

Article

The Challenges of the Forestry Sector Communication Based on an Analysis of Research Studies in the Czech Republic

Marcel Riedl, Vilém Jarský * , Petra Palátová and Roman Sloup

Department of Forestry and Wood Economics, Faculty of Forestry and Wood Sciences, Czech University of Life Sciences Prague, 165 00 Prague, Czech Republic; riedl@fld.czu.cz (M.R.); palatovap@fld.czu.cz (P.P.); sloup@fld.czu.cz (R.S.)

* Correspondence: jarsky@fld.czu.cz; Tel.: +420-2243-83708

Received: 19 September 2019; Accepted: 22 October 2019; Published: 23 October 2019



Abstract: Achieving public support and understanding in addressing the challenges of climate change and the bark beetle calamity is a prerequisite for the successful future of Czech forestry. The most important instrument for achieving public support is communication. To be effective, this communication has to be built on a communication strategy reflecting the long-term goals of forest policy and has to be based on both current analyses and other relevant information, which, in turn, is based on the research results of the public perception of the forests and forestry. This article deals with the results of current research studies and formulates conclusions in relation to this communication strategy. Among other things, these results indicate the willingness of a large part of the public to actively participate in voluntary assistance to forestry, markedly differing opinions among individual groups on forest functions, and rather below-average interest in information concerning forests and forestry.

Keywords: communication; forestry; opinion pool; Czech Republic

1. Introduction

1.1. Communication

Communication is the necessary basis of all social interaction. In [1] (p. 739), the author defined communication itself as the transmission of information from one individual or group to another. The pattern of communication refers to who is sharing information with whom, the amount of communication, the direction, whether the communication is friendly or not, and to what extent power shapes the communication [2]. Communication depends on the co-ordination and shared rules of interpretation [3]. Any decision referring to forests and forestry encompasses large areas, a long time horizon and multiple stakeholders [4], and also implies a great deal of knowledge and information from different sources [5]. As has been stated [6], changing policies and patterns of governance and growing environmental awareness on a global level will probably require fundamental policy changes in redefining the partnership between society and the forestry sector on regional or national levels. Increased interest from society towards recreational benefits acquired from forests has driven the request for the forest sector to be responsive to a broad scope of environmental and societal issues [7]. In [8], the author states that most communication activities of organisations fall into one of four categories based on the different reasons for the communication:

- “One-way” information distribution: advertising, promotion, publicity and propaganda (cf. asymmetric communication or instrumental communication);

- Information provided as part of a dialogue, usually replying to questions of the public (reactive);
- Education: a long-term process to transfer knowledge, but also attitudes and values, both to children and adults;
- Dialogue with specific groups, sometimes as part of a formal consultation process, sometimes in an effort to find acceptable solutions to complex problems involving many different groups of people (cf. two-way symmetric communication and the discussion of communication in networks). Some examples on forest dialogue activities are the “United Nation Forums on Forests” or the German and Austrian “Forest Dialogues” (Walddialoge) as stated in [9].

1.2. Forest Sector

In [10], the authors defined the ‘sector’ in the context of three elements: (i) actor-related elements (advocacy coalitions, interests or belief systems, etc.); (ii) political programmes and public policy measures; and (iii) institutional and related procedural compounds. When applying Hubo and Krott’s definition, we can conclude that forestry in the Czech Republic (further “CZ”) can be regarded as a sector because all the main components (political programmes, actors and institutions dealing specifically with the forestry issues) can be found [11]. For the forest sector, the growing public awareness related to the environmental and social issues has created a great need to build and secure the legitimacy of the operations through the transparent production and management processes and trustful stakeholder relationships (e.g., [12]). According to [13], a holistic and inter-sectoral approach includes identifying the mutual impacts of the related sectoral policies. Two different dimensions of inter-sectoral aspects have been identified. The first is land-use related, including sectors such as agriculture, infrastructure and tourism. The second dimension is related to the further processing and marketing of forest goods and services. A holistic and inter-sectoral approach includes identifying the mutual impacts of the related sectoral policies. One should be aware of the existence of the conflicting interests of the different forest sectors and also of the existence of a multi-responsibility distribution for forest issues in society [14]. The challenges in terms of building intersectoral cooperation have been identified in three main areas [15]: establishing and developing small and medium-size businesses; research and creative economy (innovations); efficient energy and use of renewable energy sources. As stated in [16], communication between the forest sector and other stakeholders is difficult. All the above mentioned issues may be a reason why “a clear path towards better inter-sectoral communication is still lacking” [17].

The importance of improving the communication of the forest sector with society relates to the need for the policy to be legitimated and accepted by society [18]. Forests mean different things to different people and this can create conflicts of interest resulting in mixed and confusing messages [19].

As stated in [16], a number of studies indicate that the public is deeply concerned, including the still unsatisfactory situation of the forests’ health and perceived threat of forest biodiversity loss.

