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Media analysis in a case study of Šumava National Park: A permanent dispute among interest groups☆

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ABSTRACT

The proclamation of Šumava National Park as a large-scale protected territory in the early 90′s of the 20th century shortly after the change of the political regime in Czechoslovakia resulted in the onset of discussions among different interest groups. The question of the approach to its management has always been controversial because forest ecosystems were essentially modified due to intensive forest management and in particular, the indigenous vegetation with native species composition has been preserved in insignificant residues only. The discussion between supporters of the "non-intervention regime" and supporters of "forestry approaches" is also reflected in reporting of the media, which addresses the public. The authors use media content analysis and framework based on a CIMO logic to find out whether the media and way of reporting can reflect the dynamism of the acting factors, provide feedback to the policy and decision makers and interests groups, and how the media influence the perception of the forestry sector by the public and, in this connection, the communication of foresters with the public and forest policy enforcement.

1. Introduction

Communication is the necessary basis of all social interaction (Primmer and Kyllönen, 2006). Krott (2000, 2005) illustrates interactions among the components in relation to various forms of communication. As stated by Birot et al. (2002), changing policies and patterns of governance and a growing environmental awareness on a global level will probably require fundamental policy changes in redefining the partnership between society and the forest sector at the regional or national level. Governance is understood, in a broad sense here, as a decision-making process, relating to, inter-alia, planning about forests (Pülzl and Rametsteiner, 2002). Even though governing competencies remain entirely at the national realm, national policies are not formulated and implemented in isolation (Hogl, 2002). As Hogl (2000) argues, the implementation of forest policy involves forestry interest groups, leading to mutual dependencies between foresters and stakeholders creating complex relationships. Schanz (2002) notes that forest policy should aim to reach an agreement on those issues that are currently at stake. According to Kleinschmit (2012), the reporting by media mirrors the perceptions of the actors at different political levels and the perceptions can influence the decision-making by either affecting the policy agenda or providing a platform for deliberation.

Communication is the key instrument for the promotion of forest policy in the forestry sector in relation to other target and interest groups and the public and mass media is a powerful tool used to effect social change (Quigley, 2006). It is the relevant public sources of information and opinions with the power to give specific meanings to issues. Thus, the actors involved perceive mass media as an efficient way to express their perspective regarding forests and their relation to forest issues (Sadath et al., 2013). As is claimed by Fabra-Crespo and Rojas-Briales (2015), communication fluxes from the forest stakeholders to society have not been sufficiently studied in many countries, not excluding the Czech Republic. Sadath et al. (2013) use framing theory as a method of understanding media reporting on different levels. In Feindt and Kleinschmit (2011), three types of frames together with their causes are analysed: diagnostic frames pointing out problems, prognostic frames indicating solutions to problems and, finally yet importantly, motivational frames that indicate the urgency of an issue by, for example, naming a victim. Frames give meaning to complex situations (Kleinschmit and Sjöstedt, 2014). According to Feindt and Kleinschmit (2011), both political actors and mass media use frames strategically to pursue their own goals and interest.

As Macnamara (2005) claims, editorial media content influences readers, viewers and listeners and understanding the content of editorial mass media is important for organisations involved in public communication. In forest policy, content analysis has become an increasingly important tool of decoding media messages relating to

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pending forestry issues such as climate and environmental change, applied by forest policy researchers. To name but a few, in their study, Fabra-Crespo and Rojas-Briales (2015) use summative content analysis to analyse forest-related messages. Qualitative analysis is applied in the study of Fischer et al. (2016). Kleinschmit (2012) is concerned with the discourse in the media perceived as an indicator of public opinion. Discourse and expertise in forest and environmental governance is discussed in Kleinschmit et al. (2009). Leipold (2014) gives a review of forest-related discourse analyses. Kleinschmit and Sjöstedt (2014) apply the framing concept and quantitative analysis to investigate the newspaper coverage of forest-related climate change. Arvai and Mascarenhas (2001) used the media's framing in the analysis of a forestry debate. In order to analyse and categorise the documentation related to European forest policy, a qualitative approach to content analysis was undertaken by Edwards and Kleinschmit (2013).

International media in particular and the relation between media coverage and conflict intensity and their potential impact are evaluated in the paper by Gritten et al. (2012) who conclude that despite the high intensity and potential impact of many of them, with a few exceptions international media had relatively little coverage of the evaluated conflicts.

In the broader Central European region there already exist several studies involving media content analyses. For example in Slovakia the situation is analysed by Sarvašová and Kolláriková (2010), in whose opinion the reports on forestry accounted for 0.44% of all media reporting. In Germany the issue of FSC in media is covered by Dobler et al. (2014). An analysis performed by Ensinger et al. (2014) dealing with cultural relevance of the planned Black Forest National Park with special focus on the perception of forest and time is the closest to our research.

Nevertheless no such research involving content analysis for the study of forest policy and forest-related issues has been carried out in the Czech Republic so far, let alone the content analysis of the media forest-related coverage.

