony rozwój lasów [1]. *Głos Lasu*, (11), 22-27.
12. Siry J.P., Cabbage F.W., Ahmed M.R. (2005), Sustainable forest management: global trends and opportunities. *Forest Policy and Economics*, 7(4), 551-561.
13. Wilkes-Allemann J., Hanewinkel M., Pütz M. (2017), Forest recreation as a governance problem: four case studies from Switzerland. *Eur J Forest Res*, DOI: 10.1007/s10342-017-1049-0
14. Wójcik P. (2013), Znaczenie studium przypadku jako metody badawczej w naukach o zarządzaniu. *e-mentor* 1 (48), s. 17-22.
15. Żylicz T., Giergiczyński M. (2013), Wycena pozaprodukcyjnych funkcji lasu. Raport końcowy. Uniwersytet Warszawski.
16. <http://www.puszczanotecka.lasy.gov.pl/> (dostęp 31.05.2017).