



Report on forest manager/owners and society on CSF and restoration

D4.2: Report on forest manager/owners and society on CSF and restoration WP 4, T 4.4

Author: Florencia Franzini (EFI)

Contributors: Silvester Boonen (EFI), Clare Hall (FCRA), Emmi Haltia (LUKE), Laurie Kelly (FCRA), Mariella Marzano (FCRA), Mart-Jan Schelhaas (WUR), Gerhard Weiss (BOKU)

Acknowledgements: Thanks to the various researchers across HoliSoils and ForestPaths for the collaborative inputs, to the forest practitioners who participated in the interviews and surveys, and to the thousands upon thousands of individuals from the general public members who participated in the survey.

Technical references

Project Acronym	FORWARDS
Project Title	Towards an Observatory for the Resilience of European Forests
Project Coordinator	Ruben Valbuena SLU coordinator@forwards-project.eu
Project Duration	November 2022 – April 2027 (54 months)

Funded by the
European Union



Deliverable No.	D4.2
Dissemination level*	PU
Work Package	WP 4 - Knowledge platform: a multi-actor forum for integrating stakeholder & civil society perspectives
Task	T4.4 - Researching forest owner and societal attitudes across Europe
Lead beneficiary	2 (EFI)
Contributing beneficiary/ies	12 (BOKU), 18 (FCRA)
Due date of deliverable	30 April 2025
Actual submission date	31 October 2025

PU = Public

PP = Restricted to other programme participants (including the Commission Services)

RE = Restricted to a group specified by the consortium (including the Commission Services)

CO = Confidential, only for members of the consortium (including the Commission Services)

v	Date	Beneficiary	Author
1.0	22/10/2025	EFI	Florencia Franzini
Review		EFI	Sara Uzquiano
2.0	31/10/2025	EFI	Florencia Franzini



Table of contents

Abstract	4
Introduction.....	5
Methods.....	7
The forest practitioner survey.....	7
The general public survey.....	10
Forest practitioner survey results	13
Behavioural beliefs: important forest management objectives	14
Normative beliefs: the influence of referent groups on forest management.....	17
Control beliefs: resources for implementing forest management	23
Behaviour: forest management activities	29
General public survey results	48
Societal values towards forest	48
Societal perceptions towards forest practitioners	50
Societal knowledge about forest management practices.....	52
Societal perceptions towards forest management activities	53
Factors shaping societal acceptance towards forest management.....	55
Conclusions.....	58
Forest management objectives and the most important benefits to society	58
At the intersection of values, norms, and societal acceptance for forest management.....	59
Forest management activities and their drivers	60
References.....	62
Appendix A. Forest Practitioner Interview Guide	66
Appendix B. Forest Practitioner Survey.....	67
Appendix C. General Public Survey.....	79
Appendix D: ANOVA and Post-Hoc tests	84
Appendix E. Management regression models.....	98
Appendix F. Acceptability regression models.....	104
Appendix G. Measurement scales	114

Abstract

One aim of the FORWARDS project is to understand the different factors affecting the implementation of climate-smart forest management and restoration activities among forest practitioners. Concomitantly, there is a need to understand the role of social acceptability and its potential to impact the uptake of climate-smart forestry and restoration. To meet these aims, this deliverable report provides findings from two surveys. The first is a forest practitioner survey (n=2,254) collecting information on present-day forest management activities across Europe and forest practitioner views towards forest management. The second is a general public survey (n=23,292) collecting views on societal acceptance towards forest management practices in Europe. Both surveys were distributed across 13 European countries: Croatia, Czechia, France, Finland, Germany, Italy, the Netherlands, Spain, Sweden, Switzerland, and the United Kingdom.

The findings from the forest practitioner survey include: i) differences in forest management perceptions between six forest practitioner groups and ii) identifying factors affecting implementation of forest management activities. The six forest practitioner groups include forest owners, forest owners and managers, family member managers, public forest managers, private forest managers, and private-public forest managers. The findings from the general public survey include: i) differences in societal views about forestry at the country-level and ii) identifying factors affecting societal acceptability towards forest management activities. In the concluding remarks, findings from both surveys are synthesized into key outcomes on current and future possibilities for the uptake of climate-smart forestry and restoration.

The first key outcome is that forest practitioners and the general public are aligned in their view over the most important benefits forest can offer society, which can all be categorized as regulatory ecosystem services. Critically, several of these preferred benefits also align with key objectives of climate-smart forestry and restoration suggesting broader approval for climate-smart forestry and restoration goals. However, the general public's is slightly less valuing of forest providing *climate storage and carbon regulation* compared to other regulatory ecosystem services. This is a weakness to accepting climate-smart forestry aims, particularly.

The second key outcome is that societal acceptability for forest management activities is affected by forest values, environmental attitudes, trust in forest practitioners, knowledge of forestry, country, and age. Notably, increased trust in public forest managers increases acceptability, regardless of whether the management activity aligns with climate-smart forestry and restoration aims (e.g., clearcutting versus selective felling). Critically, trust in forest practitioners is positive but low across most countries. This is both a weakness and opportunity for achieving social acceptability for climate-smart forestry and restoration and signals a continued need to strengthen engagement between forest practitioners and society.

The final key outcome is that forest values, normative pressures, resources, forest country location, practitioner type, and total forest area are all factors shaping the implementation of different forest management activities. Notably, increased value for regulatory ecosystem services (i.e., those aligning with climate-smart forestry objectives) are linked with increased likelihood of engaging in continuous cover forestry over clearcutting. Nevertheless, 40% of practitioners report engaging in clearcutting. Given that most practitioners highly value regulatory ecosystem services, this signals there are multiple barriers to implementing forest management activities that could support climate-smart forestry and restoration.

Introduction

Climate change is altering global ecological systems (see: Padron et al., 2020; Santer et al., 2018). These changes are shifting various dynamics across forest ecosystems, such as disturbance dynamics (IPCC 2014, Patacca et al., 2023; Senf and Seidl, 2021a, 2021b), tree species recruitment (König et al., 2025), productivity, mortality, and shifting tree species (see: Verkerk et al., 2022). Without deterrence, the effects of climate change are also expected to reduce the capacity of regulatory ecosystem services and biodiversity richness (Pereira et al., 2024), both of which are crucial elements for buffering against radical ecological dynamic shifts that could ensuring human well-being (de Groot et al., 2002; Haines-Young et al., 2010).

Forest management plays a key role in influencing forest structures (see: Puettman et al., 2009), but also more complex feedback loops, like disturbance dynamics (e.g., Seidl et al., 2011). The interplay between forest management and forest dynamics results in a greater need for forest management to respond to increasing pressures (Messier et al., 2015; Fahey et al., 2018). To this end, climate-smart forestry and restoration management represent key response strategies, as climate-smart forestry looks to enable climate change mitigation and climate change adaptation within the forest sector (see: Nabuurs et al., 2017; Bowditch et al., 2020; Verkerk et al. 2020), while forest landscape restoration seeks to restore forest ecosystem functions like biodiversity, wildlife habitat, and carbon storage (see: Spathelf et al., 2018).

Forest owners and managers, herein referred to jointly as *forest practitioners*, represent key agents in the decision to implement climate-smart forestry and restoration management—or otherwise (see: Deuffic et al., 2018). Private property rights legally legitimize private forest owners to manage their forest as seen fit within the scope of what is permissible by law (Nichiforel et al., 2018), while public forest managers have a responsibility to manage forestlands on behalf of public entities .

Despite the potential of climate-smart forestry and restoration management to provide solutions to mounting socio-ecological pressures, there is limited information on the extent to which different forest management activities are currently taken up across European forests (see e.g., Scherpenhuijzen et al., 2025; Suvanto et al., 2025), let alone how to classify different on-the-ground management practices as “climate-smart” (see: Cooper and MacFarlane, 2023). To further complicate matters, there are few systematically comparative analyses of European forest practitioners that identify trends, developments, and drivers underpinning forest management decision making in general (Weiss et al., 2019). However, it is well understood that multiple factors shape and constrain the forest practitioner’s decision making environment (Nichiforel et al., 2018; Deuffic et al., 2018). Thus, while forest practitioners represent key decision making agents, other stakeholders can play critical roles in shaping and constraining the decision making environment through, for example, societal acceptance, which can impact the uptake of forest management activities (e.g., see: Menéndez-Miguélez et al., 2025), or forest policies, which can restrict or enable forest management activities (see e.g., Gežík et al., 2022).

Based on the aforementioned knowledge gaps, one key aim in the FORWARDS project is to understand the different factors affecting the implementation of climate-smart forest management and restoration activities among forest practitioners. Concomitantly, there is a need to understand the role of social acceptability and its potential to impact the uptake of climate-smart forestry and restoration activities. To meet this aim, Deliverable 4.2 synthesizes forest practitioner and societal perceptions towards climate-smart forestry and

restoration by examining present-day management activities undertaken by forest practitioners and societal acceptance towards different forest management activities.

The information presented in the report includes results from two distinct large-scale European surveys distributed across 13 European countries. The first survey targets members of the general public in order to collect views on societal acceptance towards forest management practices in Europe (n=23,292). The second survey targets European forest practitioners to collect information on present forest management activities and views towards forest management (n=2,254). The survey targeting forest practitioners was designed in collaboration with the EU Horizon projects [ForestPaths](#), and [HoliSoils](#), as all three projects included tasks related to surveying forest practitioners perceptions towards forest management practices. As a result, the collaboration permitted harmonization of survey findings and improved total survey coverage beyond the originally proposed four demo countries in Forwards, which in turn, increased the total number of forest practitioners surveyed across Europe. In addition, aspects of the work presented in this synthesis benefitted from synergies between work presented in project deliverables (i.e., ForestPaths Deliverable 1.2, ForestPaths Deliverable 1.3, HoliSoils Deliverable 4.2).

Methods

This chapter provides an overview of the data collection and analysis resulting from a large-scale survey targeting European forest practitioners and a large-scale survey targeting members of the European general public. These two distinct surveys were designed to collect views towards climate-smart forestry and restoration management across the same 13 European countries: Croatia, Czechia, Finland, France, Germany, Italy, Latvia, the Netherlands, Romania, Spain, Switzerland, Sweden, and the United Kingdom.