The aim of the article is to provide a media content analysis using the case of Šumava National Park (NP). Based on the media content analysis, the authors endeavour to demonstrate how the activities of main forest policy actors are reflected in the Czech media in reality and what impact the media may have on the perception of the vast public and forest-policy decision makers. The article concentrates on a debate that was both ignited and propagated by the mass media over the bark beetle calamity in the Šumava NP and studies methods of management in the NP territory and the way of reporting and its influx on shaping the opinion of a vast professional and lay public. The image of the Czech Republic' forestry is analysed as well.

The study is divided into several parts. After brief characteristics of CIMO approach in Section 2, a short description of the Šumava NP follows in Section 3 and the main research questions are stated in Section 4. In Section 5 a brief survey of theories as well as practical implications of the content analysis in scientific research are described. After the presentation of results in Section 6, findings are discussed and conclusions are drawn as answers to the stated research questions in Section 7.

2. CIMO approach

In describing a situation/situational analysis, whether in forest policy or business, the SWOT analysis is applied quite frequently, highlighting the strengths, weaknesses, opportunities and threats associated with a particular project, type of business or politics. However, it does not address the relationships of the actors and, as Weihrich (1982) argues, it is difficult to translate the results of the SWOT analysis into meaningful actions that could be adopted within a wider strategy.

To capture the context and dynamics of complex processes or cases it can be preferable to use schemes that take into account a broader spectrum of problems. A suitable tool consists in applying CIMO logic. The CIMO model was presented by Denyer et al. (2008) and Denyer and Tranfield (2009), following Pawson (2006). Rajwani and Liedong (2015) used the CIMO logic for the analysis of corporate political activity. CIMO logic consists of four parts, where the following questions are analysed:

C - Context. Which individuals, relationships, institutional settings, natural conditions or wider systems are being studied?

I - Intervention. The effects of what event, action, and impact of natural factors or activity are being studied?

M - Mechanisms. What are the mechanisms that explain the relationship between interventions and outcomes? Under what circumstances are these mechanisms activated or not activated?

O - Outcomes. What are the effects of the intervention? How will the outcomes be measured? What are the intended and unintended effects?

Holloway et al. (2016) explored CIMO approach in accordance with several ways to implement the notion of design science. The CIMO framework was utilised for planning research by Straatemeier et al. (2010) and within transport planning by Soria-Lara et al. (2016).

In a design science approach to management, Denyer et al. (2008) discuss the application of the CIMO logic, which extends the previous applications of the design proposition notion. This logic involves a combination of a problematic Context, for which the design proposition suggests a certain Intervention type, to produce, through specified generative Mechanisms, the intended Outcome(s) (Denyer et al., 2008).

From the view point of the causality of the CIMO logic, media and media attraction can be regarded as the Output, while at the same time individual stages (C, I, M, O) abound in their own dynamics and continuality in time and thus are being continually depicted by the media. Following Denyer et al. (2008), the authors apply the CIMO logic to the analysis and description of the development dynamics in the Šumava NP case study.

3. Šumava NP – Characteristics

Šumava NP is a large forested territory extended on an area of 68,064 ha in the southwest of the Czech Republic, where a special regime for environmental protection with special treatment measures was set up. The large-scale protection of the Šumava Mountains began as early as in 1963 by proclaiming the territory a Protected Landscape Area (PLA) covering an area of 168,654 ha, which was followed by declaring a large part of the PLA a National Park in 1991, resulting in an area of 99,624 ha excluded from the National Park. Under the provisions of § 78 article 1 of Act No. 144/1992 Coll. on Nature Conservation and Landscape Protection as amended; the Administration of the National Park also acts as the administrating body for the Protected Landscape Area of Šumava (Šumava, 2016). Failure is believed to be an important experience from which learning can take place (Shepherd et al., 2011). The case of the Šumava NP has always been one of the most problematic issues in forestry of the Czech Republic. This case study draws on typical problems and conflicts, which were sharpened among the main stakeholders during and following the bark beetle calamity and the issues and problems resulting from it. The main controversies in the forest management are whether the trees affected by the European Spruce Bark Beetle (Ips typographus) in some parts of the Šumava NP should be felled and treated. These conflicts, commented on by experts and publicists, persist to this day, even in the parliament. A separate Act on the NP has already been prepared several times but has never been passed. The media in this case has played a significant role. Otherwise, the NP follows the regulations contained in the Act on nature and landscape conservation.

A number of Czech politicians and scientists took advantage of the dispute about the NP for their visibility. The conflicts that followed have polarised foresters and NGOs, municipalities and park management, state institutions: The Ministry of Agriculture and the Ministry of the Environment, political parties, the central government and regional authorities, experts, and even academic conflicts between

scientists of two universities have escalated and last to this day. This is well documented by the statement given by Miloš Zeman, the president of the Czech Republic, on 1 June 2016, which attracted much media attention. The president said, "If it depended on my personal opinion, I would have the Šumava NP abolished."

4. Research questions

The Šumava NP and its related issues, especially the debate on the bark beetle, have received a tremendous amount of attention and mass media coverage. Many, including Czech scientific and political elite, voiced their opinions, however it has not always been professional and has often been contradictory, which stirred both the general and professional public, dividing it into several camps. The intentionality and its implications of the communication in the media are the focus of the content analysis whose results are introduced in this paper.