In the current situation, this premise seems to apply in the CZ in its entirety. In order to verify the Czech public’s perception of the state of the forests and the situation of forest management, the results of a number of recent research studies are analysed in terms of their relevance and impact on the forest sector communication. The main research questions are:

What are the main findings concerning the perception of the forests and forestry by the Czech public?

What is the impact of these findings on creating an effective communication between the forestry sector and society?

2. Materials and Methods

As noted, a lot of research has been recently conducted on the perception of forestry by the Czech public, which has collected information on the current state of public perception on forests and forestry. Knowledge on public expectations of forestry is valuable to forest owners as well as administrations, especially in the face of the growing critical citizenship they encounter during their work [20]. The

public's perceptions, as well as stakeholders' interests, should be analyzed [21], in order to match them and make them compatible, so one can produce proper communication strategies that will reach the decision-makers, whilst having an adequate amount of social support [22]. The most important studies whose data will be further analysed and put into mutual connections are listed in Table 1.

Table 1. The list of the research studies whose data are analysed and discussed in the following section.

	Target Group	Method	Date of Research	Number of Respondents	Name of Research
A2015	18+	CAPI ¹ , F2F ²	25.11.–8.12.2015	1016	Extended research on non-wood forest products
A2016	18+	CAPI	16.11.–23.11.2016	1008	Extended research on non-wood forest products
A2017	18+	CAPI	29.10.–16.11.2017	1022	Extended research on non-wood forest products
A2018	18+	CAPI	23.11.–3.12.2018	1034	Extended research on non-wood forest products
B2018	15–75	CAPI	24.5.–4.6.2018	1519	The attitudes of the general population of the Czech Republic to forests and wood
C2018	12–79	CAPI	1.10.–21.12.2018	3764	Sociological surveys of non-productive functions of forest
D2019	15–65	On line panel	14.6.–19.6.2019	1050	Demand after ecosystem services

¹ Computer-aided personal interview, ² face-to-face polling.

All of the research studies listed in Table 1 are representative with respect to gender, age, education, the size of the municipality and the region of residence of the respondent.

The A2015, A2016, A2017, and A2018 surveys were organised as part of the omnibus research of the StemMark Agency commissioned by the Ministry of Agriculture. Querying was performed in the form of a CAPI (Computer-aided personal interview) on a representative set of more than 1000 respondents, which is representative (a so-called quota selection) with respect to the following criteria: gender, age, education, the size of the municipality and the region of residence of the respondent. A network of around 250 trained interviewers allows one to achieve the required representability of the research sample using the original standardised questionnaire. The research is, therefore, conducted on the basis of quantitative personal F2F (face-to-face) polling.

The B2018 survey was organised by the StemMark Agency commissioned by the Ministry of Agriculture with the goal to find out the opinions of the Czech public on forests, wood and wood products, and to map the use of the wood and wood products. Querying was performed in the form of a CAPI on a representative set of respondents, which is representative (a so-called quota selection) with respect to the following criteria: gender, age, education, the size of the municipality.

The C2018 survey was a sociological study, mapping the frequency and reasons for visits to the forest by the general public as part of The Market and Media and Lifestyle Research Project, which has been carried out in the Czech Republic since 1997 in a licensed co-operation with Kantar Media UK Ltd.

The D2019 survey (research of the demand for ecosystem services) was organised by the Remmark Agency with the goal to find the demand of the Czech public for ecosystem services.

3. Results and Discussion

3.1. The Sources of Information on the Forests and Forestry

When analysing the sources of information on the forests and forestry, it can be assumed that a significant part of the public has had the personal experience of visiting a forest, because the Czech public visits various forests quite often, as shown in Figure 1, based on the extensive research of C2018. It is obvious that this personal experience and the resulting perception of the forests will be strongly locally determined by the area in which the forests are visited. The UK research [23] (p. 9) holds evidence that citizens are more sceptical of forestry practice in their own local forests than they are of forestry in general

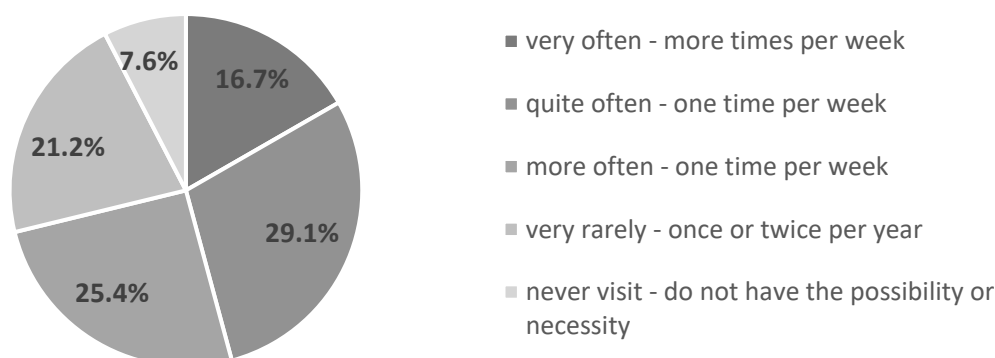


Figure 1. How often, in total (regardless of purpose), do you visit the forest on average per year (winter and summer)? (data in %, source C2018).