The first survey—referred to as “The Forest Practitioner Survey”—targeted European forest owners and managers of European forests. The second survey—referred to as “The General Public Survey”—targeted members of the European general public who are not forest practitioners.

Both surveys were jointly distributed by a polling agency to panel members of thirteen countries. To facilitate distribution, the surveys were translated from English into 11 languages: Croatian, Czech, Finnish, French, German, Italian, Latvian, Dutch, Romanian, Spanish, and Swedish. Whether participants were given the forest practitioner survey or the general public survey depended on whether the respondent self-identified as: a) owning a forest, b) managing a forest for a third party entity, c) both owner and manager, or d) neither of these options. Respondents who selected options (a), (b), or (c) were provided with the forest practitioner survey. Respondents who selected option (d) were provided with the general public survey. The panel distribution occurred between December 2023 and January 2024. In addition to the panel distribution, a secondary distribution of only the forest practitioner survey was administered through landowner association networks between December 2024 and March 2025.

The forest practitioner survey

The forest practitioner survey was designed and developed in conjunction with researchers from the FORWARDS, ForestPaths, and HoliSoils project. The survey included five sections eliciting information about (i) the forest practitioners and the forest holding, (ii) ongoing forest management practices, (iii) forest practitioner perceptions towards forest management, (iv) forest owner views on accepting payment for forest management practices, and (v) basic demographic questions. Note that Section (iv) of the survey was only available to forest practitioners who self-identified specifically as forest owners at the start of the survey. For this reason, analysis about responses in section (iv) are not reported in this Deliverable and can be found in the HoliSoils Deliverable 4.2. The full forest practitioner questionnaire is available [Appendix B](#).

Theoretical framework: measuring forest practitioners’ behaviours and beliefs

Section (iii) of the survey elicited forest practitioner perceptions towards forest management. Specifically, this section was interested in eliciting the forest practitioners’ beliefs towards implementing their forest management objectives. A theoretical framework was therefore applied in order to determine which perceptions are relevant for determining behaviour and how to best measure these perceptions.

While there are a variety of competing theories positing the relationship between behavioural factors and behaviour, this study employs the theory of planned behaviour (TPB), an extension of the theory of reasoned action (TRA) (see: Fishbein and Ajzen, 2010). TPB posits that behaviour and behavioural intentions are driven by three antecedents: attitudes, subjective norms, and perceived behavioural control. These three

antecedents are shaped by the beliefs held by the individual, namely *behavioural beliefs*, *normative beliefs*, and *control beliefs* (see: Figure 1).

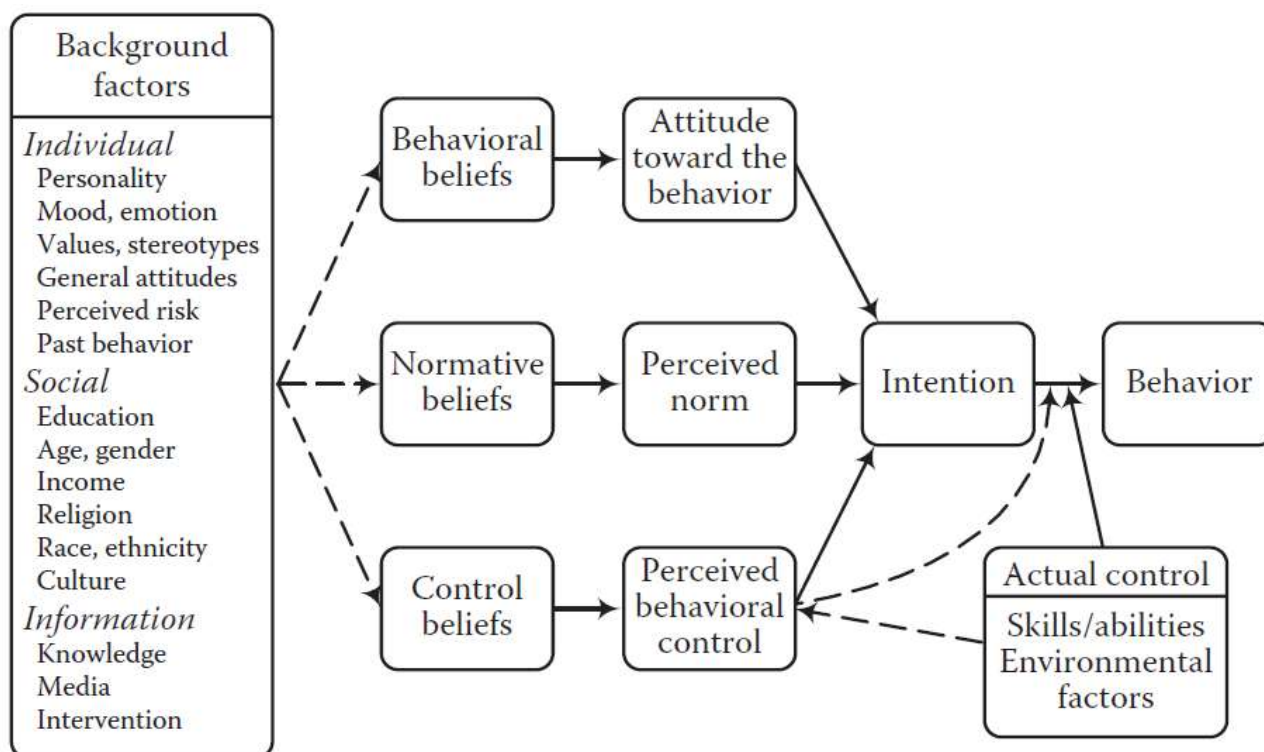


FIGURE 1. THEORY OF PLANNED BEHAVIOUR DESCRIBING RELATIONSHIP OF ANTECEDENTS TO BEHAVIOURAL ACTION (FIGURE FROM: FISHBEIN AND AJZEN, 2010)

The items in Section (iii) of the survey were developed following Fishbein and Ajzen's (2010) standardized approach to constructing a TPB questionnaire. This includes conducting elicitation research through interviews with the target group to ascertain salient topics to be included in the survey. The elicitation study included 19 interviews and was administered by researchers from the Forwards and ForestPaths projects between May 2023 and August 2023. The findings from the interviews are reported in the ForestPaths Deliverable 1.2.

The salient topics included in the survey were ultimately selected from the list of commonly discussed topics derived from the qualitative content analysis of the interviews (see: ForestPaths D1.2). Table 1 presents the statement question and key topics associated with the behavioural beliefs, normative beliefs, and control beliefs in the survey. Further details on measurement scale development for the survey are available in Chapter 2 of ForestPaths Deliverable 1.3.

TABLE 1. SUMMARY OF SALIENT TOPICS INCLUDED IN THE SURVEY TO MEASURE BEHAVIOURAL, NORMATIVE, AND CONTROL BELIEFS.

Behavioural beliefs – evaluating outcomes associated with implementing the behaviour					
<i>1. "How important do you find the following forest management objectives?"</i>					
1	Timber income	7	Forest access	13	Climate change mitigation
2	WFP income	8	Forest safety	14	Biotic disturbances
3	Service income	9	Forest beauty	15	Abiotic disturbances
4	WFP production	10	Biodiversity habitats	16	Cultural heritage
5	Timber production	11	Soil quality	17	Traditional knowledge
6	Recreation	12	Water quality		
Normative beliefs – influence of key referent groups over the behaviour					
<i>1. To what extent do you think that the following individuals would approve or disapprove of the implementation of your forest management objectives?</i>					
<i>2. How important are the opinions of the following individuals regarding your decision to implement your forest management objectives?</i>					
1	Family	4	Public	7	Local forest authority
2	Friends	5	Other owners	8	National forest authority
3	Neighbours	6	Forest owner association		
Control beliefs topics – impact of different types of resources on implementing the behaviour					
<i>Q1. How important would access to the following resources be for implementing your forest management objectives?</i>					
<i>Q2. What do you think is the likelihood that you will have sufficient access to the following resources?</i>					
1	Manual labour	4	Credit or loans	7	Market schemes
2	Technology	5	Advisory services	8	Voluntary agreements
3	Infrastructure	6	Subsidies or grants		

Data analysis

The forest practitioner data was analysed using various statistical methods.

Firstly, the data was described and summarized using descriptive statistics analyses, such as means, standard deviations, crosstabulations, and chi-square tests of response frequencies across forest practitioner types.

Secondly, exploratory factor analysis (see: Hair et al., 2019: Chapter 3) was applied to reduce the behavioural belief items, normative belief items, and control belief items (see: Table 1) into underlying behavioural factors and subsequently derive new continuous variables for further analysis. The exploratory factor analysis were assessed based on multiple criteria including, KMO test, Bartlett's test, extracted communalities of items (>.40), Cronbach's alpha (>.700), and the cumulative percentage of variance explained between factors (>50%). Continuous variables were derived by saving the Bartlett Factor Scores of the final factor solutions.

Following the development of the behavioural factors, one-way analysis of variance (ANOVA) testing was conducted to test differences between different groups of forest practitioners and the behavioural factors. In the case of significant findings, post-hoc tests were used to identify between which groups differences lie and the directionality of the differences. If equal variance was found between groups, the LSD post-hoc test was applied. If equal variance was not found between groups, Tamhane's T2 post-hoc test was applied.

Lastly, binary regression models and multinomial regression models (see: Hair et al., 2019: Chapter 8) were implemented to estimate the effect of the behavioural factors on different behaviour (i.e., forest management activities). The fitness of the models was assessed using pseudo r^2 measures including McFadden's R^2 , MacFadden's adjusted R^2 , Cox-Snell, and Nagelkerke. As the literature cites challenges with interpreting pseudo R^2 values and cautions against the explicit use of cut-off values, the predictive accuracy of the models are also reported alongside the area under the curve (AUC) value for binary regression models.

The general public survey

The general public survey was partitioned into six sections eliciting information about the respondent's (i) forest values, (ii) ecological values, (iii) perception towards forest practitioners (iv) forestry knowledge, (v) perceptions towards forest management practices, and (vi) basic socio-demographic questions. The full General Public Survey is available [Appendix C](#).