Using media analysis, the authors set out to answer the following research questions:

Q1. Has the media analysis demonstrated that the media has captured/reflected the dynamics of the natural, social and political factors in relation to Šumava NP?

Q2. Has the media provided an objective feedback for stakeholders and policy makers?

Q3. Do media significantly affect public perception of the forestry sector and the promotion of forest policy objectives?

5. Methods

5.1. Theoretical background

Media content analysis, a well-established research methodology, is a specialised sub-set of content analysis (Macnamara, 2005). Content analysis intends to determine who says what, to whom and why, to what extent and with what effect (Neuendorf, 2002). Content analysis is used for studying a broad range of texts from the transcripts of interviews and discussions on clinical and social research to the narrative and form of films, TV and the editorial and advertising content of newspapers and magazines (Macnamara, 2005). Neuendorf (2002) defines the content analysis as a summarising, quantitative analysis of messages that relies on the scientific method and as such is not limited to the types of variables that may be measured or the context in which the messages are created or presented. As Neuendorf (2002) argues, the quantitative content analysis should be conducted in accordance with the scientific method involving the following elements: objectivity-inter-subjectivity, a priori design, reliability, validity, generalisability and, last but not least, hypothesis testing. Newbold et al. (2002) propose three steps for media content analysis sampling: the selection of media forms, the selection of issues and sampling the relevant content form within that media (pp. 80–81). When coding the recorded text, messages are identified by either or a combination of word matching (i.e. an exact match) and the presence of acceptable synonyms or similar phrases (Macnamara, 2005).

In contrast to quantitative research, Neuendorf (2002) describes and categorises qualitative content analysis rather as a rhetorical analysis, narrative analysis, text analysis or discourse. Hijams (1996) adds interpretative analysis and semiotic analysis as well as critical analysis used in literary studies. According to Shoemaker and Reese (1996), however, the content analysis can be undertaken using both approaches, quantitative and qualitative. Qualitative content analysis examines the relation between the text and its audience, paying attention to contextual factors, not only the text (Macnamara, 2005). Most media researchers perceive both qualitative and quantitative content analyses as complementary (Newbold et al., 2002; Gauntlett, 2002; Curran, 2002). Mayring (2000) developed a number of procedures, thus bringing a systematic approach to qualitative text analysis. By applying specific predetermined categories, the systematicity of qualitative analysis increases (Macnamara, 2005). According to Mayring (2014), qualitative content analysis is a mixed method in which quantitative components gain particular importance when the generalisation of the result is required.

5.1.1. Practical procedure

The media analysis undertaken dealt with reports related to forestry issues. The source of information was a Czech server www.silvarium.cz, which archives messages (articles, news reports, press releases and the like) from the Czech media concerned with the forestry sector. For the purpose of the research, messages – herein referred to also as coding units - from years 2007, 2012 and 2015 were analysed. Such a selection of several time slots has been carried out in order to at least partially capture the dynamics of the processes over time. Moreover, the selection of the respective periods was performed in correspondence with significant milestones in relation to Šumava National Park.

As regards sample size, time and financial demands were taken into account as well. In all the selected years, messages – coding units - on forestry topics somehow related to the Šumava were analysed. All coding units, retrieved in 2015 and irrespective of the fact whether they were related to the Šumava locality or not, were analysed.

In all the selected individual coding units, four basic information variables were identified: categorical, descriptive, keywords, and evaluation indicators.

Categorical information aims at basic sorting and comparison of categories**.** What was recorded was the basic theme of the coding unit (divided into more sub-themes), message format and type of communication. The selection of topics (and subtopics) of the categorical information is illustrated in Table 1.

The format of the coding unit was divided into 9 types: a report, interview, article, press release or statement, essay, polemic, open letter, response to an article, informational communication. The type of communication was divided into three categories: information about a status, the construction of a conflict and a discussion. When selecting categorical variables the authors used the principles set out in Holsti (1969), who states that categories should reflect a research problem, they are exhaustive, they should be mutually exclusive and they should be independent of each other. Inclusion of one item under a category should not affect the classification of the second entry into another category. Each category should be derived from the same classification rule.

Descriptive variables identify a specific message**.** Title and author, publication date, and possibly an additional note was recorded.

Keywords are used for clarifying or supplementing a topic and if necessary filtering data for analysis. The coding unit was examined whether it contains/does not contain the following keywords: Šumava, bark beetle, wind calamity, logging, personal issues, science, behavioural activities (activists, protests), and conflicts of institutions, recreation and nature.

Evaluation variables are intended to monitor the balance between reporting and the evaluation of the selected interest groups, herein

Table 1
Categories and subcategories.

