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Analysis of the perceived condition of forests in the Czech Republic

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ABSTRACT: A realistic perception of the condition of forests, and the attributes of the forestry sector, by the public constitutes one of the basic prerequisites for successful implementation of forest policy in any country. Although data objectively demonstrate that the condition of Czech forests has improved, opinion polls show a gap between the public perception of the condition of Czech forests and the real status of these forests. The reasons for the discrepancy between reality and the perception of the public, and between the results of different surveys, are analysed. The most significant differences were found in perceptions of damage and threats to forests. The effectiveness of communication about forest policy is discussed, and some ways to create more effective communication are examined.

Keywords: forest policy; communication; opinion poll; public perception; Czech Republic

Major topics in the forest policy reform in all transition countries – the establishment of provisions for sustainable forest management, forestry sector privatization, strategies to reconcile sustainable forest management and sustainable economic and human development – are similar Weiland (2010). However, despite the similarities in themes, it should be recognised that the particular transition countries started their transformation journey under very different economic, natural, political and social conditions. Therefore methods, strategies, and also objectives and priorities, may have differed substantially.

Serial data from the Report on the Forestry of the Czech Republic (2011) confirm positive trends in the Czech forests: an increase in the forest area, increase in the total standing volume of timber, plus increases in the diversity of forest types and representation of broadleaves.

Nevertheless, opinion polls show a gap between the public perception of the condition of Czech forests and the real status of these forests. This has been demonstrated by several important investigations into the opinions of Czech citizens' concerning forests and forestry.

In this article, the forestry sector in the Czech Republic is discussed in the context of the public perception of the forest condition, its impact on the effectiveness of communication about forest policy, and the potential role of forest certification in creating more effective communications.

MATERIALS AND METHODS

This paper is primarily based on an analysis of data from surveys which are representative for the Czech Republic and took place in recent times. Specifically, data is drawn from the following research:

The ECORYS research – ***Shaping Forest Communication*** in the European Union: Public Perceptions of Forests and Forestry – a part of the research study dealing with the perception of forestry and forests by the European public. Research was conducted by the renowned agency ECORYS in all countries of the European Union (ECORYS 2009). This representative survey was conducted via computer-assisted telephone interviews (CATI) surveying a total of 11,106 randomly selected citizens of the EU in 2009. Quotas were set to ensure the representativeness of the sample across countries, gender and age groups. The public perception of various topics was analysed: key concerns regarding forests, the general condition of forests, damage and threats to forests, the importance of benefits from forests, forest management,

forests and climate change and interest in learning about forests and forest communication. All questions were asked about the forests in the interviewees' own country. 440 respondents from the CR were interviewed by telephone.

Faculty of Forestry and Wood Sciences (FFWS) research into the frequency of forest visits and non-timber forest product importance which has been organized by the Czech University of Life Sciences in Prague every year since 1994. Data collection has been completed on the basis of quantitative personal F2F (Face to Face) interviews and collaboration with research agencies Public Opinion Research Centre, AMASIA and STEM/MARK in recent years. Questioning was conducted using CAPI (Computer-Aided Personal Interview) on a representative group of over 1,000 respondents selected on the basis of gender, age, education, size of municipality and county of residence (the so-called quota sample). 1,014 respondents from CR were interviewed face to face in 2010.

The results of the ECORYS research for the Czech Republic were quite alarming (Riedl 2010). In 2010 FFWS performed a similar research based on their standard questionnaire regarding the importance of non-timber forest products and extended the questionnaire by adding questions which focused on the perception of the forest condition, and threats which could have a negative impact on this condition.

Selected relevant results from the ECORYS research for the CR are compared with the EU average and the FFWS research. The results of both research studies are discussed and interpreted. The following discussion provides a detailed analysis of the nature and causes of differences observed between the results of both surveys and the real forest conditions.

Research conclusions are used to make recommendations for changes in forestry communication.

RESULTS

Data analysis

Table 1 contains the comparison of the results of ECORYS research for the CR with neighbouring countries and the EU average regarding the objectives and priorities of communication with the public. The most important topic mentioned in connection with forests may have a strong emotional charge for the respondent. Although several of the responses from the Czech public do not particularly standout in comparison with the EU average, they are clearly well above the EU average values of responses for "conservation and protection" and "environment, forest health and air pollution", and below the EU average values of answers for "climate change" and "economic use and sustainable development".