Conceptual framework: public acceptability towards forest management

There are various studies hypothesising the relationship between the public's attitudes towards forest management and acceptability towards forest management practices (e.g., Ford et al., 2014; Ericksson et al., 2017; McFarlane et al., 2012, Kendal et al., 2022; St. Laurant et al., 2019). Such studies explore a variety of underlying cognitive dimensions that drive acceptability. Building upon this previous literature, a theoretical framework for acceptability towards forest management was developed (Figure 2). The theoretical framework explores attitudes towards climate-smart forestry and restoration management activities by evaluating the general public's *forest values*, *environmental attitudes*, *trust towards forest practitioners*, and *knowledge about forestry*, and the effect of these dimensions on *acceptability* towards different forest management practices. The survey was designed to measure each of the dimensions of the theoretical framework. The measurement scales for each dimensions are described below.

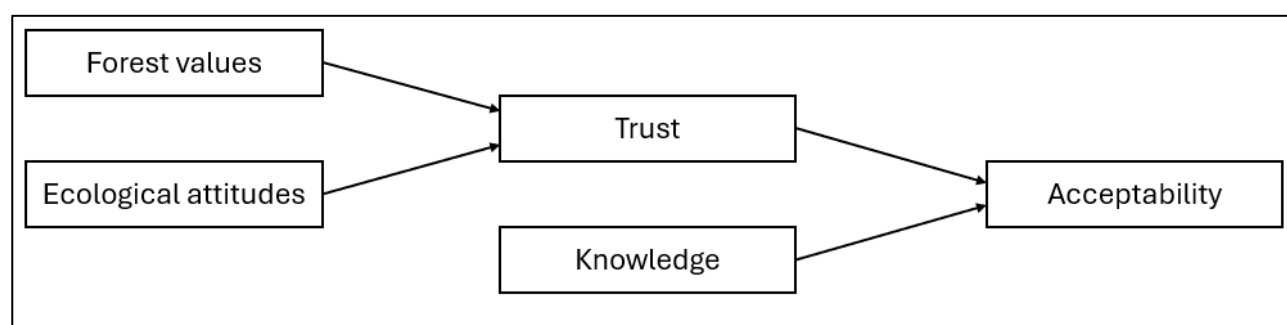


FIGURE 2. CONCEPTUAL FRAMEWORK DESCRIBING RELATIONSHIP BETWEEN ACCEPTABILITY FOR FOREST MANAGEMENT ACTIVITIES AND UNDERLYING COGNITIVE DIMENSIONS.

Acceptability

Acceptability towards the different forest management practices was measured by directly asking the respondent to state how strongly they would approve of 10 different forest management activities being implemented within their country. Each management activity was defined to avoid misunderstandings across the multiple translations of the survey. Table 2 presents the different management activities and the definitions provided in the survey. Responses to the acceptability were anchored on six point scale, from *highly unacceptable* (-3) to *highly acceptable* (3).

TABLE 2. DESCRIPTION OF FOREST MANAGEMENT SCENARIOS DEVELOPED FOR THE SURVEY.

Management activity	Definition provided in the survey
Clearfelling/Clearcutting	a harvesting approach, where all trees in a forest stand are uniformly harvested.
Selective felling	a harvesting approach, where only a select set of individual trees or groups of trees in a forest stand are harvested.
Ash fertilization	a silvicultural practice, where fertilizer made from burned wood, peat, or agrobiomass is applied to a forest stand.
Fertilization	a silvicultural practice, where synthetic fertilizer (e.g., phosphorus, nitrogen) is applied to a forest stand.
Salvage logging	a silvicultural practice, where trees are harvested after they have been damaged or died off due to a natural disturbance (e.g., windthrow, fire, or pest outbreaks).
Sanitation logging	a silvicultural practice, where trees are harvested to prevent pest outbreaks (e.g., fungus, insects).
Deadwood retention	a silvicultural practice, where trees that are damaged or die off due to natural disturbance are left in the forest.
Reforestation	the re-establishment of forest on a site that was once forested, but not in recent years.
Regeneration	the establishing of forest on a recently harvested forest site by planting or natural regeneration.
Afforestation	the establishment of forest in non-forested land (e.g., meadow to forest; farm to forest).

Knowledge

There are various approaches to testing knowledge among the public in survey studies. For example, researchers have previously employed quizzes to test the respondent's knowledge about forestry (e.g., McFarlane et al., 2012; Kendel et al., 2022; St. Laurant et al., 2019). However, given the wide range of management activities presented in the survey, it was unfeasible to create standardized quizzes for each activity. Instead, respondents are asked to self-identify the extent of their knowledge towards the 10 different forest management activities presented in the survey (Table 3). The four response categories included “*Never heard of it before*”, “*Heard of it, but no previous knowledge*”, “*Have knowledge of it*”, and “*Have expert knowledge of it*”. The responses to the 10 measures were averaged to create a singular continuous measure of knowledge.

Trust

St-Laurant et al. (2019) find that the public's trust can differ depending on the type of forest actor being evaluated. For this reason, trust was measured through three statements directed at three different types of forest practitioners: private citizens (A), public managers (B), and private companies (C). The statements were: “[*Practitioner A/B/C*] consider the needs of society when managing their forest”, “[*Practitioner A/B/C*] manage their forest in a good way”, and “I trust how [*Practitioner A/B/C*] manage their forest”. Responses were anchored on a six-point scale from *strongly disagree* (-3) to *strongly agree* (3). Responses to the 9 items measures were transformed into three continuous measures representing subscales of trust towards public managers, trust towards private citizens, and trust towards private companies. A confirmatory factor analysis using structural equation modelling found that the measures held a moderate but acceptable fit (see: [Appendix G](#)).

Environmental attitudes

Environmental attitudes were measured through the new environmental paradigm (NEP) scale, as it represents a valid and reliable instrument for measuring *pro-ecological orientation* (Dunlap et al., 2000). The NEP scale is argued to tap into “primitive beliefs” that form a core source of pro-environmental beliefs and is found to have predictive validity and a significant relationship to various behaviours (Dunlap et al., 2000: pg. 427). While the classical NEP scale proposes the use of sixteen items, recent research by Zhu and Lu (2017) applying item-response theory to a Chinese translation of the classical NEP instrument finds that the contribution of negatively worded items is redundant and perform imprecisely relative to positively worded items. They argue this is partially due to translation issues associated with negatively phrased items. Given that the survey in this research was translated into multiple languages, this research applies Zhu and Lu’s (2007) revised eight item NEP scale rather than the classic sixteen item scale. The eight measures were reduced into a continuous variable after using confirmatory factor analysis (see: Hair et al., 2019: chapter 10) to confirm the validity of the latent construct and measurements. The results of the confirmatory factor analysis are reported in [Appendix G](#).

Forest values

Rawluk et al. (2019) argues that the ecosystem services derived from forest represent a type of forest value, in that they depict the benefits valued to be obtained as the outcomes of a forest landscapes. Hence, *forest values* were measured through a series of evaluative measures asking respondents to assign importance to 15 different ecosystem service benefits provided by forest in their country. Responses were anchored on a 4-point scale from “not at all important” (1) to “very important” (4). The measures were reduced to three forest value subscale through the use of exploratory factor analysis (Hair et al., 2019: Chapter 3). The three measures were named *provisioning services*, *regulatory services*, and *cultural services*. The outputs of the exploratory factor analysis are reported in [Appendix G](#).

Data analysis

The general public survey data was analysed using various statistical methods. First, the data was described through descriptive statistics, such as average counts and crosstabulations of response frequencies across countries. Secondly, exploratory factor analysis (see: Hair et al., 2019: Chapter 3) was applied to reduce the forest values items into subscales and derive new continuous variables for further analysis. Thirdly, confirmatory factor analysis (see: Hair et al., 2019: Chapter 10) was used to test the validity of the NEP items and trust items as measurement scales before deriving new continuous variables for further analysis. Following the development of the measurement scales, binary regression modelling (see: Hair et al., 2019: Chapter 8) was implemented to test the effect of the different scales on acceptance towards different forest management practices.

Forest practitioner survey results

The forest practitioner dataset consisted of pooled survey responses collected both from the distribution conducted by the polling agency and by the forestry association networks. After pooling and cleaning the datasets, the final forest practitioner dataset consisted of 2254 respondents from 13 countries. Given the broad range of characteristics associated with different types of forest management, respondents were grouped into six classes of forest practitioners: *public managers*, *private managers*, *public-private managers*, *forest owners*, *forest owners and managers*, and *family member managers*. Definitions for each class are provided in Table 3 and a breakdown of the forest practitioner classes by country is presented in Table 4.

TABLE 3. DESCRIPTION OF FOREST PRACTITIONER CLASSES.

Forest practitioner classes	Description of classes
Public manager (PuM)	Manages publicly owned forestland that is owned by a local, regional, or national public entity.
Private manager (PM)	Manages privately owned forestland that is owned by an individual, corporation, foundation or other legal private entity.
Public-private manager (PPM)	Manages both privately and publicly owned forestlands.
Forest owner (FO)	Is the owner of the forestland they manage.
Forest owner and manager (FOM)	Owns the forest they manage <u>and</u> also acts as a manager for a privately or publicly owned forest (not for a family member's forest).
Family member manager (FMM)	Manages forestland on behalf of a family member but does not own the family forest.

TABLE 4. OVERVIEW OF FOREST PRACTITIONER RESPONDENTS BY COUNTRY AND FOREST PRACTITIONER CLASSIFICATION.

	PuM	PM	PPM	FO	FOM	FMM	Total
Croatia	28	23	6	230	16	16	319
Czechia	25	21	6	118	18	4	192
Finland	6	22	0	175	59	18	280
France	13	13	4	59	9	1	99
Germany	17	13	3	60	17	3	113
Italy	10	9	1	35	9	0	64
Latvia	68	64	9	217	49	22	429
Netherlands	14	7	2	4	2	2	31
Romania	47	14	22	194	22	6	305
Spain	21	14	0	32	9	1	77
Sweden	6	24	7	103	13	1	154
Switzerland	16	17	3	55	13	5	109
United Kingdom	22	20	2	21	15	2	82
Total	293	261	65	1303	251	81	2254
PuM: Public manager; PM= Private manager; PPM= Private-public manager; FO= Forest owner; FOM= Forest owner and manager. FMM= Family member manager; Total = sum of all forest practitioners							



Behavioural beliefs: important forest management objectives

The behavioural beliefs of forest practitioners were captured by measuring the importance towards 17 different forest management objectives (see: Table 1). When examining all survey responses to the 17 items, respondents, on average, rated the five most important forest management objectives to be: i) *biodiversity preservation* ($\mu=4.92$, $SD=1.101$), ii) *reducing biotic forest disturbances* ($\mu= 4.77$, $SD=1.153$), iii) *reducing abiotic forest disturbances* ($\mu=4.74$, $SD=1.164$), iv) *safeguarding cultural heritage sites* ($\mu=4.68$, $SD=1.21$), and v) *mitigating climate change* ($\mu=4.63$, $SD=1.285$). Meanwhile, on average, the three least important objectives were *generating income from timber* ($\mu=3.99$, $SD=1.469$), *generating income from wild forest products* ($\mu=3.82$, $SD= 1.555$), and *generating income from recreational services* ($\mu=3.60$, $SD= 1.568$). Figure 3 depicts the frequency of responses towards each of the 17 management objectives across survey respondents.

