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Perceptions and realities: public opinion on forests and forestry in Finland, 1993–2012

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Highlights

- Analysis of the longest-running survey in the world on public perceptions of forestry.
- Comparison of perceptions with realities in forestry in Finland.
- The role of the forests and their management is well regarded by the Finns.
- More protection of the forests and better performance by the wood industry is demanded.

Abstract

The perception of the Finns about forests and forestry has been tracked over a period of more than 15 years. The results of this survey constitute the longest sequence of data of this type at the national level anywhere in the world. The people's perception of reality represents a factor that influences decisions about policy. For this reason, it deserves monitoring and analysis. Forests in Finland are highly meaningful to the people, who are generally well informed and link their opinions to the facts that they are able to observe. The variability of the responses over the years of the survey is not significant. Silviculture and forest management are perceived as good by most Finns. Finns are aware that more forest grows than is harvested, and they also know that some raw material is still imported. However, they demand that more forest be protected. Finns are aware that their forest industry is not performing well at the international level. They also demand an increased wood supply for building construction. Forest harvesting is viewed as a source of employment and welfare.

Keywords values; attitude; correlation; reflexive groups; social evolution

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1 Introduction

European forests are currently perceived by the population as physical and social spaces profoundly influenced by timber use and forest management. It is essential to understand today's needs and values and to grasp the economic utility and social significance of forests in modern societies (Schmithüsen 2008). Forest resources are very well known as physical assets in Europe (Forest Europe 2011). The economic importance of forestry (wood production) and forest industries is captured well by national statistics. Economic and social aspects of other (multiple) forest uses are now much better known than was the case several decades ago (Forest Europe 2011). Forest biodiversity has been intensively studied for approximately two decades (e.g., Kuuluvainen and Aakala 2011) and has also received increasing amounts of study from socio-economic perspectives (e.g., Horne et al. 2009) as well as periodic monitoring (e.g., Forest Europe 2011). In several countries, comprehensive nationwide nature recreation surveys have even been performed, e.g., in Finland in 2000 and 2010 (Sievänen and Neuvonen 2011). However, sporadic national data are available on how people perceive multidimensional sustainability in forestry.

What, in general, are the public's opinions, attitudes and values regarding forests, forestry, forest industries and other sectoral activities influencing forests? Are the criteria and indicators or national forest programmes adequately addressing the issues and benefits that people hope to obtain from forests? How are the perceptions of forests changing over time, reflecting larger changes in the societies? These are among the questions that only opinion surveys can answer.

In philosophy this theme was developed already by one of the two ancient skepticism schools (Pyrrhonism), which not only claimed that we "should not trust our sensations and opinions" but also "that reality is indefinite" (Bett 2010).

Research and surveys on general public perceptions of forests and forestry appear to have been initiated in Europe in the early 1990s. The study "Europeans and Their Forests" (Rametsteiner and Kraxner 2003) collected information on forest attitudes and perceptions from 45 studies that had examined 16 countries in Europe. A similar meta-analysis in 2009 (European Commission 2009) included 26 surveys published since 2003, covering public opinion on forests and forestry in 21 European countries. Additionally, an entirely new survey was performed among the general public across the EU-27 countries. The results of this survey were that the public views the protection/prevention of deforestation as a key concern and perceives the general condition of European forests to be poorer than it actually is.

Previous research on this subject in Europe was conducted by Schmithüsen, Kazemi and Seeland (1997), who investigated the perceptions and attitudes of the population towards forests and their social benefits by analysing studies conducted in Germany, Austria and Switzerland between 1960 and 1995. Schmithüsen and Wild-Eck (2000) continued to address the meaning of forests to people living in cities. There are also thematic studies related to the perception of forest fires (APAS 2003). Recently, public perception on forestry issues in the Region of Valencia (Eastern Spain) was found to diverge from that of policy makers (Fabra-Crespo et al. 2012).

At the national level, there are two long-term national monitoring schemes. In the UK, the Forestry Commission has conducted biennial surveys of public attitudes to forestry since 1995 (Forestry Commission 2013). In Finland, the Finnish Forest Association, representing a wide array of forest organisations and institutions, established its "Forest barometer" in 1993 (Finnish Forest Association 2012). This biannual survey provides the longest comparative time series in the world on public perception of forests, forestry, forest industries and environmental issues related to forestry. The results of the survey are considered in this article.

In Finland, how people assess the importance of different uses, benefits and values related to the forest were studied during the 1990s in one national (Kangas and Niemeläinen 1995, 1996)

and three provincial surveys conducted in Northern and Eastern Finland (Kajala 1997; Loikkanen et al. 1997; Rantala 1997). Saastamoinen (1997) compared these results and found that the vitality and health of forests was scored highest nationally and regionally but also noticed that the perceptions of people concerning what is important to them appeared, in certain cases, to deviate significantly from what was known or calculated to be the economic ranking of forest uses. Hänninen and Karppinen (1996) analysed the 1994 survey data from the Finnish Forest Barometer. The results of an analysis of 15 statements describing the attitudes of the public concerning forestry were condensed into four attitude dimensions using principal component analysis: forest utilisation (36%), multifunctionalists (24%), supporters of forest protection (23%) and the indifferent (17%).

The socio-cultural context of Finland is strongly influenced by forest, which is the dominant land use (75% land cover), the major natural resource, the backbone of the economy until the end of the 1990s, and a source of identity (Hannellius and Kuusela 1995). The following brief description summarises several essential phenomena related to this context during the study period. Most forest land (47%) is owned by private non-industrial forest owners. According to taxation statistics, these owners total 780 000 (i.e., owners of > 2 ha of forest land) (Verohallitus 2013). This result means that roughly every fifth adult in Finland is a forest owner. During the past two decades of monitoring public attitudes towards forestry and forest industries in Finland, urbanisation has continued (including the urbanisation of forest owners), the deep recession of 1991–1993 raised the unemployment rate to postwar highs, steady growth in forest industries followed until 2007, electronics showed spectacular development followed by a rapid downturn, and an environmental movement focused strongly on forestry developed. Together with international environmental and forest policies, this movement brought an “environmental turn” to Finnish forestry as well. The structural downturn in the pulp and paper industries was accelerated by the global financial crisis and the later European economic crisis (Karppinen 2000; Kuisma 2006; Hetemäki and Hänninen 2009; Saastamoinen 2012).