Table 2 shows the results of the FFWS research. The response "Clean air and oxygen production" (33.7% in Table 2) clearly dominated in this research. This response corresponds to a great extent to the answer "Ecosystem services (clean air, non-timber products, bioenergy)" (8.2% in Table 1) in the ECORYS research. The term "ecosystem services (clean air, non-timber products, bioenergy)" used in the ECORYS research may have been difficult to understand for respondents with limited technical knowledge of forest management.

Using more simple and concrete questions and adding all issues in Table 2 corresponding to the term ecosystem services (clean air and oxygen production, source of berries and their collection, water supply, scenic beauty, aesthetics, shelter for animals, plants) yields 64.4%, i.e. 64.4% of the public appreciated (evaluated) ecosystem services as the most important topic related to forests.

Table 1. Which is the most important topic related to forests? (in % ECORYS 2009)

	Austria	Germany	Poland	Slovak Republic	Czech Republic	Within EU
Conservation and protection	46.6	53.0	45.1	28.0	51.8	43.8
Climate change	8.5	14.6	4.9	9.3	7.5	12.5
Environmental issues, forest health, pollution	11.0	9.6	24.6	26.7	21.6	15.4
Recreation	9.9	11.2	4.1	8.0	3.9	5.7
Economic use and sustainable forest management	9.9	5.6	7.5	8.3	4.8	8.0
Deforestation	1.1	0.3	4.3	1.7	0.7	6.5
Ecosystem services (clean air, non-timber products, bioenergy)	10.7	4.3	7.5	16.3	8.2	6.4
Other	1.4	1.0	1.6		0.5	1.2
Do not know	0.8	0.5	0.3	1.3	1.1	0.6

Table 2. Which is the most important topic related to forests? (FFWS 2010)

	Count	In %
Clean air and oxygen production	342	33.7
Place of rest and recreation	149	14.7
Source of wood and biomass	84	8.3
Shelter for animals, plants	97	9.6
Source of berries and their collection	24	2.4
Scenic beauty, aesthetics	68	6.7
Part of nature which should be better protected	152	15.0
Water supply	38	3.7
Protection against climate change	55	5.4
Other	1	0.1
Do not know	4	0.4

The response "Part of nature, which should be better protected" (15% in Table 2) was chosen with almost equal frequency when compared with the response "Place of rest and recreation" (14.7% in Table 2) in the FFWS research.

The greatest conformity in the results of both surveys is in the case of responses regarding the size of the forested area in CR. Comparing Table 3 it can be seen that 58.4% (30.0 + 28.4%) of Czech respondents think that the forest area is decreasing in the ECORYS research compared with 64.5% (40.8 + 23.7%) in the FFWS research in 2010. On this issue, it is apparent that the majority of those surveyed in the Czech Republic express a perception which is contrary to verifiable objective reality: the area of forested land in the Czech Republic, Austria and Poland has been increasing a little (Sedlak 1998; Country Reports Poland 2010; Report on the Forestry of the Czech Republic 2011). The public awareness about the development of forested area seems to be better in Austria and Poland than in the Czech Republic.

Comparing results in the CR and in the four neighbouring Central European countries we can also see other large differences. Table 4 shows that 52.0% of the people surveyed in the CR rated harvesting and management damage in forests (i.e. probably forestry operations) as the most concerning threat to Czech forests.

If these perceptions were to lead to direct action, this could have an enormous impact on the behaviour of the public towards the forestry sector and timber product industry. For example a large part of the public may mistakenly believe that because the area of forests is "decreasing", they (see Table 3) need to be protected (see Table 1) against the "harmful" activities of foresters (see Table 4). This in turn could ultimately stimulate organised public efforts to protect forests by preventing the felling of trees or campaigns designed to effect a boycott of the purchase of wood products and paper.

Generally, it seems that in Central Europe the public have more negative associations with forestry than the public in other regions. Forest dieback, destruction of forests, clear-cutting and overutilisation are only some examples of negative associations that were mentioned by Rametsteiner and Kraxner (2003).