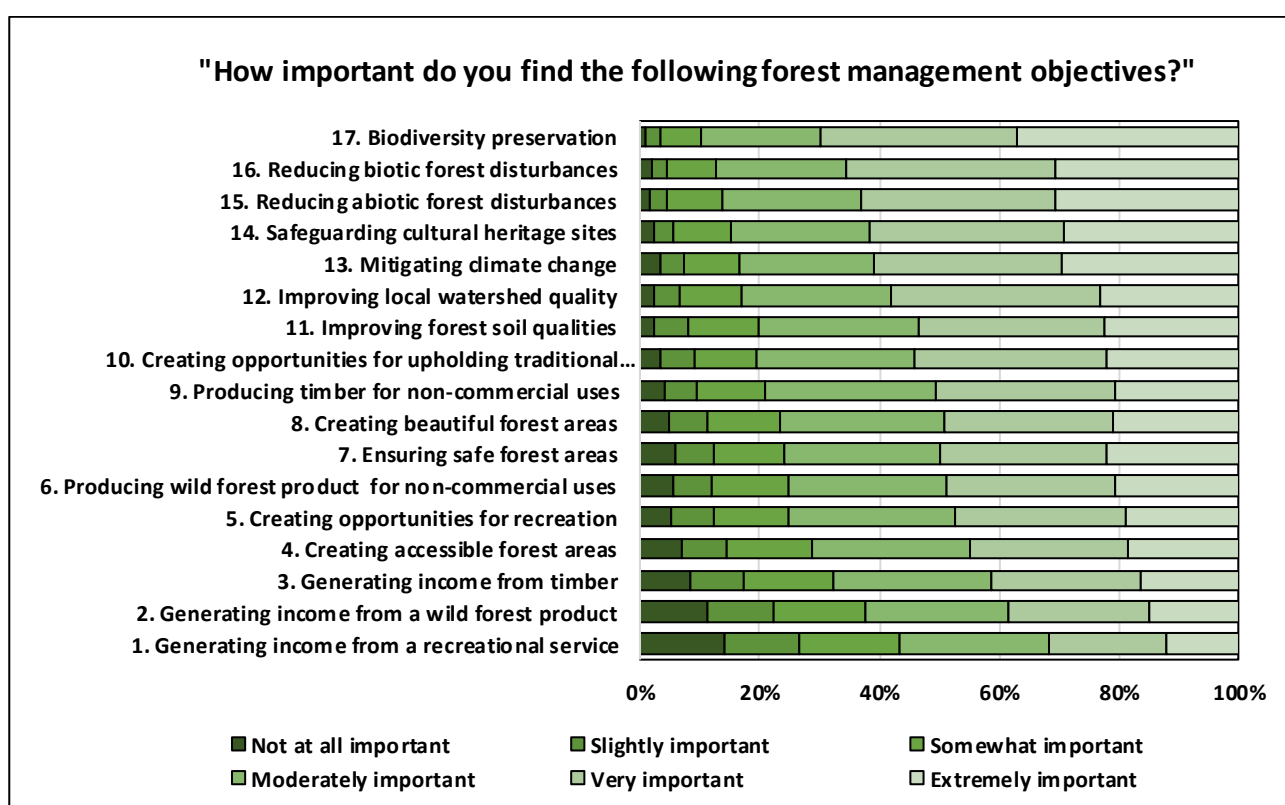


FIGURE 3. FREQUENCY OF RESPONSES IN PERCENTAGES ACROSS ALL SURVEY RESPONDENTS (N=2254). MANAGEMENT OBJECTIVES ARE ORDERED IN RANK FROM MOST IMPORTANT (17) TO LEAST IMPORTANT (1) BASED ON THE MEAN RESPONSE.

Mean responses to the 17 items measuring importance towards forest management objectives were crosstabulated according to the different forest practitioner classes and the relationship between the two variables was analysed using a chi-square test. 13 of the 17 chi-square tests showed a significant relationship, signalling a general trend that there is a relationship between forest practitioner class and importance towards forest management objectives. Table 5 presents the crosstabulations.

TABLE 5. RESPONSE TO ITEMS MEASURING IMPORTANCE TOWARDS FOREST MANAGEMENT OBJECTIVES (1= NOT AT ALL IMPORTANT, 6= VERY IMPORTANT). MEAN VALUES ARE DISPLAYED IN THE CELLS UNDER THE FOREST PRACTITIONER CLASSES. RESULTS FROM THE CHI-SQUARE TEST ARE DEPICTED IN THE LAST COLUMN (SIG=P<.05).

	All	FO	FOM	PuM	PM	PPM	FMM	χ^2 test
Generating income from timber	3.99	4.44	4.24	4.35	3.77	4.39	3.53	<.001
Generating income from a wild forest product	3.82	4.26	4.04	3.89	3.67	3.92	3.52	<.001
Generating income from a recreational service	3.60	4.32	3.98	4.05	3.35	3.63	3.16	<.001
Producing wild forest products	4.27	4.42	4.30	4.02	4.2	4.47	4.30	<.001
Producing timber for non-commercial uses	4.37	4.33	4.37	4.29	4.33	4.59	4.46	<.001
Creating opportunities for recreation	4.23	4.61	4.37	4.15	4.12	4.39	3.96	<.001
Creating accessible forest areas	4.12	4.59	4.44	4.09	3.98	4.04	3.95	<.001
Ensuring safe forest areas	4.30	4.83	4.63	4.18	4.15	4.22	4.10	<.001
Creating beautiful forest areas	4.31	4.66	4.53	4.20	4.19	4.37	4.07	<.001
Biodiversity preservation	4.92	5.14	4.93	4.82	4.87	4.96	4.95	.073
Improving forest soil qualities	4.45	4.82	4.68	4.22	4.35	4.45	4.28	<.001
Improving local watershed quality	4.55	4.86	4.60	4.57	4.48	4.53	4.44	.002
Mitigating climate change	4.63	4.93	4.79	4.62	4.56	4.53	4.49	.003
Reducing biotic forest disturbances	4.77	4.94	4.79	4.65	4.72	4.9	4.62	.302
Reducing abiotic forest disturbances	4.74	4.93	4.77	4.77	4.69	4.8	4.49	.015
Safeguarding cultural heritage sites	4.68	4.86	4.81	4.63	4.63	4.65	4.56	.133
Creating opportunities for upholding traditional knowledge	4.45	4.60	4.46	4.20	4.39	4.59	4.46	.126
PuM: Public manager; PM= Private manager; PPM= Private-public manager; FO= Forest owner; FOM= Forest owner and manager. FMM= Family member manager; Total = sum of all forest practitioners								

The 17 items measuring importance towards forest management objectives were analysed and reduced using principal axis factoring with varimax rotation. The results of the analysis are presented in Table 6. A satisfactory three-factor solution was achieved explaining 53.75% of the variance of the 13 items retained in the analysis. The subscales mostly showed appropriate levels of internal consistency (>.700), although the third factor was relatively poor (.635). The three subscales were named *cultural services*, *regulating services*, and *provisioning services*. These naming decisions reflect the types of items with the largest factor score grouping together in the different rotated factor matrix factors (see: Table 6). The three continuous subscales represent a measure of importance towards each of the three different types of ecosystem services.

TABLE 6. OUTPUTS OF THE FINAL ROTATED FACTOR MATRIX SOLUTION APPLYING PRINCIPAL AXIS FACTORING WITH VARIMAX ROTATION ON ITEMS MEASURING BEHAVIOURAL BELIEFS. HIGHEST FACTOR LOADING VALUE IN BOLD.

	Factors			Communalities
	Cultural	Regulating	Provisioning	Extraction
Generating income from timber	0.106	0.05	0.75	0.576
Generating income from a wild forest product	0.437	0.221	0.542	0.534
Producing timber for non-commercial uses	0.175	0.162	0.416	0.230
Creating opportunities for recreation	0.644	0.268	0.212	0.532
Creating accessible forest areas	0.752	0.278	0.233	0.696
Ensuring safe forest areas	0.682	0.369	0.209	0.646
Creating beautiful forest areas	0.702	0.347	0.173	0.643
Biodiversity preservation	0.267	0.662	-0.005	0.509
Improving forest soil qualities	0.348	0.623	0.184	0.543
Improving local watershed quality	0.355	0.633	0.138	0.545
Mitigating climate change	0.268	0.673	0.076	0.531
Reducing biotic forest disturbances	0.132	0.592	0.291	0.452
Reducing abiotic forest disturbances	0.198	0.633	0.207	0.482
% of Variance	20.14%	22.40%	11.21%	-
Cronbach's Alpha	0.870	0.853	0.635	-
KMO Test				0.926
Bartlett's Test of Sphericity				<.001

One-way ANOVA and post-hoc tests were conducted to evaluate the relationship between the forest practitioner classes and perceived importance towards *cultural services*, *regulating services*, and *provisioning services* by applying the subscales developed from the principal axis factoring analysis as a dependent variable. The full set of ANOVA results are presented in [Appendix D](#).