The purpose of this study was to outline a conceptual frame for the analysis of the relationships between perceptions and realities. Additionally, the study examined the changes in the perceptions of the Finnish public regarding forests and the forest sector during the period 1993–2012 and reflected these changes in terms of factual development.

2 A conceptual frame for the meeting of perceptions and realities

2.1 Perception and related concepts

In social psychology and sociology, perception is viewed as a component of human interaction. It is inextricably tied to language and to the availability of meaningful concepts. Real-world phenomena are grasped through available instruments and tied to concepts in meaningful ways through available language. Interpretation is the ongoing (re-)negotiation of meanings and concepts (Berge and Aasten 2004). In philosophy this problem has considered as the subject of ‘nominalism’ which denies the existence of abstract entities such as universals, forms, species, propositions, etc., (Brassier 2013) and the ‘problem of the universals’ (where the question is to discover to what extent the concepts of the mind correspond to the things they represent and thus have an objective reality (Catholic encyclopaedia 2014). More generally, relates to the ontological problems about what kinds of entities exist (Rodrigo-Pereyra 2000) the origins of which goes back to the antique philosophy but are considered also in the contemporary one.

Perception has a dual meaning, indicating both the process and the result of perceiving. As a process, it includes activities such as recognising, observing, and discriminating. As a result, it

means becoming aware of objects, relationships and events that manifest themselves as insight, intuition, or knowledge gained (APA 2006; Collins 2002). Such basic, sometimes-overlapping components of human cognition as attitudes, opinions, beliefs, and values are closely related to perception. Oskamp (1991) emphasises that compared with physical perception, social perception is much more likely to be inaccurate, for it suffers from numerous sources of subjectivity and unreliability.

According to Campbell (1963), an attitude is a latent acquired behavioural disposition. It also means any subjective belief or evaluation associated with an object (APA 2006). Helkama et al. (2001) have emphasised that the object needs to have social meaning and thus, in research on attitudes, an individual is viewed as a citizen or a consumer.

An opinion is a proposition that is accepted as true without compelling grounds and therefore falls short of being a belief and far short of constituting knowledge (Colman 2009). Oskamp (1991) characterises public opinion as the shared attitudes of many members of the society.

Belief is any proposition that is accepted as true on the basis of inconclusive evidence. More generally, belief is conviction, faith, or confidence in something or someone (Colman 2009). Value is a moral, social, or aesthetic principle accepted by an individual or society to guide it to what is good, desirable, or important. In economics, valuation is closely related to preferences understood as tastes in the theory of consumer choice (Fischer and Dornbusch 1984; Samuelson and Nordhaus 1989). Vatn and Bromley (1995) emphasise the importance of preferences as social constructs, i.e., the “social construction of reality”.

It is generally assumed that attitudes, understood broadly to include beliefs and values, are major determinants of behaviour, i.e., people typically, although not always, behave in a way that is consistent with their attitudes (Nickerson 2003). Culture, which includes beliefs and attitudes, furnishes the forms that specify how to behave but not necessarily why the behaviour should be performed.

2.2 A frame connecting perceptions and realities

Berge and Aasen (2000) assume that the restructuring of the rural economic and political landscape and the increased emphasis on multi-functionality of forests will bring new groups into policy making, cause the fragmentation of existing groups, and allow new alliances to form. All these developments mean that the fields of values and perceptions towards forests have become much more diverse and complex everywhere in the industrialised countries than in previous times (e.g., Hellström and Reunala 1995; Hellström 2001; Rametsteiner and Kraxner 2003; Schmithüsen 2008; European commission 2009; McDermott et al 2010). This process also applies to the owners of forests (Karppinen 2000; Hänninen et al 2011).

Surveys measure perception in the form of opinions, which represent the social reality of the people. Social reality is formed by the interactions of people, is strongly influenced by the mass media, and is the form of reality in which people in general believe as if it were real (Searle 1997). In contrast, “evidence-based” or “measured reality” (“physical reality”) can be defined as the form of reality that is generated by the information obtained through objective and verifiable methods, which provide quantitative and qualitative information about a certain subject. Both realities often differ strongly due to numerous factors (Greenwald 1990). Berge and Aasen (2004) applied the theories of social construction (Berger and Luckmann 1966; Searle 1997) in the context of forestry. The basic idea that there are two realities provides the conceptual framework for this study of forest opinions in Finland.

Berger and Luckmann (1966) claimed that our reality is socially constructed and that the task of the sociology of knowledge is to study the process of that construction. They state that the core

theoretical question of sociology is how subjective meanings are transformed into objective facts. The answer is a historical process in which basic face-to-face interactions develop into legitimised institutions and are therefore objectivised, forming intergenerational settings that gradually come to represent the given objective institutional world (with their norms, rules and transgenerational continuity), the existing social reality, to the individuals (Saaristo and Jokinen 2004).

The activity of perceiving negative or positive conditions and the resulting interpretation for use in opinion formation are basically socio-cultural processes (Berge and Aasen 2004). Social reality, understood as the creation of an image by the population, is known as social representation. It is social because it is shared by many individuals and, as such, constitutes a social reality that can influence individual behaviour (Jaspers and Fraser 1984). The concept of social representation was originally developed by Moscovici (1976). It considers not only what the people think but also the life and the groups with which the thinking of the people coexists (Wagner and Elejabarrieta 1994). In the system of values, one part is always associated with the individual, but the other is cultural, implied by the society where the individual lives or has been educated. Also here one can find similarities with the ideas found in the early philosophy or its later development. Like every modern discipline related to man's thought, behaviour and social development, also social psychology and sociology have their deep roots in philosophy (e.g. Jackson 2013)

The social construction of reality in the meaning of perceptions and opinions on forests and forestry can be categorised as positive, negative, ambivalent or neutral (neither positive nor negative). If the actual state of affairs in forests is well known through objective measurements (physical reality), it can be assessed whether or to what extent perceptions (negative or positive) correspond to the evidence-based reality. There are circumstances in forests where a lack of objective knowledge prevents any assessment of the measurable state of forests (physical reality), and perceptions cannot, therefore, be evaluated against measured reality. This recognition has guided the selection of questionnaire items in this study. The items that have been selected are those for which information on physical reality is available, allowing contrasts to be made that involve both perceptions and evidence-based information.