Category	Subcategory
Activities of the public in the forest	tourism, recreation, picking mushrooms and berries, hunting, forestry education, Christmas, beauty of nature and others
Logging and commercial processing	extraction, biomass, price, saws, wood products and others
Forest and natural causes	cultivation and forest protection, calamity, weather, pests, flora, fauna and others
Institutions and organisations	Forests of the Czech Republic, state enterprise; Military Forests and Farms, state enterprise; the Ministry of Agriculture, the Ministry of the Environment, national parks, municipal forests, private owners and others
Political issues	forest policy, planning, restitution, subsidies and others

foresters. Two variables were observed: correctness – in the sense of balance (on a scale: 1 - balanced report, 2 - balanced with a clear tendency of the author, 3 - incorrect report) and rating of the foresters (on a scale of coding values ranging from 1 - excellent to 5 - entirely negative, adding the value of 0 if the foresters are not evaluated).

Two Ph.D. students who had been trained to work with the coding units assessed all collected messages.

Moreover, in three stages there was an independent parallel processing of 10 coding units of each processed year with a subsequent evaluation. The mutual comparison allowed both evaluators achieve reconciliation/harmonization in the evaluation and thus reach unification during the processing of variables (of rating scales, in particular) and greater objectivity of the processed results.

Using a simple MS Excel program with cascading menus to facilitate the categorisation of topics and subtopics, a record was created for each coded unit, i.e. an MS Excel field vector was created for each analysed message. In order to verify a statistical significance of the referred differences, the test of goodness of fit using the chi-square method was applied. Also see the Pearson chi-squared statistics for testing a specified multinomial in Agresti, 2002. For example, to compare the frequency and percentage share in individual years after the cumulating of categories with zero occurrences, it is possible to use data homogeneity tests

Table 2
Temporal evolution of the most important factors.

Period	Factor	Description
1991–1995		Consequences of wind calamity in 1984, 1990 and 1995; 1995: an exceptionally strong year for seed in the Šumava; Extension of bark beetle from infested spruce stands in the neighbouring Bavarian Forest National Park;
	Natural	1996: in the NP 187,000 cubic meters of bark beetle wood harvested. Government Regulation on the proclamation of the Šumava NP issued;
	Political-legislative	The law on nature and landscape protection adopted. Building the organizational structure of the NP; The first Šumava NP Management Plan created; The NP administration often criticized for excessive "dismemberment" of the 1st zone and interventions in the 1st zone of the Šumava NP;
	Managerial/Park administration	1995: zoning change; 3 persons change in the position of the Šumava NP director.
	Municipalities/regions	Initiation of the restitution process - the return of forests owned by municipalities in the 3rd zone of the NP or in the immediate vicinity of the NP.
	NGOs etc.	1994: Media support the enforcement of non-intervention principles; Criticism of the fragmentation of the 1st zone to 135 parts.
1996–2000	Natural factors	Liquidation of bark beetle calamity continues.
	Political-legislative	New forest law adopted.
	Managerial/State administration	From 1994 to 2004 no changes at the post of the director; 2000: invitation of the IUCN expert commission for the assessment of the Šumava NP management and interventions against bark beetle; 1998 and 1999: sanitation of bark beetle wood in the Šumava NP 1st zones; The management plan for 2000–2013 approved.
	Municipalities/regions	Restitution of property to cities and municipalities - the consolidation of municipal property.
	NGOs etc	1999: efforts to prevent felling bark beetle trees - blocking in administrative proceedings; The blockade of cutting down trees in the Trojmezenský Forest
2001–2007	Natural factors	2003: wind calamity (200 thousand m3); 2007: hurricane Kyrill (windbreaks in the Šumava NP- 800,000 cubic meters of timber on an area of 54,000 ha).
	Political-legislative	2003: Governments of the Czech Republic and Germany agreed on a common procedure in accordance with the principles of IUCN intervention for both NPs; 2004: amendment of the Act on nature and landscape protection, the introduction of the area system Natura 2000; The Ministry of Environment decision to increase the non-intervention area to 30% of the total NP area.
	Managerial/Park administration	2 directors during this period.
	Municipalities/regions	The Law on higher administrative territorial units - regions creation and editing competencies of municipalities.
	NGOs etc	2000–2003: preventing felling bark beetle trees - participation in debates, administrative proceedings
2008–2012		Bark beetle gradation - liquidation of consequences of the bark beetle calamity after the hurricane;
	Natural factors	In 2011: 233,000 cubic meters of bark beetle wood processed.
	Political-legislative	2011: The Ministry of Environment began to prepare a new draft of the Šumava NP law.
	Managerial/Park administration	During this period two directors (2007–2010 - measures for non-intervention, 2010–2011 - transitional period, 2011 - supporting redevelopment of "bark beetle wood"); The management of "intervention" in areas affected by the bark beetle gradation after the hurricane Kyrill; reducing the non-intervention zones; The Minister of Environment decides to leave about 200,000 infested trees without sanitation.
	Municipalities/regions	Municipalities join the supporters of interference against the bark beetle contested wood; 2011: Pilsen and South Bohemia started preparing "competition law" on the Šumava NP; The draft of the NP management in the administration of a publicly beneficial corporation (non-profit corporation), especially under the administration of regions.
	NGOs etc	2011: The blockade of the bark beetle trees felling in the spruce stands at Bird Creek; Judicial decisions based on the initiative of activists to cancel the ban on entry into certain Šumava NP areas.
2013–2015	Natural factors	Wind calamity (a total of 62 thousand m3); 2015: extreme drought.
	Political-legislative	The Ministry of Environment began to prepare a government bill on the protection of nature and landscape, which includes uniform conditions for 4 NPs in the Czech Republic; 2014: The Ministry of Environment is preparing a new management plan for the Šumava NP; 2015: the presentation of the government amendment to the Parliament; The Parliament refused to discuss the bill on the Šumava NP prepared by the regions.
	Managerial/Park administration	2 directors of the Šumava NP (2012–2014 - supporter of sanitation bark beetle wood sanitation, 2014–2016 supporter of non-intervention).
	Municipalities/regions	The municipalities support a bill on the Šumava NP prepared by the regions; 2015: the municipalities took action to block the approval of the management plan - the court dismissed the management plan approved by the Ministry of Environment.
	NGOs etc.	Media support the government bill of the amendment as the "only correct" approach; Campaign for the rejection of the Šumava NP bills submitted by the regions.