The ANOVA was statistically significant in the case of *cultural services* ($F(5,2248) = 8.121$, $p = \leq .001$) and *provisioning services* ($F(5,2248) = 12.291$, $p = \leq .001$) but insignificant for *regulatory services* ($F(5,2248) = 1.243$, $p = 0.286$). Levene's test found that variance between groups to be unequal in the case of *regulating services* ($p < .001$) and *cultural services* ($p < .001$), and as the samples sizes between groups are also unequal, caution must be taken with the interpretation of the ANOVA findings. Nevertheless, Welch's tests confirmed the statistically significant findings between groups in the case of *cultural services* ($p < .001$) and *provisioning services* ($p < .001$). Similar to the ANOVA, the Welch's test for *regulatory services* was insignificant ($p = .162$).

The post-hoc Tamhane's test for the *cultural services (importance)* subscale indicated that the mean of the forest owner group (FO) and forest owner and manager (FOM) group were both statistically significantly lower than that of public managers (PuM) and private managers (PM). The post-hoc LSD test of the *provisioning services (importance)* subscale indicated that the mean of the forest owner (FO) and family member manager (FMM) groups was statistically significantly lower compared to that of public forest managers (PuM), private managers (PM), public-private managers (PPM), and forest owners and managers (FOM). Figure 4 plots the means score for the *provisioning service* and *cultural services* importance subscales

according to each forest practitioner class helping to illustrate the directionality of differences between practitioner classes.

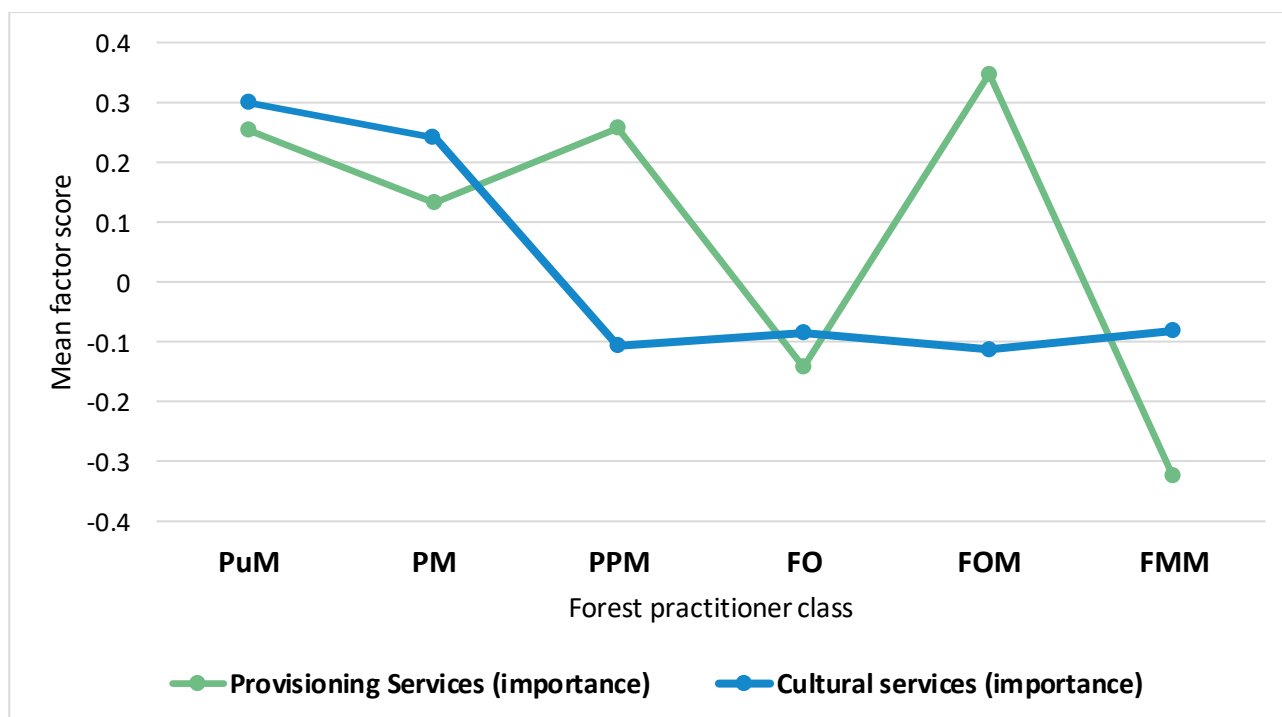


FIGURE 4. PLOT OF MEAN SCORES TO PROVISIONING SERVICES (IMPORTANCE) AND CULTURAL SERVICES (IMPORTANCE) SUBSCALES ACCORDING TO THE SIX DIFFERENT FOREST PRACTITIONER CLASSES. NOT ALL PRACTITIONER CLASSES SHOW STATISTICALLY SIGNIFICANT DIFFERENCES DESPITE DIFFERENCES IN MEANS. HOW TO READ THE FIGURE: AS MEAN SCORE INCREASES, THE PRACTITIONER CLASSES IMPORTANCE TOWARDS THE RESPECTIVE ECOSYSTEM SERVICE INCREASES.

Normative beliefs: the influence of referent groups on forest management

Normative beliefs influencing forest management decision making was captured through 16 items: 8 items measuring *subjective societal approval* of different societal referent groups towards the respondent's management objective, and 8 items measuring the *importance* of different societal referent groups towards forest management decision making (Table 1).

Subjective societal approval

To measure subjective societal approval, respondents were asked "To what extent do you think that the following individuals would approve or disapprove of the implementation of your forest management objectives?". Following, they were presented with the list of 8 different referent groups.

When examining responses to the 8 items measuring *subjective societal approval*, the respondents altogether (n=2254), on average, rated the two most approving referent groups to be *my family* ($\mu=2.01$, $SD=1.10$) and *my friends* ($\mu=1.73$, $SD=1.78$), while the least approving referent group was perceived to be *the general public* ($\mu=1.29$, $SD=1.24$). Figure 5 depicts the frequency of responses across the entire survey.

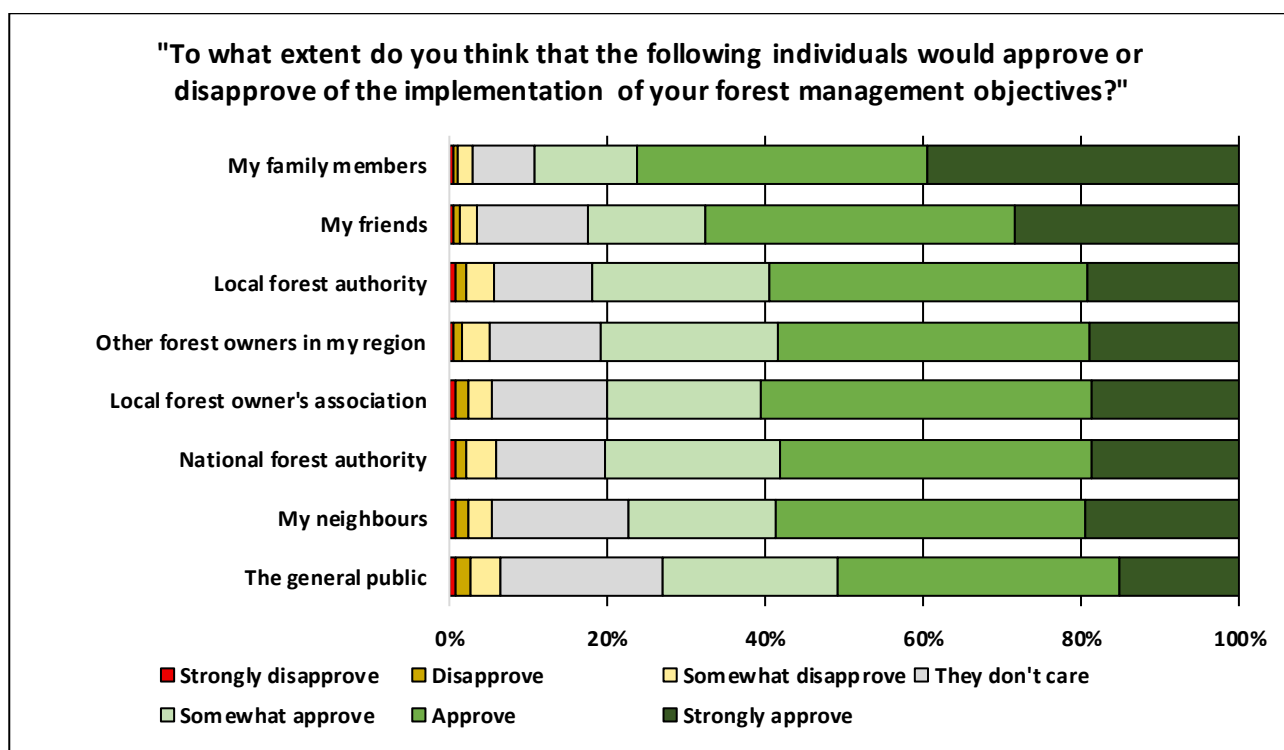


FIGURE 5. FREQUENCY OF RESPONSES PROVIDED ACROSS ALL SURVEY RESPONDENTS (N=2254). REFERENT GROUPS ARE ORDERED FROM MOST APPROVING (TOP) TO LEAST APPROVING (BOTTOM) BASED ON THE MEAN RESPONSE.

Responses to the 8 items measuring *subjective societal approval* were crosstabulated by the six forest practitioner classes and the relationship between the two variables was analysed using a chi-square test. All 8 chi-square tests were significant, indicating a relationship between the two variables. The crosstabulations are presented in Table 7.

TABLE 7. MEAN RESPONSES BY FOREST PRACTITIONER CLASS TO THE STATEMENT "TO WHAT EXTEND DO YOU THINK THAT THE FOLLOWING INDIVIDUALS WOULD APPROVE OR DISAPPROVE OF THE IMPLEMENTATION OF YOUR FOREST MANAGEMENT OBJECTIVES?" (MEASURED FROM -3 = STRONGLY DISAPPROVES TO 3= STRONGLY APPROVES, WITH 0= THEY DON'T CARE).