3 Materials and methods

3.1 Materials

The data produced by the Finnish Forest Barometer (titled "Metsä ja puu" in Finnish) survey (Finnish Forest Association 2009) concern the attitudes of Finnish people aged between 15–79 years and are a part of Taloustutkimus' regular Omnibus questionnaire. This survey has been performed regularly since 1993 using the same core pattern of statements. The most recent survey was performed in March 2012. However, the pattern of factual questions and attitude statements has become more diverse since 1994 as new aspects of the overall survey concerns have been recognised. The core pattern of this unique survey has been stable since 1996, comprising the same questions to facilitate the production of comparable results. These core questions are the source of the data examined in this study. According to Karppinen and Hänninen (1999), the wording of the attitude statements can be interpreted to be value-laden in certain cases and, perhaps, biased in favour of the economic utilisation of forests. However, the number of statements is large, and several new statements have been added, whereas the other statements have remained the same to maintain the comparability of the results. Most of the questions included in the survey are designed to ascertain the opinions of the respondents. Therefore, the responses to these questions cannot be categorised as correct or incorrect (relative to physical reality), as they do not address facts but focus on values, wishes or ideas.

The questionnaires were administered to a total of 1,000 respondents. These respondents were interviewed face-to-face. The respondents were identified according to a process of simple random selection. Additionally, fixed quotas were implemented. These fixed quotas were used to obtain equal gender and age intervals, with margins of error due to statistical reasons of at most 3.2% in either direction. Information on the socio-economic profile (e.g., age, gender, place of residence) of the respondents was recorded, as this information has been shown to be influential in other studies (Tarrant and Cordell 2002). Most of the respondents were not members of forest-owning households. The percentage of non-forest owners ranged from 74%–79% in different years. However, the respondents may have included a slightly greater percentage of forest owners than that for the entire population. Approximately two-thirds of the forest owners in the sample owned small forest holdings of less than 20 ha. Forest owners holding less than 5 ha represented more than one-half of these small forest owners.

From the 22 questions included in the survey, the most interesting questions in terms of the objective of this article were selected for further analysis. The focus of this selection was the questions that represented social reality as opposed to measured reality. The necessary information on measured reality was obtained from several sources. The Finnish Forest Research Institute (Metla) publishes a complete statistical yearbook every year (e.g., Metla 2013). Metla 2013 was the main source of physical data for this study. For this purpose, five factual questions were analysed in greater depth and compared with the factual (i.e., real) information. The analysis of these questions was complemented with the analysis of another seven questions that represented attitudinal statements.

3.2 Methods

Survey data were analysed with descriptive statistics (frequencies). A chi-square test was used to analyse the total set of surveys and to perform pairwise comparisons. The null hypothesis of temporarily equal frequency distributions in all surveys was tested using a standard chi-square test. The response category “I cannot say” was excluded from all these tests, as, in our view, it is not compatible with the measurement scale. Moreover, there were no clear general trends in the response data for this category. After the rejection of the null hypothesis, the frequencies for subsequent surveys were also subjected to pairwise comparisons using a Bonferroni adjusted p-value.

The correlation coefficient between variables was calculated for each of the figures shown. This correlation coefficient represented the association of measured or evidence-based reality (physical reality) with social reality in the data.

4 Results

4.1 Stability and changes

The results of the chi-square test ($p < 0.001$) (Table 1) clearly confirm the patterns observed in the frequency distributions: although there have been no dramatic changes, no statements were found to have response frequency distributions that remained equal over the 15 years of the survey. However, the stability of the statements was found to differ in terms of the pairwise comparisons of the distributions of responses between two consecutive opinion polls during the whole survey period. For example, as noted below, the downturn of the profitability of forest industries and the consequent closures of production lines and entire mills have received substantial and broad media publicity, resulting in a consistent and significant decrease in the percentage of people accepting the statement “The forest industry performs well in international competition”.

Table 1. The results of chi-square tests for the total set of surveys and for pairwise comparisons.

Question	χ^2 -test, total set ^{a)}	No of year pairs	Pairwise comparisons (for subsequent years) ^{b)}																	
			1996/1997	1997/1998	1998/2000	2000/2001	2001/2003	2003/2005	2005/2007	2007/2009	2009/2012									
Factual statements																				
Forest grows more than the amount harvested	P<0.001	9	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
One has to intensify the utilisation of forests to improve employment and maintain welfare	P<0.001	9	ns	0.018	0.001	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
In our forests, abundant wood is available as a raw material for the forest industry	P<0.001	9	ns	ns	0.018	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
There are enough protected forests	P<0.001	8	-	ns	0.001	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Forest industry performs well in international competition	P<0.001	9	ns	ns	0.036	ns	ns	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Attitudinal statements																				
Silviculture in Finland is... very good... very bad	P<0.001	7	-	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Our welfare is also based on forests in the future	P<0.001	9	ns	0.018	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Cutting and management are a threat to the abundance of our wildlife and plants	P<0.001	9	0.018	ns	0.001	0.001	0.001	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Forest management has improved during the past ten years from the point of view of the care of nature in the forest	P<0.001	9	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
The use of wood in building construction should be increased	P<0.001	9	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

a) H0: Frequency distributions equal in all surveys.

b) P-values corrected for the no. of comparisons with Bonferroni adjustment.

ns=Not significant; - =No data

4.2 State of forests, harvesting and silviculture

The statement “Forests grow more wood than the amount harvested” had the most stable distribution of responses during the 1996–2012 survey period. No statistically significant differences were found in the pairwise comparisons between two subsequent years (Table 1). The correlation coefficient was -0.5 . The average sum of “agree” answers (“completely” or “fairly agree”) was 64% of the respondents during this period. This statement is also clearly confirmed (Fig. 1) by the forest statistics (Metla 2013).