From the analysis of the results of questions relating to damage (see Table 4) in the ECORYS research, it seems likely that they have been influenced by some negative preconceptions about Czech forestry rather than first-hand observations while visiting a forest and also some alternative answers were missing.

Table 3. What do you think about the area of forested land in your country? (in %)

	EU research						FFWS research
	within EU	Austria	Germany	Poland	Slovak Republic	Czech Republic	Czech Republic
Increasing a lot	2.7	12.1	1.1	5.6	0.0	2.0	1.0
Increasing a little	12.3	25.7	8.2	23.4	5.7	10.0	7.2
Stable	22.2	33.3	27.4	22.2	9.0	25.7	20.5
Decreasing a little	29.4	20.1	39.8	26.3	43.7	30.0	40.8
Decreasing a lot	30.1	7.3	21.8	18.2	40.7	28.4	23.7
Do not know	3.3	1.4	1.8	4.3	1.0	3.9	6.8

Table 4. Which issues do you find the most concerning regarding damage and threats to forests in your country? (in %) ECORYS (2009)

	Austria	Germany	Poland	Slovak Republic	Czech Republic	within EU
Forest fires	7.1	18.4	61.7	55.3	18.2	44.6
Storms	43.8	31.7	4.5	5.3	8.9	11.8
Wild animals (such as deer)	2.0	3.7	1.0	0.7	1.6	3.3
Invasive species	11.0	15.8	1.6	19.7	14.3	7.6
Harvesting and management damage	15.0	18.9	27.1	9.7	52.0	25.9
Other	17.5	10.2	4.1	9.3	5.0	5.8
Do not know	3.7	1.3	0.0	6.0	0.0	1.1

There is frequent damage caused by frost and snow in the CR, and historically a lot of damage to trees and forest soils was caused by atmospheric pollution leading to acid rain. Czech media pay attention to contemporary cases of illegal logging and in the past they publicised the extensive damage caused by acid rain. Because of this, the extent and severity of actual damage and threats to forests in the CR might be perceived by the Czech public as much greater than it actually is. Also in the case of the response on "invasive species" this is a rather technical term which would be difficult for respondents to connect with their own observations of damage to forest.

To verify these conjectures, the same question was posed, but the number of alternative answers was extended and ranked with other issues, in the FFWS regular annual research on non-timber forest product importance with the following results (Table 5).

In relation to the perceived damage and threats to Czech forests caused by forest management it should be noted that forest certification holds a great communication potential. The Report on the Forestry of the Czech Republic (2011) says that 72% of Czech forests are certified by the PEFC system and a further 2% by the FSC system. But the data on brand recognition of the most widespread certification system in the Czech Republic indicate that only 7% of respondents recognise the PEFC logo and have an appreciation of what the logo means.

DISCUSSION

After analysing the differences between the ECORYS and the FFWS research results we can suggest several reasons why they are not in agreement.

– Statistical errors: There are statistical errors in both research studies. The confidence interval for an unknown proportion π of reference data in the population of the usual 95% level of significance can be constructed using the proportion p of sample size n, $p \pm 1.96 \times$ square root $(p \times (1 - p)/n)$. The confidence interval calculation for the Czech Republic (440 respondents in the ECORYS research gives 4.67% (ECORYS 2009).

– Different research methods were used in both studies. The CAPI (Computer-Aided Personal Interview) method is more expensive but allows personal

Table 5. Which issues are you most concerned about when you think about damage and threats to forests in your country? FFWS (2010)

	Number	In %
Forest fires	93	9.2
Wind and snow calamity, ice	175	17.3
Wild animals (e.g. wild boar, deer)	11	1.1
Harmful insects such as bark beetles, etc.	195	19.2
Conservation, overprotection not allowing human interventions	15	1.5
Harvesting and forest management	147	14.5
Acid rain and air and soil pollution	128	12.6
Illegal logging	150	14.8
Tourists and vandals	94	9.3
Other	3	0.3
Do not know	3	0.3
Sum	1.014	100

Table 6. Assisted Brand Awareness – PEFC Logo (PEFC Czech Republic 2011) (Number of respondents 951, in %)