(Chi-square test of homogeneity can be used). The corresponding *p*-value of each test can be obtained using the Excel function CHISQ. TEST, accompanied by appropriate degrees of freedom. With the final *p*-value ≤ α in the test, the hypothesis of homogeneity can be rejected at the level (1-α) - in our hypothesis, about the same category representation in 2007, 2012 and 2015. Not surprisingly, the visually apparent differences are statistically significant. For example, if we hypothesised that the percentage of subjects will be the same in the individual selected years, a corresponding *p*-value will be lower than $10^{-6.}$ For common statistical statements and rejecting the null hypothesis of the homogeneity of data, the *p*-value ≤ 0.05 would be sufficient. There is a broad consensus that the results of the quantitative content analysis are a valid tool of media coverage research. It is based on the assumption that quantification increases the degree of accuracy of conclusions and allows a more precise description of the covariance between elements (Emmert and Barker, 1989). It also stems from fact that media content is encoded using the same language as in the reality to which it relates (McQuail, 1999, 2010).

6. Results

As mentioned in the introduction in relation to the Šumava NP there are a number of stakeholders with often conflicting interests. Before presenting the detailed results of the media analysis, an analysis of the main stakeholders is necessary (for their conflicts influenced the media scene and some stakeholders even used it as a tool for promoting their own views and interests).

Among the main stakeholders belong:

State administration: Ministry of Environment (responsible for national parks). Competence-wise, the Ministry of Environment is the most important government authority in the area and it is therefore essential, as defined by its action towards conceptual management tools (management plan, territory zoning , licensing activities in the Šumava NP territory in the administrative decision-making). Ministry of Agriculture (responsible for forestry outside NPs, water management), veterinary administration.

Central authorities (especially the Ministry of Environment), Regional authorities (clash of competence of 2 regions) and autonomy. Both regions have a certain autonomy in the regions (education, transportation, health infrastructure etc.) and in the Šumava NP territory implement their own regional policies.

Municipalities - 22 villages and small towns which have part of the whole area within the park boundaries and manage their own assets (including parts of the forests in the Šumava NP). 21 of these municipalities are associated in the Šumava NP Association of Municipalities. There are often clashes with the Šumava NP in urban planning, land use plans such as the construction of recreational buildings and tourist infrastructure. They primarily represent the interests of local residents and businesses.

Forests of the Czech Republic, State enterprise; Military Forests and Estates - entities managing the forests adjacent to the Šumava NP forests. They manage their forests by "traditional forestry practices," and they are entities that are significantly focused on the production and monetization of wood. The production in the forests of the Czech Republic is discussed for example in Pulkrab et al. (2015).

NGOs - especially active is the Rainbow Movement, which presents its own conceptual materials to the management of the Šumava NP, organizes media campaigns and environmental activists. They are active promoters of "wilderness" and no intervention in the territory. Locally significant role is also played by the Czech Union for Nature Conservation and the Czech Ornithological Society.

Community of experts – South Bohemian University × Forestry faculties - the scientific communities are interested thanks to their own research projects implemented in the territory of the Šumava National Park or they explore the park.

Table 3
Main topics in relation to Šumava National Park.

Main Topic	2007	2012	2015
Activities of the public in forests	16.1%	6.5%	11.7%
Logging and commercial processing	9.8%	7.4%	1.5%
Institutions and organisations	25.9%	46.7%	33.2%
Others	5.2%	11.6%	1.5%
Forest and natural causes	38.2%	18.4%	32.7%
Political issues	4.9%	9.5%	19.5%

Visitors - residents of the Czech Republic intensively use the Šumava NP and recreational functions of the forests as discussed for example by Šišák et al. (2016).

Before the actual evaluation of the media analysis results, the chronology of the main events capturing the dynamics of the most important factors concerning the Šumava NP is given in Table 2.

As already mentioned, the media analysis was conducted for the years 2007, 2012 and 2015 which represent milestones in relation to the Šumava National Park.