The amount of wood harvested in Finland has remained relatively stable during the past 15 years, whereas the growth of the forests has increased by approximately 20% during the same period. However, public opinion has remained just about the same, as measured by the proportions of responses to this statement.

Similarly, for the statement “In our forests, abundant wood is available as a raw material for the forest industry”, only one of the pairwise comparisons indicated a statistically significant difference (between 1998 and 2000) ($P < 0.05$) (Table 1). The correlation coefficient was -0.68 . Although the agreement was high (84%), it showed a slight decrease. Most likely, these findings reflect the increasing amount of roundwood imports (Fig. 2) during the past decade prior to the sharp decline of these imports beginning in 2009 (Metla 2013).

During the past 15 years, wood imports to Finland have remained at a level between one-fourth and one-fifth of the wood harvested in Finland. Most of this wood comes from Russia for reasons involving price and species mix and due to other strategic and political reasons. The general public might form the impression that if Finland still imports wood, it does so because it does not have enough.

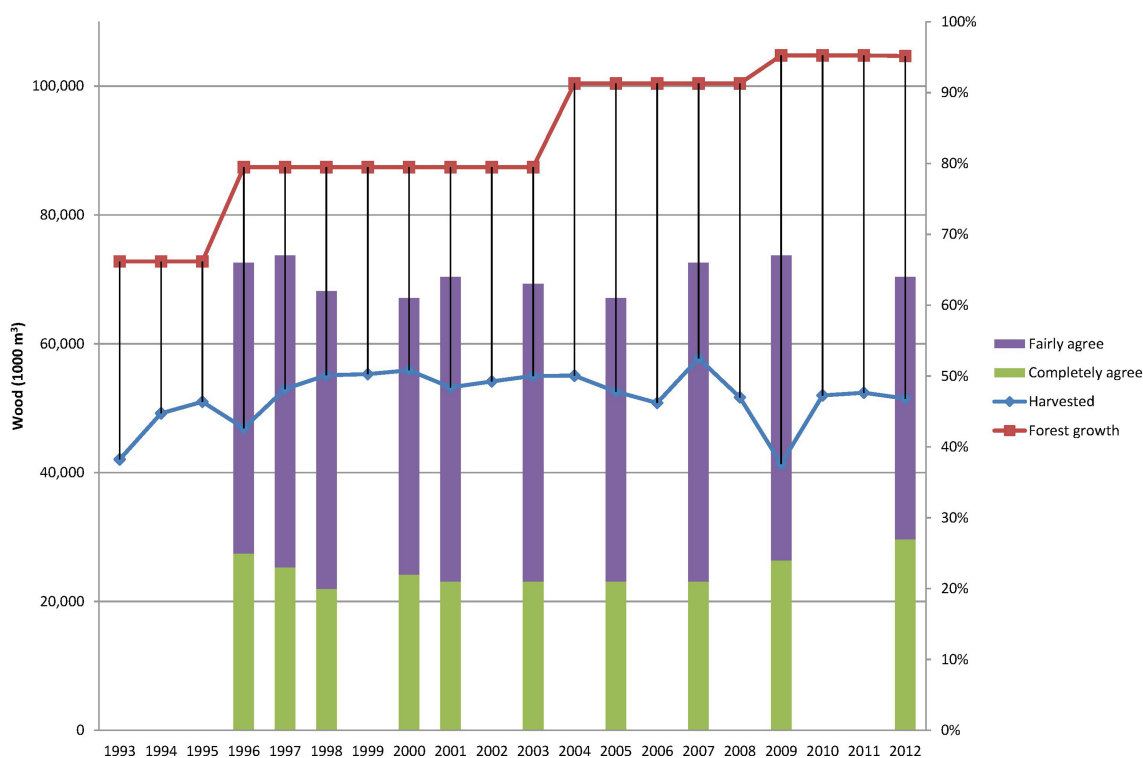


Fig. 1. Wood harvested in Finland and the perception of Finns on the statement “Forests grow more wood than the amount harvested”.