In addition to personal experience stemming from the forest visits, as confirmed by repeated inquiries in 2016, 2017 and 2018, the main source of information on the forests and forestry is the television (see Table 2, in brief, we present the results for 2018). This is also related to the fact that the majority of the population does not specifically search for information on forests (see Table 3) and, as a main source of information for them, the TV news is generally superficial, too short and shallow, and does not provide a deeper insight from experts and alternative views. This is annoying for several reasons. Forestry is a rather complicated and complex matter. The TV news, as a typical mass medium, only allows one-way communication of a relatively small amount of information to a large group of recipients. For many television stations, of a commercial nature in particular, the main task is to achieve the highest viewership (see, for example, [24]). In particular, negative reports of a spectacular nature are a proven means of achieving this. In the area of forestry, these are mainly forest fires. A previous study [25] concluded that there is a need to communicate a clear and sufficiently detailed message to enable the public to understand the corresponding differences in specific issues such as forest area, biodiversity, and damage in different geographical contexts (e.g., local forests, European forests, forests worldwide). Trust in managing authorities and knowledge about forest management have proven influential in shaping public support for policy across the different forest management contexts [26]. The articulation of forestry in the media becomes a challenge, which consequently means a lot of effort has to be put into communication in order to be heard by the society and its politicians [27].

The research also shows that online sources of information and social networks are more common among people under 44, students and university graduates. TV is the main source for all socio-demographic groups and is watched even more by seniors. The research results from the last three years do not show a qualitative shift, so we cannot expect a major change in the coming years. The majority of the population only passively consumes television news (and, thus, incidentally, information about forestry), but they do not show an active interest in seeking a forestry topic. A TV programme targeted at forestry is not very effective because of its small audience. The younger

generation can be targeted in a much better way through social networks, for example, in cooperation with a monitored youtuber or influencer.

Table 2. Which of the following sources of information do you consider to be the most important for yourself in terms of information on forests and forestry? (data in %, source A2018).

Source	1st Choice	2nd Choice	3rd Choice	Total Selected
Television	55	17	10	81
Personal information from acquaintances, family	11	12	19	42
Online news, diaries, and magazines	9	10	9	27
Printed news, diaries, and magazines	6	18	19	43
Radio	4	20	12	35
Social media – Facebook etc.	3	7	7	18
Other online resources	4	5	7	16
Other	2	1	2	5
I don't know	7	10	16	34

Table 3. What is your interest in information concerning the forests and the forest use? (data in %, source: A2016, A2017, A2018).

Year	Not Interested at All	Only Care a Little	Interested in It on Average	Interested in It Above Average	Very Interested in It
2018	15	29	44	6	6
2017	12	27	48	7	7
2016	18	26	42	5	7

Generally, we can say that the Czech public perceives a deteriorating state of the Czech forests, based on the research data of A2016, A2017, and A2018, which is confirmed by Figure 2, which compares the perception of the state of the forests by the Czech public in recent years.

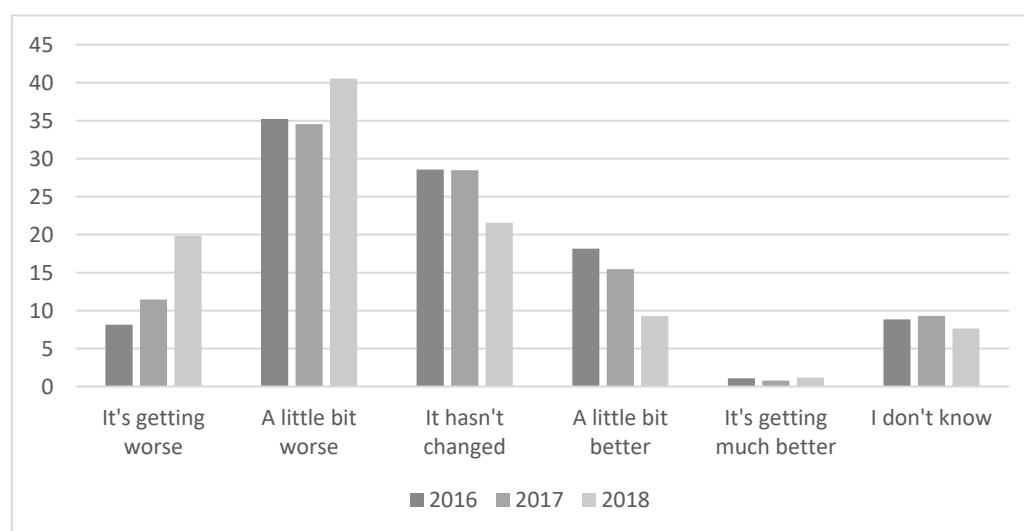


Figure 2. When you think about the state of our forests in general, do you feel that the state is improving, not changing or getting worse? (data in %, source A2016, A2017, A2018).