Referent groups	PuM	PM	PPM	FO	FOM	FMM	All	χ^2 test
My family members	1.90	1.98	1.69	1.98	2.29	2.25	2.01	<.001
My friends	1.76	1.82	1.38	1.67	1.98	1.90	1.73	<.001
My neighbours	1.59	1.45	1.20	1.39	1.80	1.58	1.47	<.001
The general public	1.54	1.39	1.09	1.18	1.48	1.26	1.29	<.001
Other forest owners in my region	1.75	1.60	1.49	1.39	1.79	1.33	1.51	<.001
Local forest owner's association	1.76	1.64	1.51	1.38	1.75	1.44	1.50	<.001
Local forest authority	1.82	1.64	1.68	1.39	1.69	1.52	1.52	<.001
National forest authority	1.82	1.65	1.46	1.32	1.74	1.60	1.48	<.001
PuM: Public manager; PM= Private manager; PPM= Private-public manager; FO= Forest owner; FOM= Forest owner and manager. FMM= Family member manager; Total = sum of all forest practitioners								

The 8 items measuring *subjective societal approval* were analysed and reduced using principal axis factoring with varimax rotation. The results are presented in Table 8. A satisfactory two-factor solution was achieved explaining 62.52% of the variance of the 6 items retained in the analysis. The subscales showed appropriate levels of internal consistency (Cronbach alphas >.700). The two subscales were named *forestry networks (approval)* and *citizens (approval)*, as the items with the largest factor loadings grouping under each factor represented referents belonging to forestry networks (i.e., *national forest authority*, *local forest authority*, *local forest owners' association*) and referents representing citizens from society at large (i.e., *my neighbours*, *my friends*, *the general public*). The two subscales developed from principal axis factor ultimately represent a measure of perceived approval from two different types of societal groups.

TABLE 8. OUTPUTS OF THE FINAL ROTATED FACTOR MATRIX SOLUTION APPLYING PRINCIPAL AXIS FACTORING WITH VARIMAX ROTATION ON ITEMS MEASURING SOCIETAL APPROVALS. HIGHEST FACTOR LOADING VALUE IN BOLD.

	<u>Factors (approval)</u>		<u>Communalities</u>
	Forestry networks	Citizens	Extraction
My friends	0.262	0.699	0.558
My neighbours	0.306	0.734	0.632
The general public	0.403	0.572	0.490
Local forest owner's association	0.655	0.436	0.620
Local forest authority	0.797	0.315	0.735
National forest authority	0.788	0.310	0.717
% of Variance	33.50	29.02	-
Cronbach's alphas	0.864	0.783	-
Bartlett's test of sphericity			<.001
KMO measure of sampling adequacy			0.862

One-way ANOVA tests were conducted to evaluate the relationship between forest practitioner classes and their *subjective societal approval* by applying the two subscales developed from the principal axis factoring analysis as a dependent variable in the ANOVA. The full set of results are presented in [Appendix D](#).

The ANOVA was statistically significant in both the case of the *forestry network (approval)* subscale ($F(5,2248) = 11.450, p = \leq .001$) and *citizen (approval)* subscale ($F(5,2248) = 4.535, p = \leq .001$). However, as the Levene's test found unequal variance between the practitioner groups, and the practitioner group samples sizes are also unequal, this necessitates caution with the interpretation of the significant ANOVA findings. Nevertheless, a Welch's tests confirmed the statistically significant findings between groups in the case of both the forestry network approval measure ($p < .001$) and the public's approval measure ($p < .001$).

The post-hoc Tamhane's T2 test of the *forestry networks (approval)* subscale indicated that the mean of forest owner (FO) group was statistically significantly lower than that of public managers (PuM), private managers (PM), and forest owners that are also managers (FOM). The post-hot Tamhane's T2 test of the *citizens (approval)* sub-scale indicated that the mean of the forest owner and manager group (FOM) group was statistically significantly higher than that of public-private managers (PPM) and forest owners (FO). Figure 6 plots the means score for the *forestry network* and *citizens* approval subscales according to each forest practitioner class helping to illustrate the directionality of differences between practitioner classes.

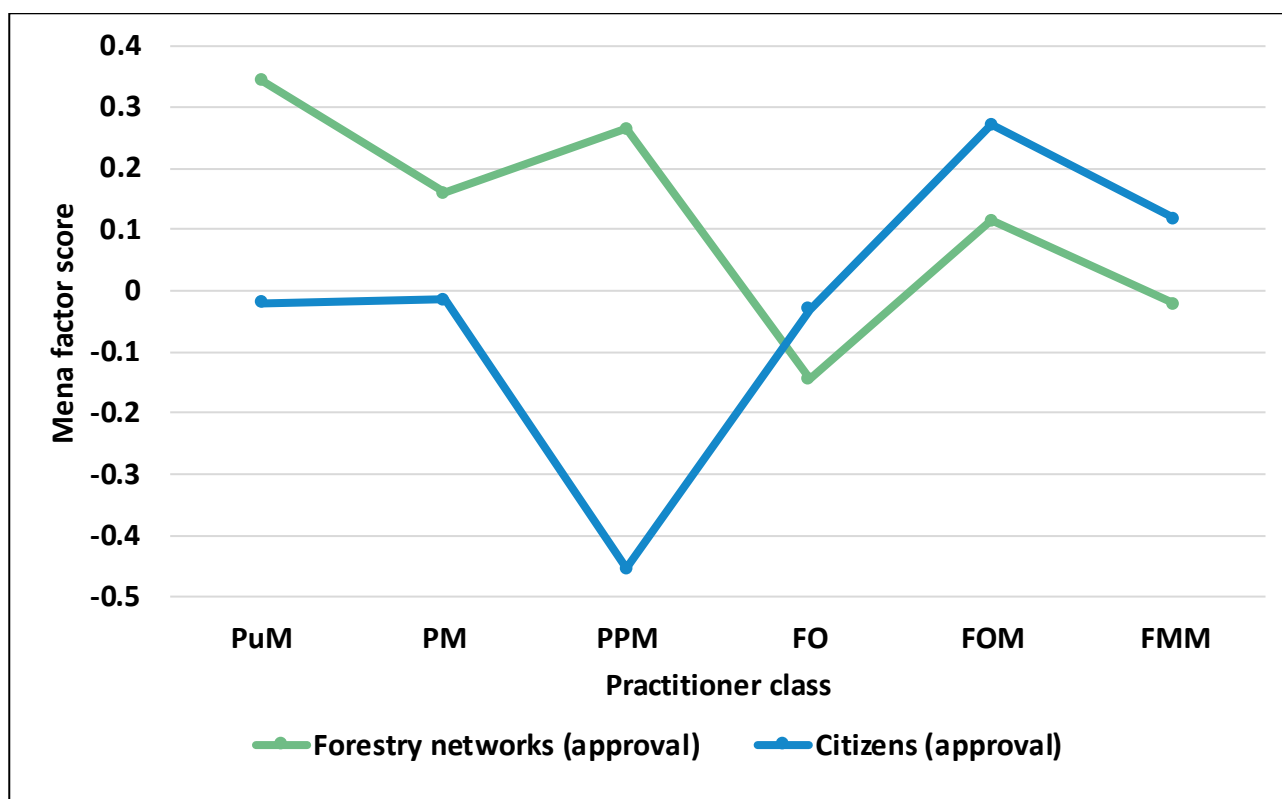


FIGURE 6. PLOT OF MEAN SCORES TO CITIZENS (APPROVAL) AND FORESTRY NETWORKS (APPROVAL) SUBSCALE ACCORDING TO THE SIX DIFFERENT FOREST PRACTITIONER CLASSES. NOTE THAT NOT ALL PRACTITIONER CLASSES SHOWED STATISTICALLY SIGNIFICANT DIFFERENCES DESPITE WIDE DIFFERENCES IN MEANS. HOW TO READ THE FIGURE: AS MEAN FACTOR SCORE INCREASE, THE PRACTITIONER CLASSES PERCEIVED SUBJECTIVE APPROVAL FROM THE RESPECTIVE REFERENT GROUP INCREASES.

Importance of society

To measure subjective societal importance, respondents were asked “*How important are the opinions of the following individuals regarding your decision to implement your forest management objectives?*”. Following, respondents were presented with the list of 8 different referent groups (see: Table 1).

When examining responses to the items, respondents altogether ($n=2254$), on average, rated the two most important referent group to be *family members* ($\mu=4.60$, $SD=1.27$) and *local forest authorities* ($\mu= 4.33$, $SD=1.37$), while the least important referent group was *the general public* ($\mu=3.65$, $SD= 1.57$). Figure 7 depicts the frequency of responses across the entire survey.

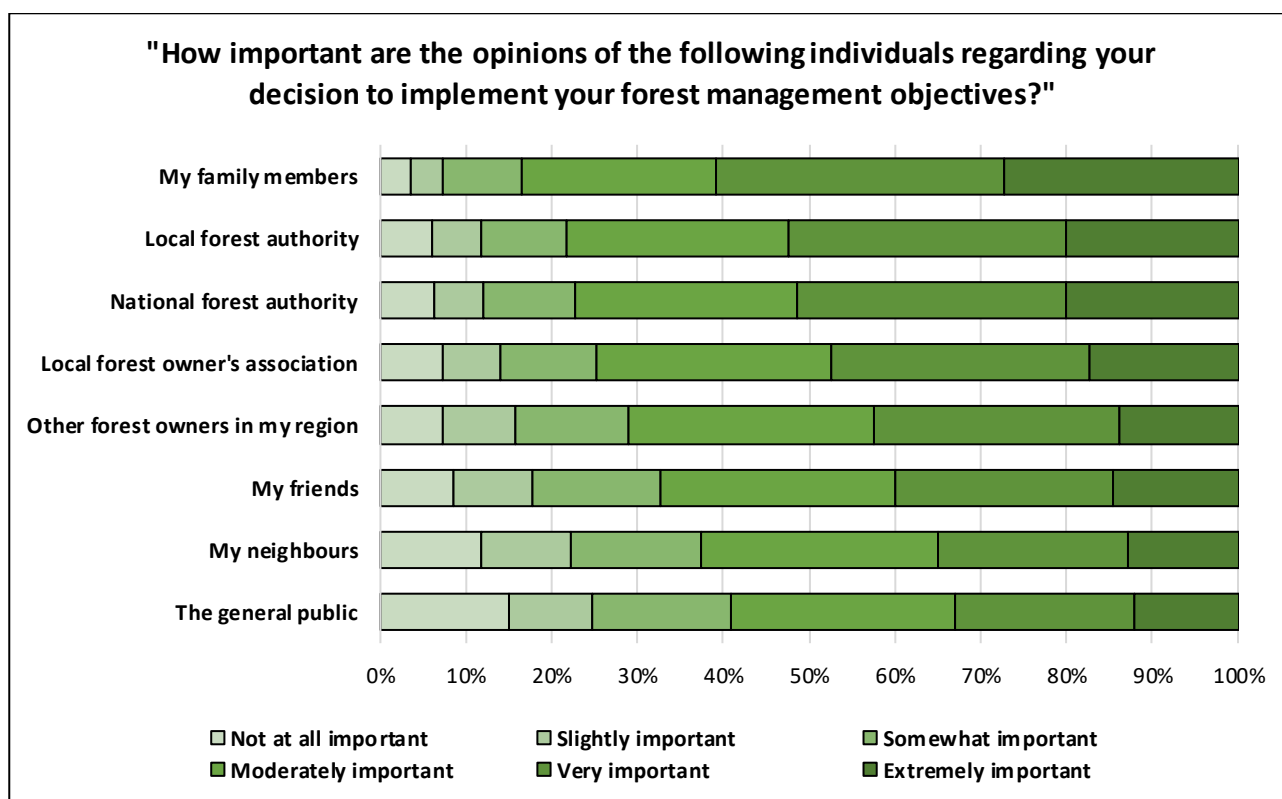


FIGURE 7. FREQUENCY OF RESPONSES PROVIDED ACROSS ALL SURVEY RESPONDENTS (N=2254). REFERENT GROUPS ARE ORDERED FROM MOST IMPORTANT (TOP) TO LEAST IMPORTANT (BOTTOM) BASED ON THE MEAN RESPONSE.