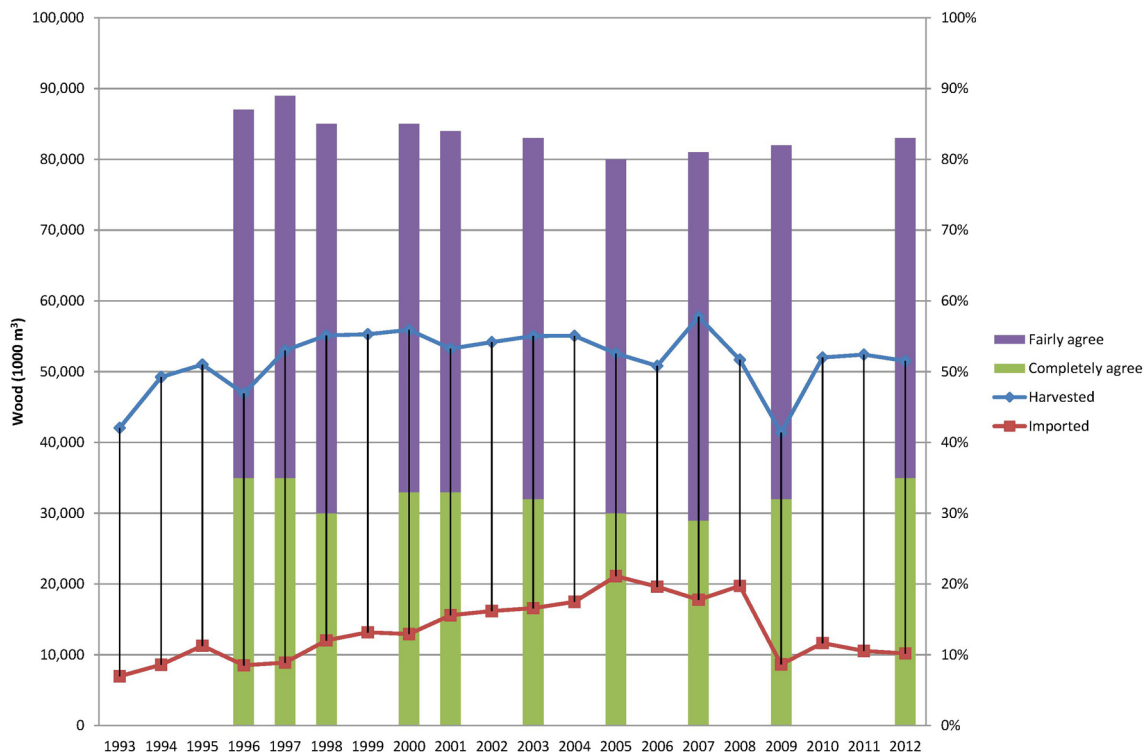


Fig. 2. Wood harvested and imported in Finland and the perception of Finns on the statement “In our forests, abundant wood is available as a raw material for the forest industry”.

A multiple-choice statement, “Silviculture in Finland is ...”, with possible responses categorised according to a Likert scale from “very good” to “very bad”, peaked in 2005 and 2007, when 90% of the respondents stated that they regarded silviculture in Finland as “very good” or “rather good”. The only statistically significant pairwise change ($P < 0.05$) was between 2007 and 2009, when the percentage of these two supporting responses decreased slightly, to 86%. The related statement “In your residence area and its surroundings, the forests are managed...” “very well” or “rather well”, significant changes were found during the initial years of the study: a slight decrease and then an increase. The overall “well managed” level (i.e., “very well” or “rather well”) was 78%, whereas the percentage of “very well” responses was only 7% in 1998–2000 but was 12% between 2003–2009.

4.3 Forest industries

The statements for which the most drastic changes occurred during the study period were related to the forest industries. The number of significant changes in pairwise comparisons (5 to 7) reflects this emphasis, but the amount by which the percentages changed is even more marked (Table 1). The statement “The forest industry performs well in international competition” obtained very high support in the late 1990s and reached its peak percentage (93%) in 2000, when the forest statistics (Finnish Forest industries 2010) also indicated the highest profitability during this period (Fig. 3). Since then, the perception of the competitiveness of the forest industry has decreased systematically, reaching its lowest level (61%) during the 2009 financial crisis, when the industry sustained its greatest losses (Finnish Forest industries 2010). The correlation coefficient was 0.4.

In this case, the correspondence between the evidence-based reality of the decrease in the performance of the Finnish forest industry and the social reality perceived by the people is relatively

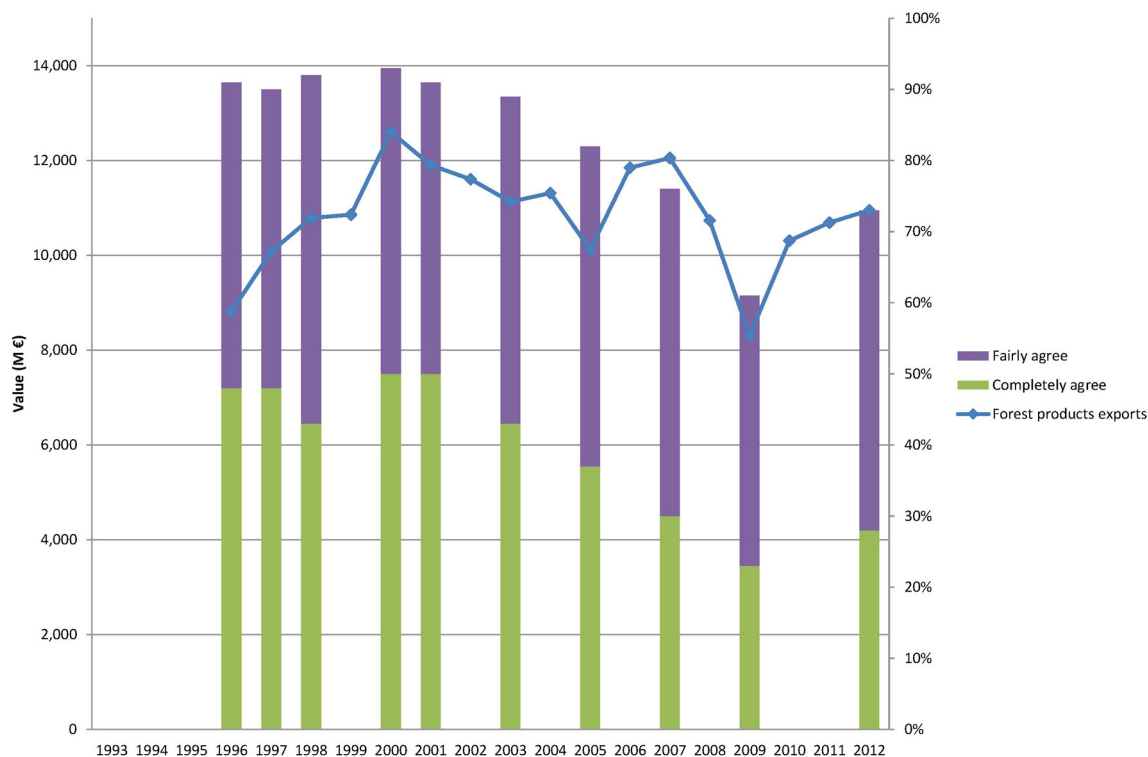


Fig. 3. Forest industry exports from Finland and the perception of Finns on the statement “The forest industry performs well in international competition”.

clear. The reason for this agreement could be that the media report more intensively on economic issues or that this type of news has a stronger effect on the people.

There have been several public programmes and campaigns in Finland aimed at increasing the use of wood in building construction. The support for the statement “The utilisation of wood in building construction should be increased” remained steady (85–91%) from 1997 through 2005. From the 2005 level of 85%, it decreased to 80% in 2007 ($P > 0.05$) and then increased in 2009 ($P > 0.05$). The domestic consumption of sawnwood increased from 0.57 m³ per capita in 1995 to 1.06 m³ per capita in 2004 and subsequently stabilised at 1 m³ per capita (Metla 2013).