From the results shown in Figure 2, it is clear that the public is aware of the deteriorating state of forest stands in the Czech Republic. As mentioned in [28], other countries now also face novel forest stresses in the form of climate change, air pollution, and invasive pests. In this context, the relatively low interest in the forest information documented in Table 2 may be surprising.

Table 3 shows that the overall interest is moderate or weak, and does not change much over time. However, as follows from the following sections, this result cannot be interpreted in such a way that the fate of the Czech forests is indifferent to the public. These data may indicate that the public believes that they already have enough information. A significant part of the public may also expect concrete suggestions on how to get involved in forest management (FM) assistance. For the forest sector communication, this means that the new information needs to be communicated in an attractive way, or that this information is to be linked to proposals for specific activities.

The differences between the years were evaluated by a good compliance test. Program R [29] was used: Pearson's Chi-squared test; $X^2 = 2.1778$, $df = 8$, $p\text{-value} = 0.9751$. Conclusion: the level of significance significantly exceeds the standard criterion of 0.05, therefore, the differences between the years are not significant.

3.2. The Perception of the Importance of the Forests and Forest Management Goals

In this context, society's idea of the importance of the individual forestry objectives are summarised in Table 4. It is clear that there is a conflict between the stated objectives, which the public has not yet perceived. Citizens are forced to disambiguate complex feelings and almost necessarily appear to be inconsistent in their arguments [30]. As one of the most important tasks of this research, they come from: providing shelter for forest animals and protecting forests against pests (which, however, can often be game). Nowadays, with the extreme outbreaks of virtually all game species and the high game numbers, and the eradicating efforts to reforest after the bark beetle calamity, it may be necessary to focus communication on a systematic explanation that without game reduction, effective reforestation is not possible. Otherwise there is a risk that foresters will be considered as damaging the forest and the wildlife.

Table 4. Question: In your opinion, how important are the objectives of the forest management for society? (data in %, Source: A2016).

Objective	Very Important	Partially Important	Neither Important, nor unimportant	Rather Unimportant	Not Important at All
Providing shelter for wildlife	73	23	4	1	
Forest protection against forest fires	73	20	6	1	0
Forest protection from pests and diseases	69	23	6	2	0
Protection of rare plants	59	30	8	2	1
Enlargement of forest areas by new plantings	61	28	8	2	1
Maintaining the diversity and traditional character of the Czech forests	52	34	11	2	0
Ensuring the supply of wood for the woodworking industry	39	38	16	6	2
Leaving a significant forest area to spontaneous development	38	34	20	6	2
Enabling recreational use, off-road passage, weed control	33	38	19	7	3
Restoration of marking and construction of new tourist routes	28	39	21	10	3
Improvement of additional tourist services (educational trails, gazebos, wells, lookout towers)	29	37	21	10	3

In assessing the importance of forest ecosystem products and services in 2018, an accentuation of the forest function in relation to the water retention in the landscape can be observed (see Table 5), probably in connection with the persistent drought. At the same time, the importance of the wood-production function and the underestimation of the importance of forests in mitigating climate change are evident. In terms of communication, as well as the professional public and some radical views of environmentalists, the wood-production function, the use of wood and the efforts to reduce climate change can be appropriately complemented, as the carbon footprint of the wood products can be reduced throughout their life cycle. A gradual change from the economic to non-economic values over time has been noted, as evident in [31,32]. A tool that is growing in importance for the forest sector is branding [33]. Most of the weaknesses of certification systems in CZ are similar, as mentioned in [34]: lack of recognition and no market structure to take advantage of certification.

Table 5. How important are forest ecosystem products and services (data in %, source D2019).

Products and Services	Very Important	Partially Important	Rather Unimportant	Not Important at all	Don't Know
Oxygen production and disposal of some pollutants in the air	79.4	15.0	2.8	0.1	2.7
Wood for heating, for construction purposes, wood for decoration etc.	31.7	46.4	15.4	3.2	3.2
Water retention, clean water storage	77.7	16.4	3.0	0.3	2.6
Mitigating climate change and storing carbon in trees	58.2	28.7	7.5	0.8	4.9
Natural habitat of game, birds and insects	73.6	21.0	2.4	0.5	2.5
Job opportunities and rural development support	37.4	45.4	12.3	1.4	3.4
Public space for recreation (hiking, geocaching, camping, hunting, bird watching ...)	14.9	36.3	33.4	11.2	4.2

From the perspective of communicating the role of forestry and identifying the target groups, the data in Table 6 are important.