	Yes, I have/Yes, I do	No, I have not	I do not know
Have you ever seen this logo?	10	82	8
Do you know what this logo means?	7	n.a.	93

n.a. – not applicable, no answer

contact to be established and an experienced interviewer can recognize from the nonverbal communication when it is appropriate to explain the question further. Apart from this the representative sample of respondents corresponding to the basic demographic features of Czech citizens (sex, age, education, size of residence, districts residence – quota selection) was used. This contrasts with one of the disadvantages of gathering responses using CATI (Computer-Assisted Telephone Interviews) which is that, when faced with a larger number of possible responses, the interviewee may choose the response which is the most easily remembered. For CATI it may be difficult for the interviewee to demand clarification of response options or to ask for a question to be repeated. Also the structure of the set of respondents may be biased, i.e. selection of telephone contacts may not correspond to basic demographic features of the Czech population.

– Both research studies pose the same question but offer different sets of answers to respondents to choose from: the answer "Harvesting and management damage" in Table 4 corresponds to the answers "Harvesting and forest management", "Illegal logging" and may include some other human factors such as "Tourists and Vandals" in Table 5.

– The surveys were conducted in different years: in the recent past the Czech media have been energetic in criticising the management of the State Enterprise Forests of the CR. There have also been well publicized conflicts between foresters and environmental NGOs regarding interventions against bark beetles in protected areas. About half of the respondents confirm that they do not go to forests at all, or they visit forests only twice a year maximally (Report on the Forestry of the Czech Republic 2011). Therefore their opinions about forests and forest management are not likely to be based primarily on their first-hand experiences. These people must be forming their opinions in other ways and it is most likely that they are strongly influenced by negative news in the media. Some people may not even distinguish between the criticism of the top management of the State Enterprise "Forests of the Czech Republic" and the methods of forest management used in forests in the Czech Republic. The negative consequences for the image of Czech foresters may be very serious.

Both research studies show that the real condition of forests, and the actuality of forestry management activities, is not accurately understood or articulated by the majority of the Czech population.

Even a significant part of the Czech public considers the method of forest management as one of the main risks for the Czech forestry. As was already mentioned, the majority of Czech forests are certified. This means that in addition to expenses involved in maintaining well-managed forests, foresters must pay additional fees to independent certification authorities confirming that their forest management is carried out in accordance with all principles of sustainable development, which paradoxically is not appreciated by the public. And yet, for example, Tokarczyk et al. (2006) highlights that branding continues to grow in importance as a tool for the forestry sector. Hansen (1997) recommends that companies should proactively evaluate the potential for environmental marketing strategies and how forest certification might be used to develop competitive advantage.

Most of the weaknesses of certification systems in the CR are similar to those described by Cubbage et al. (2010): lack of recognition (see Table 6), poor funding for certification, few people know about certification, no market structure to take advantage of certification, no country/government incentives for certification, no price premium benefits for timber from certified forests. Czech foresters should consider taking advantage of certification in marketing messages directed at the public.

CONCLUSIONS

Various surveys on the public perception of forest condition have yielded different results. Their interpretation should be undertaken with care and should take into account: the structure of respondent questioning, data processing methodology, clarity of questions for respondents. Without taking into account these factors the research results and their interpretation may be too simplistic and perhaps misleading.

During the last twenty years Czech forestry has experienced many substantial changes in economics, politics and social structure and this has influenced

the process of developing forestry policy. In this situation effective communication is an important instrument for the successful promotion of forestry policy within the forestry sector as well as in relation to other target and interest groups and the public at large.

Public understanding of multifunctional and sustainable forest management may be at a relatively low level. In this situation communication efforts about Czech forestry, targeted at the public at large, may not explain effectively the real processes taking place in forests and forestry, the positive shift of Czech forestry towards multifunctional forestry and the improving condition of forests.

Contemporary communication channels which are part of social media have been, as yet, relatively unexplored in the Czech forestry sector. Using social networks the concept of sustainable forest development could be made even more accessible and attractive to the public at large.

Czech foresters may have underestimated the need for effective communication with the public. Communication, targeted at the public at large, relating to forestry and forests probably needs to be improved. Therefore, it would be advisable to enhance the communication capacity of individual parts of the forestry sector (especially foresters and the owners of small wood lots) as the first step towards the enhancement of an objective understanding of forestry by the public. The forest administration may consider developing a well-planned and structured strategy for effective and successful communication with the public at large. This strategy could harness the communication potential of forest management certification.

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