4.4 Biodiversity and recreation

The multiple-choice question “What percentage of the forests of Finland do you believe are included in nature conservation areas?” included eight possible response intervals from “0%” to “> 20%”. Between 1998 and 2007, the percentage of respondents that stated “0–5%” was relatively stable (32–35%), but this response percentage decreased to 27% in 2009. Generally, however, there was a tendency to indicate that the percentage of forests included in nature conservation areas was increasing, as was actually the case. In earlier years, the percentage of protected forests was assumed to be relatively higher than its actual value. In the most recent survey, the respondents favoured a value closer to the official figure, 8.9% (in 2009). This value represents strictly protected forests that may include forest or scrub land (Fig. 4).

There are two explanations for this previous “over-estimation”. One is that if less strictly protected areas are included, the percentage responding in this way increases to 13%. The other reason may be related to the question “Which do you think is the largest group of forest owners in Finland?” Most respondents (on average, 50% during the entire study period) considered that

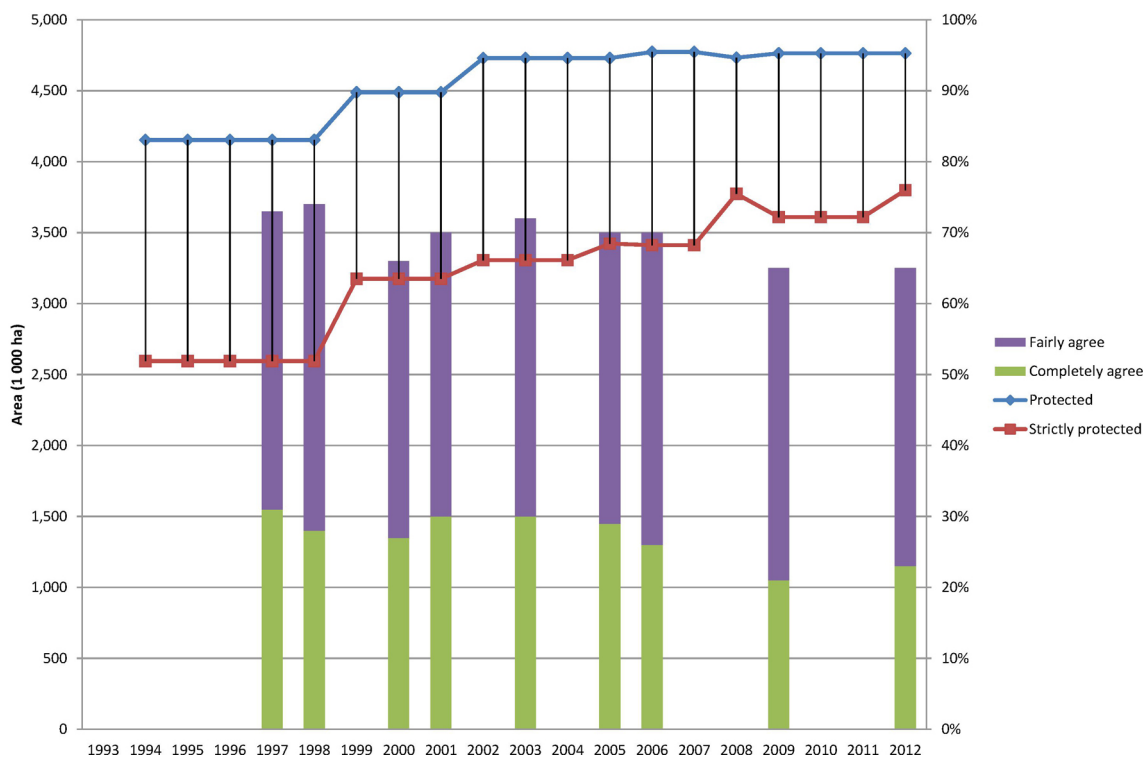


Fig. 4. Protected forests in Finland and the perception of Finns on the statement “The amount of protected forests is adequate”. The correlation coefficient is -0.72 .

the State was the dominant owner of forest land, whereas, in reality, private non-industrial forest owners own most forests (66% of forest land).

In this case, the physical and the social realities show opposing tendencies. Protected and, to an even greater extent, strictly protected forest areas have increased during the 15-year period over which the surveys have been conducted. However, the perception of the people has been that the amount of protected forests is inadequate. Either communication on this issue has failed or the people’s consciousness of this issue has increased so that they demand more protection than has previously been achieved. This outcome may also have resulted from persistent media pressure exerted by Environmental Non-Governmental Organizations for increased forest protection.

Many questions are matters of scientific and public debate and still lack a conclusive answer. On the statement “Cutting and management are a threat to the abundance of our wildlife and plants”, the percentage of those who absolutely agree has been extremely stable at 17% or 18% (previously 14%), whereas the percentage of all those who agree has ranged between 51% and 58% except in 2000, when it reached a peak of 64% ($P < 0.05$). That year, the results of the national red list survey were published and indicated an increasing probability that endangered species in old-growth forests would disappear (Rassi et al. 2001).

The statement “Forest management has improved in terms of the care of nature in the forests during the past ten years” received a percentage of approximately 20% of “absolutely agree” and a high percentage of approximately 75% of “agree” overall during 1996–2005. The pairwise comparisons showed no significant differences for those years, whereas a slight significant decrease ($P < 0.05$) was found for 2005–2009.

4.5 Employment and welfare

The normative or policy statement “One has to intensify forest harvesting to improve employment and maintain welfare” obtained the highest support (81%) in 1996 after the economic crisis of 1993–1995, the lowest (72%) during the boom year of 2000 ($P < 0.05$ from 1998) and an increased level of support of 75% in 2009 after the downturn of the pulp and paper industry (Fig. 5). The other significant ($P < 0.05$) change was between 1997/1998 (Table 1), primarily due to a decrease in “completely agree” in 1998. However, the level of support was the same, 79%, in both years. The correlation coefficient was 0.51.