- 2007 – A previous wind calamity Kyrill in January 2007 and bark beetle calamity subsided. Disputes among NGOs, foresters and institutions about the conception of Šumava NP have culminated;
- 2012 – The discussion about the concept and manner of the Šumava NP management was resumed: in the summer of the previous year there were intense protests by environmental activists against the felling of bark beetle trees, new protests in 2012 were no longer as attractive to the media;
- 2015 – Long-term disputes between municipalities and the NP about the administration of property belonging to the municipalities became a "smaller" media attraction.

The quantitative content analysis was undertaken to examine how many forestry-related coding units in the media contained the word "Šumava". The result was as follows: in 2007, it was 346 coding units, in 2012, 484 coding units and in 2015, it was 205 coding units. For comparison, in 2015 another 1999 forestry messages were analysed, irrespective of their relation to the keyword Šumava.

For a more detailed analysis, the following topics were selected:

6.1. The frequency of topics in the selected periods

The frequency of topics in the selected periods in news reporting containing the keyword "Šumava" is show in Table 3.

Table 4 presents mutual comparison of the most significant subcategories and changes in their frequency in the selected periods. It reflects, to some extent, the nature and scope of managerial challenges associated with managing Šumava NP and at the same time, it documents an increase in the frequency of topics aimed at consolidation: planning,

Table 4
Comparison of subcategories and their frequencies in the selected periods.

Subcategory	2007	2012	2015
Fauna	3.9%	2.7%	0.0%
Movement/NGOs	2.4%	9.5%	0.5%
Calamities	12.4%	1.1%	3.5%
Forestry pedagogy	4.2%	0.5%	3.5%
Forest policy	0.0%	3.0%	10. 4%
Urban/municipal forests	0.3%	1.6%	0.5%
Ministry of the Environment	0.0%	0.8%	2.0%
National parks	26.3%	42.1%	28.4%
Cultivation and protection	6.6%	10.3%	22.9%
Planning	0.6%	0.5%	6.5%
Weather	1.5%	0.3%	3.0%
Pests	13.0%	9.0%	4.0%
Logging	9.1%	7.3%	0.5%
Tourism, recreation	14.2%	7.6%	6.5%
Others	5.4%	3.5%	8.0%

Table 5
Number of messages containing keywords "bark beetle" and "Šumava" - Frequency of occurrences of the combination "bark beetle" and "Šumava" in individual months.

	Months												
Year	1	2	3	4	5	6	7	8	9	10	11	12	Total Sum
2007	3	5	6	12	18	6	5	13	5	1	3	1	78
2012	26	22	9	21	18	44	30	30	25	16	8	13	262
2015	8	9	2	5	5	6	2	7	14	4	8	2	72

forest policy, cultivation and protection. This fact can be seen as a positive, constructive trend and direction towards issues dealing with a long-term perspective and tackling strategic problems. Conversely, there was a significant decrease in the representation of themes calamities and logging, which are more or less short-term issues responding to the current situation at a rather operational or tactical level, seeking neither long-term solutions nor the ways to tackle them. A very interesting development can be monitored regarding the theme of national parks. The topic of national parks was most represented in 2012, which saw the culmination of disputes about the conception accompanied by personnel changes and personal attacks - which was definitely newsworthy.

6.2. Natural factors - bark beetle

The issue of the bark beetle has been a principal theme of scholarly as well as lay reports related to Šumava NP over the last 20 years. This is an issue, which is cross-sectional regardless of the type of the main theme. Table 5 shows the incidence of this topic during each month of each selected year. A number of articles containing the words "bark beetle" and "Šumava" in 2007 and 2015 copies the frequency of the occurrence of the bark beetle on the locality of Šumava NP in the individual months. In 2012, the occurrence of the high frequency was caused by fading disputes about the conception of Šumava NP and the way of solving the crisis in the future, i.e. not a current occurrence of bark beetle, but bark beetle as a symbol of basic polarisation of the approach to administration and legislation.

6.3. Conflicts among institutions

Table 6 shows the frequency of the messages containing the word "Šumava" and mentioning the conflicts among institutions in the selected periods.

Table 6 shows that the proportion of coding units dealing with conflicts is more or less stable, but their content is changing. In 2007, conflicts connected with logging prevailed, while in 2012 it was the personnel changes in Šumava NP and in 2015 conflicts with communities.

It is therefore interesting to compare the content aspect of the articles dealing with forestry and conflicts among institutions in 2015, based on whether they are related to Šumava NP or not. The results are presented in Table 7.

Out of 119 coding units reporting about forestry in 2015, where conflicts are mentioned, only 24% of the coding units account for those mentioning the word "Šumava". In the coding units not containing the word "Šumava", a dominating topic is the conflict among institutions - no news reports, or the owner - Forests of the Czech Republic, state enterprise, or towns / municipalities. In the coding units containing the keyword "Šumava" and dealing with the conflict among institutions, the dominant topic is National Park (43%), Forest Policy (14%), and Cultivation and Protection (11%). The topic of Šumava is no longer attractive for journalists, most coding units related to the NP concerns the conflict related to the competence with municipalities about the preparation of a new act. The topic of Šumava, in connection with cultivation and protection, is concerned with the polemic about non-intervention.

Tables 6 and 7 thus show that messages covering conflicts have differed not only over the years but also in relation to the site on which they inform.