Response means to the 8 items measuring the *societal importance* were crosstabulated by the six forest practitioner classes and the relationship between the variables was analysed using a chi-square test. All 8 chi-square tests were significant, indicating a relationship between the two variables. The crosstabulations are presented in Table 9.

TABLE 9. MEAN RESPONSES BY FOREST PRACTITIONER CLASS TO THE STATEMENT "HOW IMPORTANT ARE THE OPINIONS OF THE FOLLOWING INDIVIDUALS REGARDING YOUR DECISION TO IMPLEMENT YOUR FOREST MANAGEMENT OBJECTIVES?" (MEASURED FROM 1 = NOT AT ALL IMPORTANT TO 6= EXTREMELY IMPORTANT).

Referent groups	PuM	PM	PPM	FO	FOM	FMM	All	χ^2 test
My family members	4.43	4.67	4.00	4.61	4.78	4.95	4.60	<.001
My friends	4.35	4.20	3.97	3.79	4.08	3.95	3.95	<.001
My neighbours	4.23	4.05	3.94	3.59	3.83	3.62	3.77	<.001
The general public	4.59	4.11	4.06	3.35	3.63	3.12	3.66	<.001
Other forest owners in my region	4.63	4.38	4.25	3.85	4.06	3.59	4.04	<.001
Local forest owner's association	4.73	4.53	4.17	4.02	4.15	3.75	4.18	<.001
Local forest authority	4.95	4.61	4.57	4.16	4.30	3.88	4.33	<.001
National forest authority	4.90	4.56	4.71	4.13	4.27	4.04	4.31	<.001

PuM: Public manager; PM= Private manager; PPM= Private-public manager; FO= Forest owner; FOM= Forest owner and manager. FMM= Family member manager; Total = sum of all forest practitioners

The items measuring *societal importance* were analysed and reduced using principal axis factoring with varimax rotation. The results are presented in Table 10. A satisfactory two-factor solution was achieved explaining 71.43% of the variance of the 6 items retained in the analysis. The subscales showed appropriate levels of internal consistency (Cronbach alphas >.700). The two subscales were named *forestry network (importance)* and *citizens (importance)*, as the items with the largest factor loadings grouping under each factor represented referents belonging to forestry networks (i.e., *national forest authority, local forest authority, local forest owners association*) and referents pertaining to citizens from society at large (i.e., *my neighbours, my friends, the general public*). The two continuous subscales developed from principal axis factor therefore represent a measure of perceived importance towards the opinions of the two societal groups.

TABLE 10. OUTPUTS OF THE FINAL ROTATED FACTOR MATRIX SOLUTION APPLYING PRINCIPAL AXIS FACTORING WITH VARIMAX ROTATION ON ITEMS SOCIETAL IMPORTANCE. HIGHEST FACTOR LOADING VALUE IN BOLD.

	Factors (importance)		Communalities
	Forestry networks	Citizens	Extraction
Local forest authority	0.851	0.302	0.815
National forest authority	0.846	0.257	0.782
Local forest owner's association	0.715	0.425	0.692
My neighbours	0.235	0.852	0.781
My friends	0.283	0.708	0.582
The general public	0.462	0.649	0.635
% of Variance	38.32	33.11	-
Cronbach's Alphas	0.842	0.899	-
		KMO	0.852
		Bartlett's Test of Sphericity	<.001

One-way ANOVA tests were conducted to evaluate the relationship between forest practitioner classes and the societal importance by applying the two subscales developed from the principal axis factoring analysis as a dependent variable in the ANOVA. The full set of results are presented in [Appendix D](#).

The ANOVA test was statistically significant in the case of *forestry networks (importance)* subscale ($F(5,2248) = 15.8139, p = \leq .001$) and the *citizens importance* subscale ($F(5,2248) = 9.459, p = \leq .001$). However, Levene's test found variance to be unequal between the groups, and the group samples sizes are also unequal, necessitating caution with the interpretation of the significant ANOVA findings. Welch's tests confirmed the statistically significant findings between groups in the case of both the *forestry network (importance)* subscale ($p < .001$) and the *citizens (importance)* subscale ($p < .001$).

Post-hoc Tamhane's test were conducted to determine between which groups the significant differences are found and the directionality of the difference. The post-hoc Tamhane's T2 test of the *forestry networks (importance)* subscale indicated that the mean score of public managers (PuM) was statistically significantly higher than that of all groups (FO, FOM, PM, FM) except private-public managers (PPM). The mean score of private managers (PM) was also statistically significantly higher than forest owners (FO) and family member

managers (FMM). Lastly, the mean score of public-private managers (PPM) was statistically significantly higher than family member managers (FMM).

The post-hoc Tamhane's T2 test of the *citizens (importance)* subscale indicated that the mean score for forest owners (FO) was statistically significantly lower than that of public managers (PuM) and private managers (PM). No other between group differences were statistically significant. Figure 8 plots the means score for the *forestry network* and *citizens importance* subscales according to each forest practitioner class helping to illustrate the directionality of differences between practitioner classes.

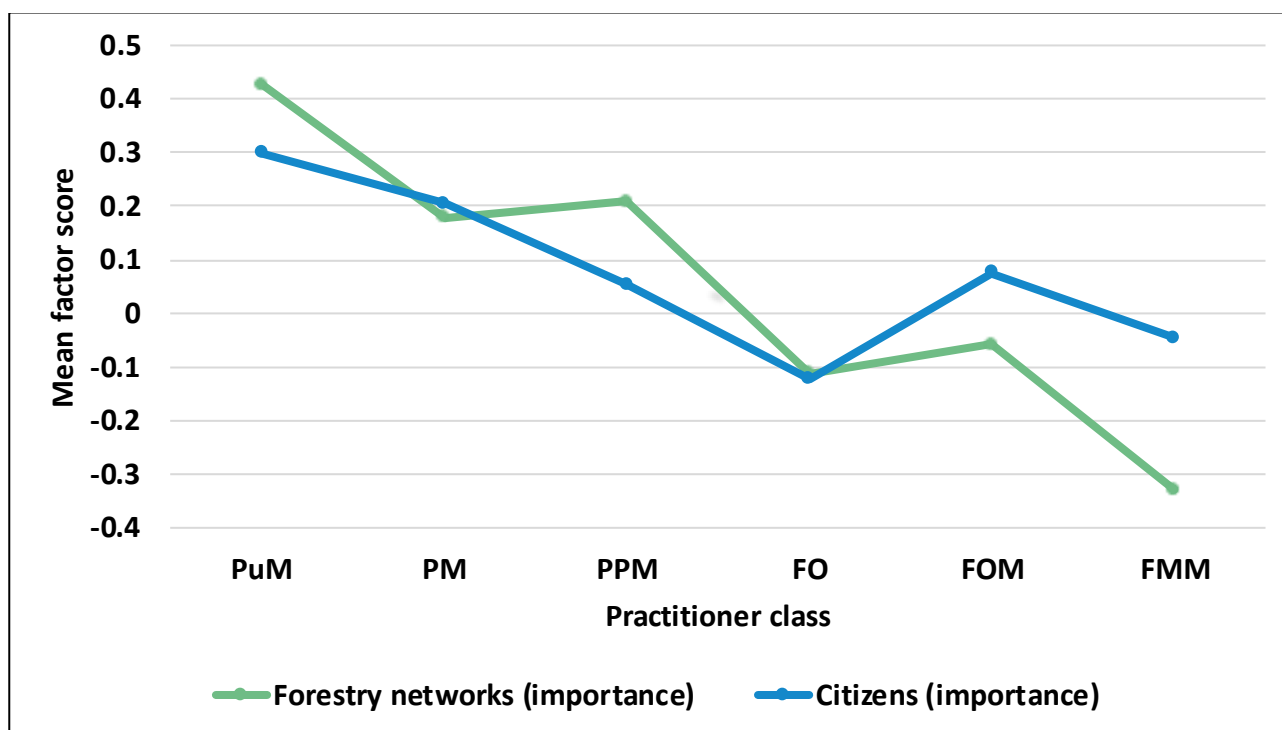


FIGURE 8. PLOT OF MEAN SCORES TO *CITIZENS (IMPORTANCE)* AND *FORESTRY NETWORKS (IMPORTANCE)* SUBSCALE ACCORDING TO THE SIX DIFFERENT FOREST PRACTITIONER CLASSES. NOTE THAT NOT ALL PRACTITIONER CLASSES SHOWED STATISTICALLY SIGNIFICANT DIFFERENCES DESPITE WIDE DIFFERENCES IN MEANS. HOW TO READ THE FIGURE: AS THE MEAN FACTOR SCORE INCREASES, PERCEIVED IMPORTANCE TOWARDS THE OPINIONS FROM THE RESPECTIVE REFERENT GROUPS INCREASES.