The level of forest harvesting in Finland has remained stable during the past 15 years. Meanwhile, employment in forestry has decreased slightly. This decrease is due primarily to the increase in mechanisation, following the general trend of unemployment in Finland (Table 2). However, employment in forest industries has decreased, with further intensification since 2005. The social reality has not reflected the need to increase forest harvesting to recover the lost jobs.

In absolute terms, the number of unemployed persons in the entire forest sector was high in the 90s following the economic crisis but showed a decreasing tendency. It became relatively stable between 2000 and 2003 (7,000 persons) and then reached a rather stable but lower level in 2004–2008 (5,000 persons). It subsequently increased due to the financial and economic crisis in 2009 (e.g., Saastamoinen 2012). However, larger-scale drivers, the earlier mechanisation of logging operations and the later restructuring and, more recently, the downturn of the pulp and paper industry have caused much more substantial decreases in employment than those caused by setting aside productive forest land for conservation purposes (Metla 2013). Additionally, the steadily increasing tendency to emphasise shareholder value and minimise labour costs by decreasing staff should be noted.

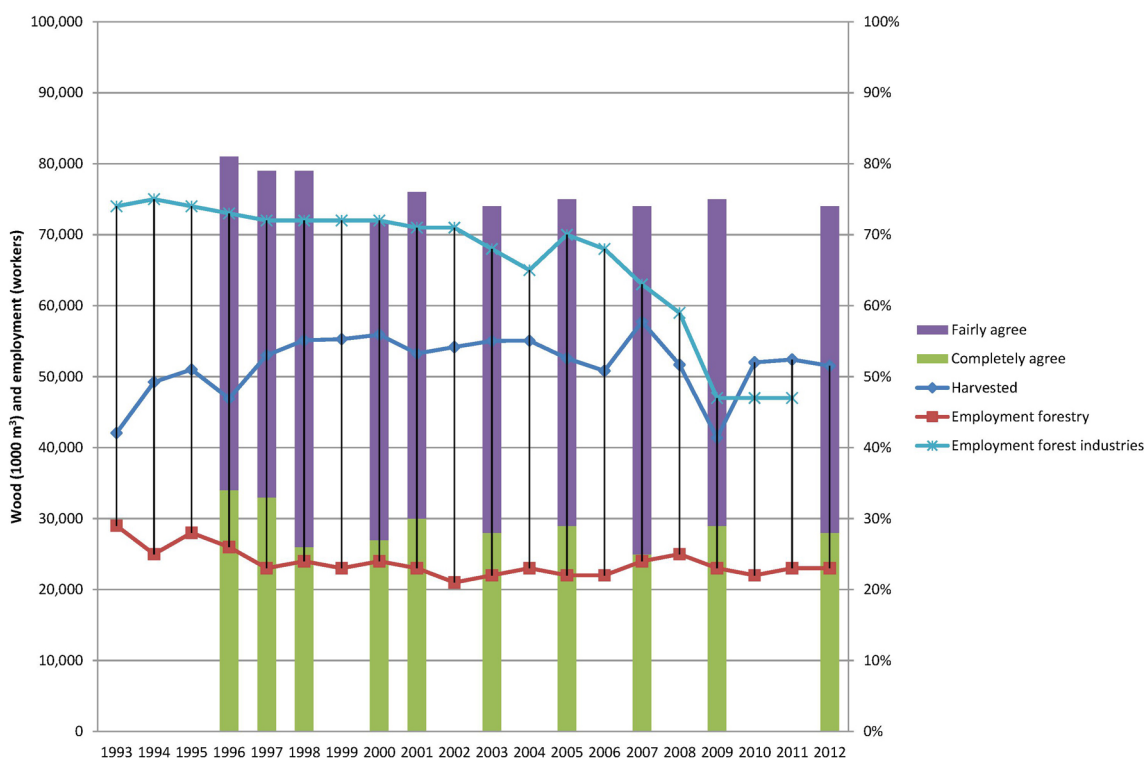


Fig. 5. Wood harvested and employment in the forest sector in Finland and the perception of Finns on the statement “One has to intensify forest harvesting to improve employment and maintain welfare”.

Table 2. Unemployment rate in Finland.

1995	1996	1997	1998	1999	2000	2001	2002	2003
15.2	14.6	12.7	11.4	10.2	9.8	9.1	9.1	9.0
2004	2005	2006	2007	2008	2009	2010	2011	2012
8.8	8.4	7.7	6.9	6.4	8.2	8.4	7.8	7.7

Source: Statistics Finland, Labour force survey

In 2010, the forest sector provided employment to approximately 69 000 persons, less than 3% of the entire employed labor force. The regional distribution of employed people in the forest sector follows the location of the manufacturing installations that produce forest products. The number of people employed in the forest sector has stabilised, but the worldwide recession in 2008–2009 caused a collapse in employment, particularly in the pulp and paper industries. In 2010, the average unemployment rate in the forest sector was 9.0% (Metla, 2012).

Similarly, the statement “Our welfare will also be based on forests in the future” had extremely high support (the summed percentage of “absolutely agree”, “agree very much” varied from 93% in 1996 to 89% in 2005) until 2005 and subsequently decreased to 81% ($P > 0.05$) and 80% in 2007 and 2009, respectively. The relative changes were most marked for the “absolutely agree” category, reaching the highest value, 50%, in 1997 and the lowest value, 31%, in 2009. These perceptions follow the trends set by economic realities, but they can also be viewed as expressions of confidence in the multiple benefits and also, perhaps, the possibilities that forests may provide.

5 Discussion

Thomas’s (1928) theorem states that “if a man defines situations as real, these are real in their consequences”. This principle is often regarded as a basic rule to be considered and analysed in policy-making and communication. According to Worcester (1986), the art of understanding public opinion rests not only on the measurement of people’s views but also on understanding the motivations behind those views.

A postmodern media theory (Baudrillard 1983), as given by Giddens (2009), argues that the border between reality and representation has collapsed. One can no longer separate representations from reality. In an age where the media are everywhere, a new ‘hyperreality’ is constructed. Hyperreality is defined as an inability of consciousness to distinguish reality from a simulation of reality. It is composed of the intermingling of people’s behaviour with media images, which sometimes obtain their meaning, in part, from other images and lack substantial grounding in external reality.