Table 6
Number of messages containing the word "Šumava" with or without the mention of the conflict among institutions in the selected years.

Year	Containing conflict	NOT containing conflicts
2007	17%	83%
2012	13%	87%
2015	14%	86%

6.4. Analysis of the media correctness

The share of individual categories of correctness is presented in Table 8. Individual media outlets are grouped into logical categories.

In 2015, the messages containing "Šumava" were evaluated as less correct. As regards to print newspapers, messages relating to the Šumava were evaluated as less correct and were published in a rather right-wing daily newspaper "Lidové noviny", and a leftist daily newspaper "Halo", both published nationwide, and in regional dailies (e.g. from Šumava region). Table 8 shows that the media with a clear-cut political orientation (as mentioned above) tend to perceive solutions to natural problems with bias, not impartially. As regards the Internet, some of the reports and statements were also evaluated as less correct and were published on Šumava forestry-related portals and a private sever "Neviditelný pes".

Regarding television, there were no significant differences among individual operators.

6.5. Media evaluation of the work of foresters

Table 9 shows the evaluation/ratings of the foresters (scale from 1 to 5) in relation to the Šumava NP issue. The most significant topics were evaluated only.

Even though the number of evaluating articles was low, the data showed certain trends, which urge us to think in relation to the image of foresters. The evaluation from the point of view of individual topics (see Table 9) is subject to faster fluctuations depending on location and time. The ratings of the institutions are of a more permanent character, reflecting more aspects and thus can be evaluated as a positive trend. As for the image of foresters, the fact that resulting ratings are constantly under average with respect to the topic of Šumava can be taken for granted. It particularly concerns logging, solving natural impacts and activities of the public in forests. This is properly connected with a following skill to:

a) Make topics interesting and attractive for both the public and media;

b) Gain space in the media to express (own) opinion; and

Table 7
The number of messages dealing with forestry and conflicts among institutions, related or not related to Šumava NP in the year 2015.

Conflicts - Subtopic	NOT related to Šumava		Related to Šumava	
Beauty of nature	0	0.00%	2	7.14%
Forests of the Czech Republic, state enterprise	10	10.99%	1	3.57%
Forestry pedagogy	1	1.10%	1	3.57%
Forest policy	4	4.40%	4	14.29%
Urban/municipal forests	10	10.99%	0	0.00%
National parks	7	7.69%	12	42.86%
Others	7	7.70%	3	10.71%
Cultivation and protection	2	2.20%	3	10.71%
Planning	6	6.59%	1	3.57%
Restitutions	43	47.25%	0	0.00%
Tourism, recreation	1	1.10%	1	3.57%
		100%		100%
Total amount and percentage of the total	91	76.47%	28	23.53%

Table 8
Categories of correctness.

	NOT containing "Šumava"			Containing "Šumava"		
Medium	1	2	3	1	2	3
Czech News Agency	98.05%	1.95%	0.00%	100.00%	0.00%	0.00%
Internet	87.17%	9.73%	3.10%	55.56%	24.07%	20.37%
Press	90.10%	8.95%	0.95%	56.52%	25.22%	18.26%
TV	97.65%	2.35%	0.00%	86.67%	13.33%	0.00%

c) Gain institutional support: the Ministry of the Environment defends NGOs, the Ministry of the Agriculture is restrained and, what is more significant, regarding Šumava NP, is essentially without competencies.

7. Concluding remarks

Content analysis of the media coverage may bring interesting information and findings, however, their applicability may be rather restricted.

The influence of media as the outcome in terms of the CIMO model can be seen in the results of the pan-European research presented in Table 10.

Table 10 shows that the management method of forest management was perceived as the biggest threat to the Czech forests in 2009. The intensity of the perceived threat of bad forest management among the public in the Czech Republic is the second largest in Europe while the state of forests is objectively improving. Even more significant and objectively measurable is the discrepancy between perceived and actual threat - forest fires. Whereas in fact the fires in the Czech Republic are a negligible issue (MZe, 2015) here, as well as in the case of forest management, the influence of the media is clearly reflected. The concentration of particularly commercial media on negative reports that grab attention and arouse strong emotions, i.e. mostly negative news content, causes a distorted perception of reality. For example, in the second part of the same table it is evident that only 24.1% of the population presents value 5 corresponding to "above average interest", which is the lowest in the EU, where the value was given by 40.7% of the surveyed European public. It can be assumed that the Czech public did not demonstrate special interest in more information about the health of our forests either due to the excess of negative information reported in the media in connection with forestry or due to believe that the amount of information on the state of Czech forests was already sufficient. The diversity in results also occurs when compared to Slovakia (SK), the country which until 1992 comprised a common state with the Czech Republic. Based on their research, Dobšinská and Sarvašová (2016) claim that people in Slovakia are mostly satisfied with forest management despite the fact, as is illustrated by Sarvašová et al. (2014) on Slovak example, the participation in decision making processes in forestry is still very formal.