The results in Table 6 clearly show that young people under the age of 29 have significantly different views on forests and forest management. Systematic deviations on a number of questions show that young people perceive the forest much more romantically, the ideal is, for them, more wilderness, forests without people, non-intervention management, less understanding of the functions of the forest, not only economic but also ecological (water retention, landscaping, etc). It is a bit of a surprising result because the awareness of environmental issues in forestry should have been increasing due to environmental education in CZ, as in Slovakia [35].

Table 6. The differences in perception (data in %, source B2018).

Opinions	The Youth, Aged 18–29	The Whole Population	The <i>P</i> -Value
Reasonable logging is an essential part of forest management as well as planting new trees	78% Agree	86%	2.8×10^{-5}
Logging is a normal part of forest management, much like harvesting crops is taking care of fields and mowing is grass care	53.9% Agree	69.4%	3.9×10^{-10}
The area of forests left by man without any intervention should be increased, e.g., without roads, signs, disposal of sick trees, etc.	52% agree	42%	1.4×10^{-3}
There should be an increase in the areas of the forests where they are not harvested at all, nor otherwise interfere with the forest, nor are roads, fences, water streams, etc. maintained.	23% completely agree	17%	1.03×10^{-1}
Forests prevent soil and landscape erosion	78% Agree	87%	6.97×10^{-7}
Forests hold rainwater	79% agree	90.2%	2.5×10^{-12}

The differences between the group of younger and older respondents were again tested by the R program using Pearson's Chi-squared test. The significance levels achieved are shown in the last column. It is evident that all the differences are statistically significant, even at the 99% significance level.

The above figures show the need to communicate the concept and the role of forests to the young generation. For this communication, social media can be used to target the individual target groups. In this research, the age range of 18 to 29 years is relatively wide. It can be assumed that if the age range was 15 to 21 years of age, the variations in perception would be even more pronounced. The results presented in Table 6 indicate that the level of knowledge regarding the forest functions and forest ecosystem services is low for the younger generation. This hypothesis will be further verified by the research of pupils and students of different types of schools and, based on the results and after consultation with teachers, it is possible to recommend a wider distribution of forest pedagogy at primary and secondary schools.

3.3. The Conative Aspects of the Attitudes of the Czech Population

People have strong emotional ties to trees and forests, especially when they form landmarks at particular places people feel attached to [36].

It is clear from Figure 3 that a large part of the public is interested in engaging in the care and restoration activities of our forests in some way, although in interpreting these responses, it is necessary to take into account that people tend to answer positively when they are willing to support something positive. Of these options, some respondents were free to volunteer before paying any fees. When people expressed their willingness to help in other ways, they stated, for example, that they did not want to make a mess or they would be involved in the promotion of forest protection. In the case of interest in volunteer work, it is mainly women and persons under 59 years of age.

The interest of the Czech population, in some way, to engage in activities related to assistance to forestry is repeatedly confirmed by the current detailed data processed in Table 6, based on data from the D2019 research.

It can be assumed that this willingness is based on affective attitudes towards the forest and nature. If foresters do not take advantage of this offer of help from a part of the public and channel the forestry sector through the appropriate communication, these people can become involved in events organised by other entities whose views on the future of forestry can be burdened with considerable naivety and dilettantism. Receiving this assistance is a demanding organisational task. It is also necessary to prepare professional staff for meetings with the lay, often, clumsy public. Although the resulting effect

of these voluntary works may be relatively low, it is necessary to bear in mind the long-term emotional effect, the willingness to engage and support other (e.g., financial) forms of assistance and, last but not least, to consolidate the positive image of the forestry sector.