Several periodic environmental polls (Eurobarometer, 2008) have found that values are highly positive, whereas the actual performance of behaviour is nevertheless quite low. An explanation of this finding is the importance of the perceived consequences of behaviour and the assignment of responsibility attribution (Redclift and Woodgate 2000).

These attitude dimensions can be presented based on an the interpretation of perceptions of Maslow’s pyramid of needs (Maslow 1943). If the society only reaches the base of the pyramid, the people are going to view the forest as a resource based on subsistence and wood. If the society reaches the apex, however, the people view the forest as an outdoor environment and landscape. In our case, Finland has a high level of welfare relative to the world level. Additionally, it is a highly egalitarian society. Therefore, most of the population enjoys a high standard of living (close to the apex of the pyramid).

The responses to the statement “One has to intensify the utilisation of forests to improve employment and maintain welfare” can be interpreted, in part, as a reflection of the ways in which external factors to which the people are sensitive, as in the case of unemployment, affect the perception of the forest. Most likely, external factors are expected to have affected the perceptions, but it is difficult to identify these external factors more accurately and state how they have produced these effects. In fact, the boom in 2000 in Finland was primarily in the IT sector. The times were also good for the forest sector, but Finns could generally see only Nokia and its subcontractors during those times.

The most negative perceptions, in the sense of asserting that there is room for improvement in forests and forestry in Finland, correspond to three separate questions. First, “The utilisation of wood in building construction should be increased” shows a level of agreement of 80% and, thus, a negative perception. Therefore, it appears that there might be more room for public support for buildings based on construction with wood. Second, “Cutting and management are a threat to the abundance of our wildlife and plants” shows a negative perception of 50%. Third, the statement “Increasing forest conservation increases unemployment in the forest sector in Finland” shows a negative perception of 40%.

To perform temporal comparisons of the results over 15 years, it is necessary to recognise that a value of change lower than a certain percentage threshold from one year to another must be attributed to sampling error because different individuals are interviewed from year to year, so that the answers must also differ from one year to another. This variability is addressed statistically through considerations of sampling error. The statistical analysis identifies instances of significant change and examines the correlation between variables. Nevertheless, public opinion does not always change in agreement with the change in measured reality.

Based on the questionnaire analysed in this study, one noteworthy result is the high level of trust in the forest sector. Several questions address this factor in some form, and it appears in most of the items on the questionnaire. According to Taloustutkimus, which has been in charge of the surveys, the percentage of respondents answering “cannot say” or “don’t know” has always been remarkably low in the Finnish Forest Barometer polls compared with the other Omnibus responses. This outcome means that Finns are very familiar with their forests and believe that they know their forests and forestry issues whether they are wrong or right. This characteristic is an important challenge to forest communications, as Finns in general find it extremely difficult to change their attitudes about forests whether or not the attitudes are correct.

The very nature of public opinion, according to the American researcher Irving Crespi (1997), is to be interactive, multidimensional, and continuously changing. No matter how strongly they are held, opinions are subject to change if the individual holding them learns of new facts or perspectives that challenge his or her earlier thinking. If there is a new context or a change of mentality, it begins a process of reflection and debate about the position to adopt in the face of a new social reality. Perceptions can be changed by influencing the public directly or through reflexive groups. As a result, a new representation is adopted by the majority of the members of the reflexive group. This majority is found to be the most influential in changing social reality. In this way, they are the source of changes in opinion.

Reflexive groups are the entryway for influencing the perception of forestry by the people and can be found clustered in various associations, e.g., associations of forest professionals, of natural scientists or of agro-forest owners. These groups each play a substantial role in the generation of new social awareness and, therefore, model individual perceptions. Forest stakeholders create their own image of forests and the forest sector to advocate in support of their own interests and to influence decision-makers to fulfil these interests. Therefore, they influence the perception of the public in this way and contribute to lobbying as well.

Nevertheless, diffusion to the rest of the population is not as straightforward and is channelled and, thus, controlled by the media. Accordingly, it is becoming difficult to distribute new messages throughout the society. The reason for this difficulty is that journalists in media and teachers at schools have generally been reluctant to accept these messages from foresters. Therefore, the impact on society as a whole is much lower than expected. In the long run, educational programmes might change values over a generation, but only the media are able to produce rapid detectable changes.

Nevertheless, it is a basic misunderstanding for a society to believe that the world is as it is represented in the mass media. In daily communications, it is often extremely difficult to bring people to recognise that everything that we are able to understand about reality consists of images. These images can, of course, be true or false, wrong or right, positive or negative, but they are still images. There are 700 000 forest owners in Finland and 200 000 workers in the forest sector. Accordingly, everyone in the country personally knows at least one person who is working in the forest sector or receives income from the forest sector. However, no analyses have considered how the forest sector is shown in the media in Finland. Currently, analyses with this aim must also consider the social media and the changes that they bring to the influences on people because we place more trust in opinions that originate from our friends than in opinions that originate directly from the media (Kirkpatrick 2011).

There is a need for further research on public perceptions to define the demographic and psychographic differences (e.g., age, gender, area where the respondent lives (urban-rural), number of visits to a forest per year). These differences are always part of the makeup of both the respondents that are more conscious of the physical reality and the respondents for whom social reality differs from physical reality. A key question is whether all the individuals whose response to a statement was negative and was based on an image that was incorrect were responding for the same type of reason or due to different motivations even if the answers were the same. A seemingly homogeneous body of public opinion may, therefore, be composed of individual opinions that are rooted in very different interests and values.

Moreover, there is a need to analyse the drivers that influence perceptions and, therefore, to investigate how persuasion and influence can be used to modify perceptions. In contrast, there remains a lack of understanding of the relationship of perceptions to the messages sent by the media and the sensitivity of public opinion to the media. Consequently, further research is also needed to analyse how the media evolve with their messages and shape opinion over time related to the forest sector.

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