As Cihar and Trebicky (2008) report, stakeholder's surveys and interviews reveal sceptical attitudes of local people and mayors towards benefits that stem from inhabiting a unique area of Šumava NP. Both groups like the place where they live, but they have to be involved more strongly in the design of a new management plan. So far, lack of stakeholder's involvement encouraged unnecessary hassles. As Sarvašová et al. (2014) confirm, public participation in sustainable forestry may be considered a means to develop better informed and more widely accepted forest management outcomes.

Table 9
Evaluation/ratings of the foresters in relation to Šumava NP.

Topic	2007	2012	2015
Activities of the public in forests	3.27	1.8	3.6
Logging and commercial processing	3.32	2	3.7
Institutions and organisation	3.49	2.72	2.25
Forests and natural causes	3.51	2.94	3.40

The article dealt with the media content analysis as a tool, whose aim was to answer the defined research questions, using the CIMO logic as a framework for the analysis.

Within the **C**ontext, the following factors were assessed: Natural, political-legislative, managerial/Park administration;

As **I**ntervention: Changes of governments, ministers and managerial positions, legislative initiative, natural calamities;

Mechanism: Changes in attitudes, activation of NGOs, discontent of municipalities and regions;

Outcome: Overload with news, dispute among professionals, contradictory perception, inconsistent actions, economic losses, legislative delays.

As regards the research **Q1,** whether the media analysis proved that the media reflected the dynamics of natural, social and political factors in relation to the Šumava NP, the answer can be of type **YES, BUT**. YES because (although delayed) the analysed reports reflect the social reaction to the dynamics of natural processes. BUT it should be taken into account that the interest of media in the outcome of individual, existing problems is not media's primary interest. This is vividly illustrated on the example of the issue of the management of spruce stands that are repeatedly attacked by bark beetle because of the action of natural influences. The media found the discussions around the management interesting, but the final solution (the result of a process) no longer stands in the centre of their attention, as is evident from the occurrence frequency of messages covering this topic.

Regarding the research **Q2**, whether media provided an objective feedback to stakeholders and policy makers, the answer can be **NO**. The objectivity of the information provided can be monitored using a factor expressing the "correctness" in the sense of "balance" of the information provided, but it is clear that these factors expressing the degree of objectivity will always vary depending on other factors (media campaign, interest groups, media ownership). Studying the objectivity of the transferred information, however, is no doubt important when it comes to public service media (e.g. public radio and public TV), who are conducted by their own bodies and public scrutiny and, with the help of control mechanisms of their functioning, led to providing objective information. Conversely, it is possible to say that the media is rather a means of advancing interests of individual stakeholders.

As for the research **Q3** - Do media significantly affect public perception of the forestry sector and the promotion of forest policy objectives? - the answer can be **YES**. Excessive intensity of negative news helps create a negative image of foresters and partly causes the lack of interest of the public in information relating to forestry, which results in difficulties in communicating objectives of forest policy. The example of the Šumava NP shows that the promotion of forest policy involves a large number of interest groups whose views and interests are, in many cases, inconsistent over time and thus causing a problem for the public to be oriented in the issue.

It is apparent that the media reflect the interests of the individual groups. However, the media is only interested in topics that involve a conflict or a "story" and particularly complex issues, trying to find and formulate a compromise so that questions of sustainable forest management are dealt with in detail and balance, while respecting economic, environmental and social interests, are already beyond the scope of the medial analysis. The issues associated with the influence of media as feedback to policy makers are possible to study with the help of the medial analysis.

However, it needs to be emphasised that the research questions were strictly related to a very media quantitative content analysis only.

In conclusion, it can be stated that the media analysis has its place in policy analysis, especially if A) we focus on a particular problem or scandal, and B) it is part of a more comprehensive approach, e.g. CIMO approach. According to Krumland and Krott (2004), forestry actors could

Table 10
Results of Public opinion survey – comparison CZ, SK and EU *(ECORYS, 2009, Number of respondents in CZ 440, EU 11.106).*

Issue	Harvesting and management damage	Forest fires	Invasive species	Storms	Other
Which issues do you find the most concerning regarding damages and threats to forests?					
Czech Rep. (CZ)	52.00%	18.20%	14.30%	8.90%	6.60%
Slovakia (SK)	9.70%	55.30%	19.70%	5.30%	16.00%
% within EU	25.90%	44.60%	7.60%	11.80%	10.20%
How interested are you in learning more about general condition of forests (health, vitality)? (where 1 means you are "not interested" and 5 means you would be "very interested")					
Evaluation	1	2	3	4	5
CZ	13.20%	9.80%	32.70%	20.20%	24.10%
SK	2.30%	6.00%	27.00%	23.30%	41.30%
% within EU	5.00%	5.60%	21.80%	27.00%	40.70%

be successful with their political interests by using the advantageous presentation of the media. Rather unfortunately, this argument was also confirmed by the case study of the Šumava NP. The fact that foresters did not succeed in conclusive and inconsistent presentation of their plans, design and solution concepts, and principles of forest policy in the media, was one of the reasons why they in a certain sense lost the battle on a twofold ground. Not only did they lose by not managing to save the forests in the Šumava NP, but they also lost in the minds of the Czech Republic mass population.

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