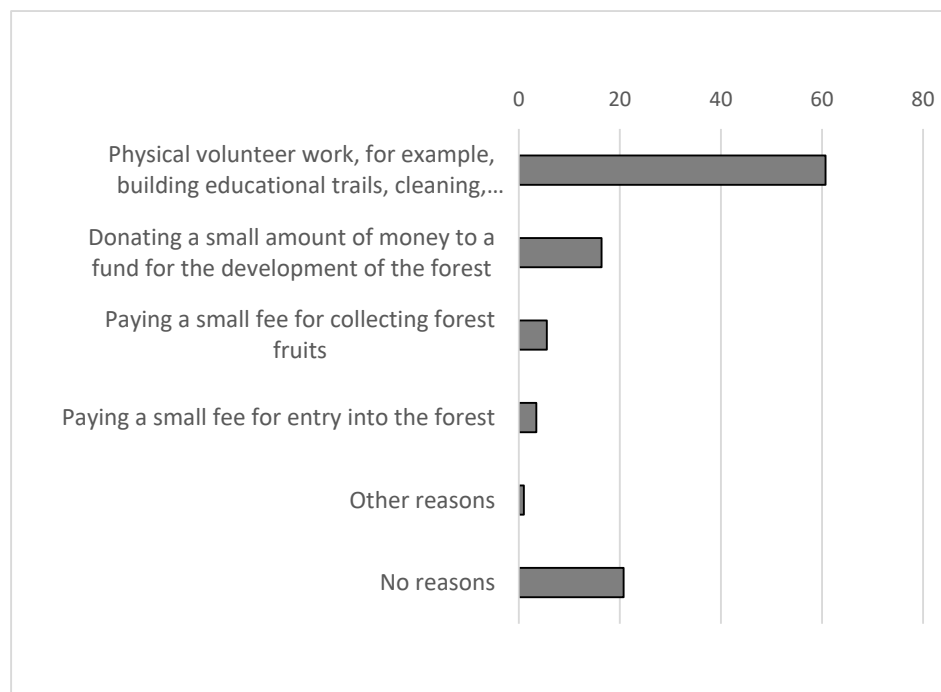


Figure 3. As regards to you personally, would you be willing to support activities related to the development, management and quality of our forests in some way? (data in %, source: A2016).

If we analyse the data from Table 7 (see row h in the table), we find that 30.2% of the population say they would definitely participate in some physical activity related to forestry and 46.9% give a ‘rather yes’ answer. These data from 2018 are more or less in line with the data from 2016 shown in Figure 3.

Table 7. Would you be interested in some way to be involved in activities related to forest management (data in %) source B2018.

Activities	Definitely Yes	Rather Yes	Rather Not	Definitely Not	Don't Know, Not Sure
(a) Voluntary garbage collection	23.0	41.7	21.2	5.1	9.0
(b) Planting trees	20.2	41.8	25.0	5.1	7.9
(c) Take care of hiking trails and walkways on a voluntary basis	10.0	31.7	35.6	13.4	9.2
(d) Removal of undesirable invasive plant species	11.2	30.3	36.4	12.6	9.5
(e) Participate in training programmes and related forestry workshops	9.9	30.1	37.5	12.8	9.7
(f) Attend local meetings with the opportunity to comment on current issues	11.8	34.2	33.9	11.0	9.1
(g) Provide a small financial contribution to a fund on the development of the Czech forests	7.8	32.9	31.0	15.9	12.5
(h) Some form of physical activity referred to in (a), (b) (c), (d)	30.2	46.9	14.5	4.0	4.4

Citizens who engage in matters of forest management enter the interaction without fixed meanings [37]. They learn and acquire their knowledge and opinions during the process of engagement and develop new frames of interpretation. This can lead to a more positive view of forest management [38] (p. 539).

4. Conclusions

The purpose of this article was, with the help of the evaluation of a number of sociological surveys, to show the public relationship to forests and forestry. The results confirm in many respects a strong public relationship to the forests, but not a very positive relationship to forestry as a socio-economic sector. Generally, it seems that the Central European public has more negative associations with forestry than the public in other regions [39].

To improve the perception of the sector, communication with the public must be based on a long-term communication strategy, which should ensure that the public becomes more aware of and understands the multifunctionality of forestry. The communication strategy should fulfil two basic highlights: consistency and long-term. Consistency in the sense that to effectively influence the public opinion is easier if the communication of the whole forestry sector is unified, not diversified according to individual stakeholders. Consistent communication within the sector is also essential for the joint promotion of interests within the Advocacy Coalition Framework [40–42]. The quality of communication is also highly influenced by the distribution of power and conflicts of interest [30]. Stakeholder management involves three main tasks: identifying important audiences, topics important to them, and appropriate methods to communicate with them; maintaining relationships with them and improving those relationships [43].

For external communication (i.e., towards the public), the existence of an internal communication (i.e., within the forestry sector, in both the horizontal and vertical directions) is essential. Calamities of various origins will always occur in forests (as well as unforeseen events in other sectors), and their occurrence is likely to increase as climate change takes place. Only if the forestry sector clearly articulates what it really wants from the public, is it possible to permanently communicate and, in the future, to begin to successfully engage society and to transform its theoretical interest in forest events into concrete actions. Without this challenge, the space will continue to belong to activists and environmental organisations (with objectives other than sustainable forest management) who can clearly communicate to the public what they want. This concerns, in particular, the use of specific procedures for the younger generation, which (due to a lack of life experience) is more open to the views and approaches of these organisations.

Author Contributions: conceptualization, M.R. and V.J.; methodology, V.J.; software, M.R.; writing—original draft preparation, M.R., P.P. and R.S.; project administration, M.R.

Funding: This research was funded by National Agency for Agricultural Research of the Czech Republic NAZV, grant numbers QK1920272 and QK1820041.

Acknowledgments: We thank Alan Harvey Cook for language corrections.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Giddens, A. *Sociology*, 2nd ed.; Polity Press: Cambridge, UK, 1993.
2. Papa, M.J.; Daniels, T.D.; Spiker, B.K. *Organizational Communication: Perspectives and Trends*; Sage Publications: London, UK, 2008.
3. Clappitt, P.G. *Communicating for Managerial Effectiveness*; Sage Publications: Thousand Oaks, CA, USA, 1991.
4. Kangas, A.S.; Kangas, J. Probability, possibility and evidence: Approaches to consider risk and uncertainty in forestry decision analysis. *For. Policy Econ.* **2004**, *6*, 169–188. [[CrossRef](#)]

5. Kennedy, P.; Folving, S.; Munro, A.; Paivinen, R.; Schuck, A.; Richards, T.; Kohl, M.; Voss, H.; Andrienko, G. European forest information. In *Advances in Forest Inventory for Sustainable Forest Management and Biodiversity Monitoring*; Springer: Dordrecht, The Netherlands, 2003; Volume 76, pp. 295–310.
6. Birot, Y.; Buttoud, G.; Flies, R.; Hogl, K.; Pregernig, M.; Paivinen, R.; Tikkanen, I.; Krott, M. Voicing interests and concerns: Institutional framework and agencies for forest policy research in Europe. *For. Policy Econ.* **2002**, *4*, 333–350. [[CrossRef](#)]
7. Cohen, D.; Mathey, A.H.; Biggs, J.; Boyland, M. Corporate social responsibility in the forest sector. In *The Global Forest Sector—Changes, Practices, and Prospects*; Hansen, E., Panwar, R., Vlosky, R., Eds.; CRC Press, Taylor & Francis Group: Boca Raton, FL, USA, 2014.
8. Jones-Walters, L. Communication the basics. In *Communicating Nature Conservation: A Manual on Using Communication in Support of Nature Conservation Policy and Action*; Rientjes, S., Ed.; European Centre for Nature Conservation: Tilburg, The Netherlands, 2000.
9. Ludvig, A.; Weiss, G.; Sarkki, S.; Nijnik, M.; Živojinović, A. Mapping European and forest related policies supporting social innovation for rural settings. *For. Policy Econ.* **2018**, *97*, 146–152. [[CrossRef](#)]
10. Hubo, C.H.; Krott, M. Umsetzungsstrategien für integrative Politikansätze am Beispiel invasiver gebietsfremder Arten. *Z. Für Angew. Umweltforsch.* **2007**, *18*, 216–226.
11. Jarský, V. Analysis of the sectoral innovation system for forestry of the Czech Republic. Does it even exist? *For. Policy Econ.* **2015**, *59*, 56–65. [[CrossRef](#)]
12. Toppinen, A.; Lähinen, K.; Holopainen, J. On corporate responsibility. In *Forests, Business and Sustainability*; Panwar, R., Kozak, R., Hansen, E., Eds.; Earthscan: London, UK, 2016.
13. Lust, N.; Nachtergale, L.; Serbruyns, I. A general discussion on National Forest Programmes. *Silva Gandav.* **2000**, *65*, 21–42. [[CrossRef](#)]
14. Boon, T.; Boswald, K.; Egestad, P.; Hanewinkel, M.; Hogl, K.; Luckge, F.J.; Pregernig, M.; Schanz, H.; Schraml, U.; Statz, J. Conceptualising National Forest Programmes from a theoretical point of view. In *Formulation and Implementation of National Forest Programmes, Volume I: Theoretical Aspects*; Glueck, P., Oesten, G., Schanz, H., Volz, K.-R., Eds.; European Forest Institute Proceedings: Joensuu, Finland, 1999; pp. 253–288.
15. Wanat, L.; Potkański, T.; Chudobiecki, J.; Mikołajczak, E.; Mydlarz, K. Intersectoral and Intermunicipal Cooperation as a Tool for Supporting Local Economic Development: Prospects for the Forest and Wood-Based Sector in Poland. *Forests* **2018**, *9*, 531. [[CrossRef](#)]
16. Janse, G. Characteristics and challenges of forest sector communication in the EU. *Silva Fenn.* **2007**, *41*, 279. [[CrossRef](#)]
17. Hogl, K. How to co-ordinate the non-integrated: Development and recent perspectives of European Union forest policy. In *Quo Vadis Forestry? Proceedings of international conference*; Sieroga, Z., Ed.; 29–30 June 2006; Institut badawczy Lesnictwa: Sekocin Stary, Poland, 2007; pp. 18–32.
18. Hellstrom, E. Communicating with Society. In *Proceedings of the Forest Academy, Finland Forums 1–4*; Hellstrom, E. Finnish Forest Association: Helsinki, Finland, 2004; pp. 22–25.
19. Krott, M. Voicing interests and concerns of forestry. *For. Policy Econ.* **2000**, *1*, 3–4, 193. [[CrossRef](#)]
20. Bethmann, S.; Simminger, E.; Baldy, J.; Schraml, U. Forestry in interaction. Shedding light on dynamics of public opinion with a praxeological methodology. *For. Policy Econ.* **2018**, *96*, 93–101. [[CrossRef](#)]
21. Fabra-Crespo, M.; Rojas-Briales, E. Comparative analysis on the communication strategies of the forest owners' associations in Europe. *For. Policy Econ.* **2015**, *50*, 20–30. [[CrossRef](#)]
22. Cox, R.; Pezzullo, P.C. *Environmental Communication and the Public Sphere*; Sage Publications: Thousand Oaks, CA, USA, 2016.
23. Grant, N.; Smillie, A. *UK Public Opinion of Forestry*; Forestry Commission: Edinburgh, Scotland, 2007.
24. Lyengar, S.; Kinder, D.R. *News That Matters: Television and American Opinion, Chicago Studies in American Politics*; Updated Edition; University of Chicago Press: Chicago, IL, USA, 2010.
25. Rametsteiner, E.; Eichler, L.; Berg, J. Shaping Forest Communication in the European Union: Public Perceptions of Forests and Forestry. 2009. Available online: http://ec.europa.eu/agriculture/fore/publi/public-perception/report_en.pdf (accessed on 9 September 2019).
26. St-Laurent, G.P.; Hagerman, S.; Findlater, K.M.; Kozak, R. Public trust and knowledge in the context of emerging climate-adaptive forestry policies. *J. Environ. Manag.* **2019**, *242*, 474–486. [[CrossRef](#)] [[PubMed](#)]
27. Moscovici, S.; Mucchi-Faina, A.; Maass, A. (Eds.) *Nelson-Hall Series in Psychology, Minority Influence*; Nelson-Hall Publishers: Chicago, IL, USA, 1994.

28. Trumbore, S.; Brando, P.; Hartmann, H. Forest health and global change. *Science* **2015**, *349*, 814–818. [[CrossRef](#)] [[PubMed](#)]
29. R Core Team. R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing, Vienna, Austria. 2018. Available online: <https://www.R-project.org/> (accessed on 21 September 2019).
30. Aasetre, J. Perceptions of communication in Norwegian forest management. *For. Policy Econ.* **2006**, *8*, 81–92. [[CrossRef](#)]
31. Bengston, D.N.; Webb, T.J.; Fan, D.P. Shifting forest value orientations in the United States, 1980–2001: A computer content analysis. *Environ. Values* **2004**, *13*, 373–392. [[CrossRef](#)]
32. Clement, J.; Cheng, A.S. Using analysis of public value orientations, attitudes, and preferences to inform National Forest planning in Colorado and Wyoming. *Appl. Geogr.* **2011**, *31*, 393–400. [[CrossRef](#)]
33. Tokarczyk, J.; Hansen, E. Creating Intangible Competitive Advantages in the Forest Products Industry. *For. Prod. J.* **2006**, *56*, 4–13.
34. Cubbage, F.; Diaz, D.; Yapura, P.; Dube, F. Impacts of forest management certification in Argentina and Chile. *For. Policy Econ.* **2010**, *12*, 497–504. [[CrossRef](#)]
35. Dobsinska, Z.; Sarvasova, Z. Perceptions of forest owners and the general public on the role of forests in Slovakia. *Acta silvatica et Lignaria Hungarica* **2016**, *12*, 23–34. [[CrossRef](#)]
36. Creighton, J.H.; Blatner, K.A.; Carroll, M. People, place, and politics: The role of place attachment and conflict in forest communities. *West. J. Appl. For.* **2008**, *23*, 232–235. [[CrossRef](#)]
37. Ford, R.; Williams, K.; Smith, E.; Bishop, I. Beauty, belief and trust: Toward a model of psychological processes in public acceptance of forest management. *Environ. Behav.* **2014**, *46*, 476–506. [[CrossRef](#)]
38. Halvorsen, K. Assessing the effects of public participation. *Public Adm. Rev.* **2003**, *63*, 535–543. [[CrossRef](#)]
39. Rametsteiner, E.; Kraxner, F. Europeans and Their Forests. What Do Europeans Think About Forests and Sustainable Forest Management? Ministerial Conference on the Protection of Forests in Europe, Vienna. 2003. Available online: http://www.foresteurope.org/filestore/foresteurope/Publications/pdf/LU_Europeans_Forest.pdf (accessed on 28 September 2019).
40. Sarvašová, Z.; Šálka, J.; Dobšínská, Z. Mechanism of cross-sectoral coordination between nature protection and forestry in the Natura 2000 formulation process in Slovakia. *J. Environ. Manag.* **2013**, *127*, S65–S72. [[CrossRef](#)] [[PubMed](#)]
41. Sotirov, M.; Memmler, M. The advocacy coalition framework in natural resource policy studies—Recent experiences and further prospects. *For. Policy Econ.* **2012**, *16*, 51–64. [[CrossRef](#)]
42. Anderson, W.F.A.; Maclean, D.A. Public forest policy development in new Brunswick, Canada: Multiple streams approach, advocacy coalition framework, and the role of science. *Ecol. Soc.* **2015**, *20*, 20. [[CrossRef](#)]
43. Smudde, P.M.; Courtright, J.L. A holistic approach to stakeholder management: A rhetorical foundation. *Public Relat Rev.* **2011**, *37*, 137–144. [[CrossRef](#)]



© 2019 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).