Control beliefs: resources for implementing forest management

Perceived behavioural control was measured through 16 items: 8 items measuring the importance of key resources for implementing forest management decisions and 8 items measuring expected availability of the key resources (see: Table 1).

Resource importance

To measure the importance of key resources for implementing forest management objectives, respondents were asked “How important would access to the following resources be for implementing your forest management objectives?”. Subsequently, a list of 8 different resources was presented to the respondent.

When examining responses to the 8 items, respondents altogether (n=2254), on average, rated the two most important resources to be *technology* ($\mu=4.85$, $SD=1.078$) and *subsidies and grants* ($\mu=4.80$, $SD=1.121$). The least important resource was access to *credit or loans* ($\mu=4.35$, $SD=1.333$). Figure 9 depicts the frequency of responses across the entire survey.



FIGURE 9. FREQUENCY OF RESPONSES PROVIDED ACROSS ALL SURVEY RESPONDENTS (N=2254). KEY RESOURCES ARE ORDERED FROM MOST IMPORTANT (TOP) TO LEAST IMPORTANT (BOTTOM) BASED ON MEAN RESPONSES.

Responses to the 8 items measuring resource importance were crosstabulated by forest practitioner class and the relationship between the variables was analysed using a chi-square test. All 8 chi-square tests were significant, indicating a relationship between the variables. The crosstabulations are presented in Table 11.

TABLE 11. MEAN RESPONSES TO THE STATEMENT "HOW IMPORTANT WOULD ACCESS TO THE FOLLOWING RESOURCES BE FOR IMPLEMENTING YOUR FOREST MANAGEMENT OBJECTIVES?" MEASURED FROM 1 = NOT AT ALL IMPORTANT TO 6= EXTREMELY IMPORTANT.

Resources	PuM	PM	PPM	FO	FOM	FMM	All	χ^2 test
Manual labour	4.75	4.54	4.45	4.16	4.27	4.04	4.31	<.001
Technology	4.85	4.54	4.68	3.97	4.24	3.85	4.20	<.001
Infrastructure	4.77	4.6	4.55	4.19	4.39	3.89	4.33	<.001
Credit	4.35	3.98	3.82	3.33	3.68	3.02	3.58	<.001
Advisory services	4.58	4.45	4.49	4.05	4.25	4.04	4.20	<.001
Subsidies/Grants	4.80	4.57	4.52	4.21	4.22	3.95	4.33	<.001
Market instruments	4.46	4.33	4.18	3.8	4.10	3.62	3.99	<.001
Voluntary agreements	4.71	4.27	4.31	3.87	4.01	3.58	4.05	<.001

PuM: Public manager; PM= Private manager; PPM= Private-public manager; FO= Forest owner; FOM= Forest owner and manager. FMM= Family member manager; Total = mean of all forest practitioners

The items measuring resource importance were analysed and reduced using principal axis factoring with varimax rotation. The results are presented in Table 12. A satisfactory two-factor solution was achieved explaining 58.99% of the variance of the 7 items retained in the analysis. The subscales showed appropriate levels of internal consistency (Cronbach alphas > .700). The two subscales were named *support mechanisms* and *operational resources*, as the items with the largest factor loadings grouping under each factor represented market and policy instruments that support the implementation of management activities (i.e., *market schemes, voluntary agreements, credits/loans, advisory services*) and resources necessary for carrying out operational activities (i.e., *infrastructure, manual labour*). The two continuous subscales developed from principal axis factor therefore represent a measure of importance towards two different types of resources.

TABLE 12. OUTPUTS OF THE FINAL ROTATED FACTOR MATRIX SOLUTION APPLYING PRINCIPAL AXIS FACTORING WITH VARIMAX ROTATION ON ITEMS MEASURING RESOURCE IMPORTANCE. HIGHEST FACTOR LOADING VALUE IN BOLD.

	Factors (importance)		Communalities
	Support mechanisms	Operational resources	Extraction
Market schemes	0.704	0.403	0.658
Voluntary agreements	0.666	0.41	0.612
Credit or loans	0.646	0.394	0.572
Advisory services	0.644	0.427	0.597
Subsidies or grants	0.625	0.449	0.592
Infrastructure	0.409	0.647	0.586
Manual labour	0.372	0.612	0.513
Cronbach's Alpha	0.882	0.706	-
% of Variance	35.22	23.75	-
Kaiser-Meyer-Olkin Measure of Sampling Adequacy			0.926
Bartlett's Test of Sphericity			<.001

One-way ANOVA tests were conducted to evaluate the relationship between forest practitioner classes and resource importance by applying the two subscales developed from the principal axis factoring analysis as a dependent variable in the ANOVA. The full set of results are presented in [Appendix D](#).

The ANOVA test was statistically significant both in the case of *support mechanisms (importance)* subscale ($F(5,2248) = 4.996, p = \leq .001$) and *operational resources (importance)* subscale ($F(5,2248) = 8.528, p = \leq .001$). However, variance was found to be unequal between the groups, and the group samples sizes are also unequal, necessitating caution with the interpretation of the significant ANOVA findings. Nevertheless, a Welch's tests confirmed the statistically significant findings between groups in the case of both the forestry network approval measure ($p < .001$) and the public's approval measure ($p < .001$).

The post-hoc Tamhane's test results for the *support mechanism (importance)* subscale indicated the mean scores of *forest owner* (FO) was statistically significantly lower than that of *public managers* (PUM) and *private managers* (PM). The post-hoc Tamhane's test results for the *operational resources (importance)* subscale indicated that the mean score of *public managers* (PuM) was statistically significantly higher than that of *forest owners* (FO), *forest owner and managers* (FOM), and *family member managers* (FMM).

Meanwhile, the mean score of *forest owners* (FO) was also statistically significantly lower than that of *private managers* (PM).

Figure 10 plots the means score for the *operational resources (importance)* and *support mechanisms (importance)* subscales according to each forest practitioner class to illustrate the directionality of differences between practitioner classes.

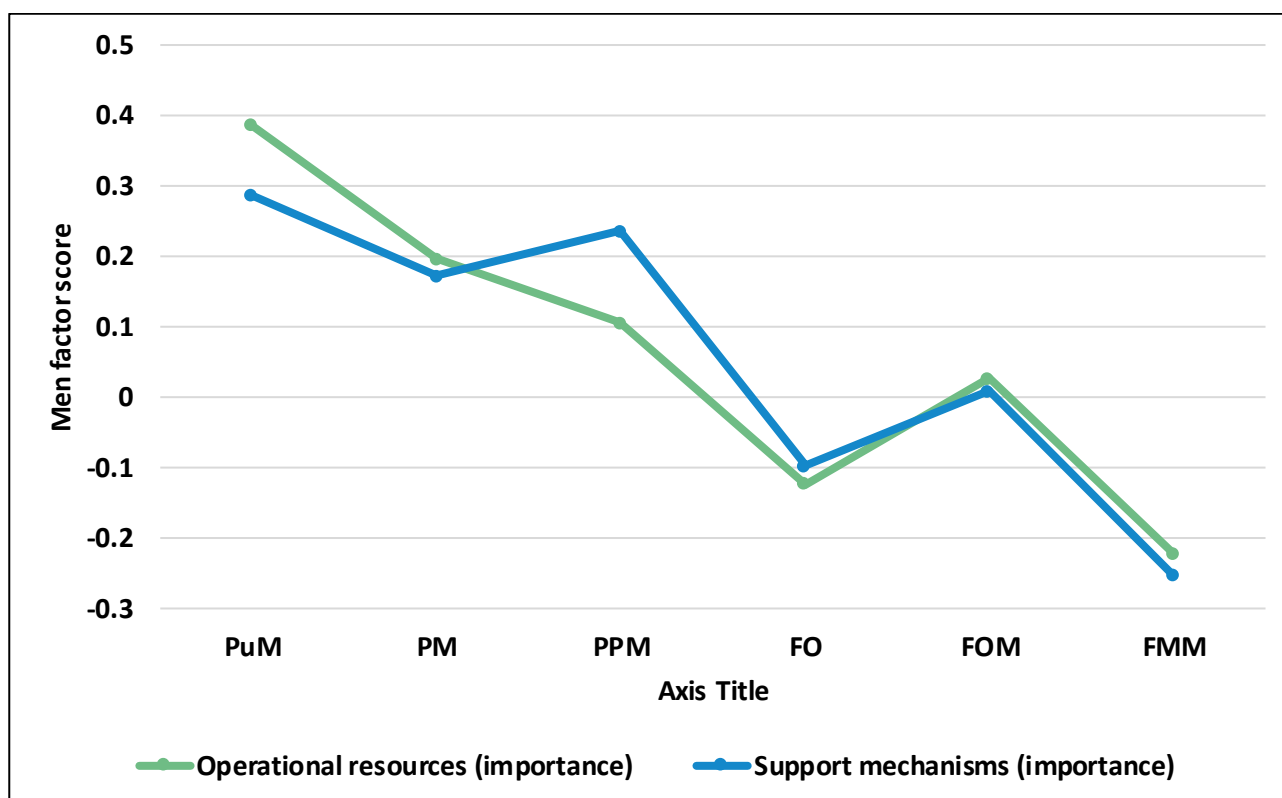


FIGURE 10. PLOT OF MEAN SCORES TO OPERATIONAL RESOURCES (IMPORTANCE) AND SUPPORT MECHANISMS (IMPORTANCE) SUBSCALE ACCORDING TO THE SIX DIFFERENT FOREST PRACTITIONER CLASSES. AS MEAN FACTOR SCORE INCREASE, THE PERCEIVED IMPORTANCE TOWARDS THE RESPECTIVE RESOURCE INCREASES.

Perceived resource availability

To measure perceived future availability of resources needed for implementing forest management objectives, respondents were asked “*What do you think is the likelihood that you will have sufficient access to the following resources?*”. When examining responses to the items, respondents altogether ($n=2254$), on average, rated the two most accessible resources to be *manual labour* ($\mu=0.20$, $SD=1.900$) and *infrastructure* ($\mu=0.10$, $SD=1.952$), while the least two accessible resources were *market instruments* ($\mu=-0.39$, $SD=1.895$) and *credit and loans* ($\mu=-0.51$, $SD=1.936$). Figure 11 depicts the resources, ordered from most accessible to least accessible, based on mean score.

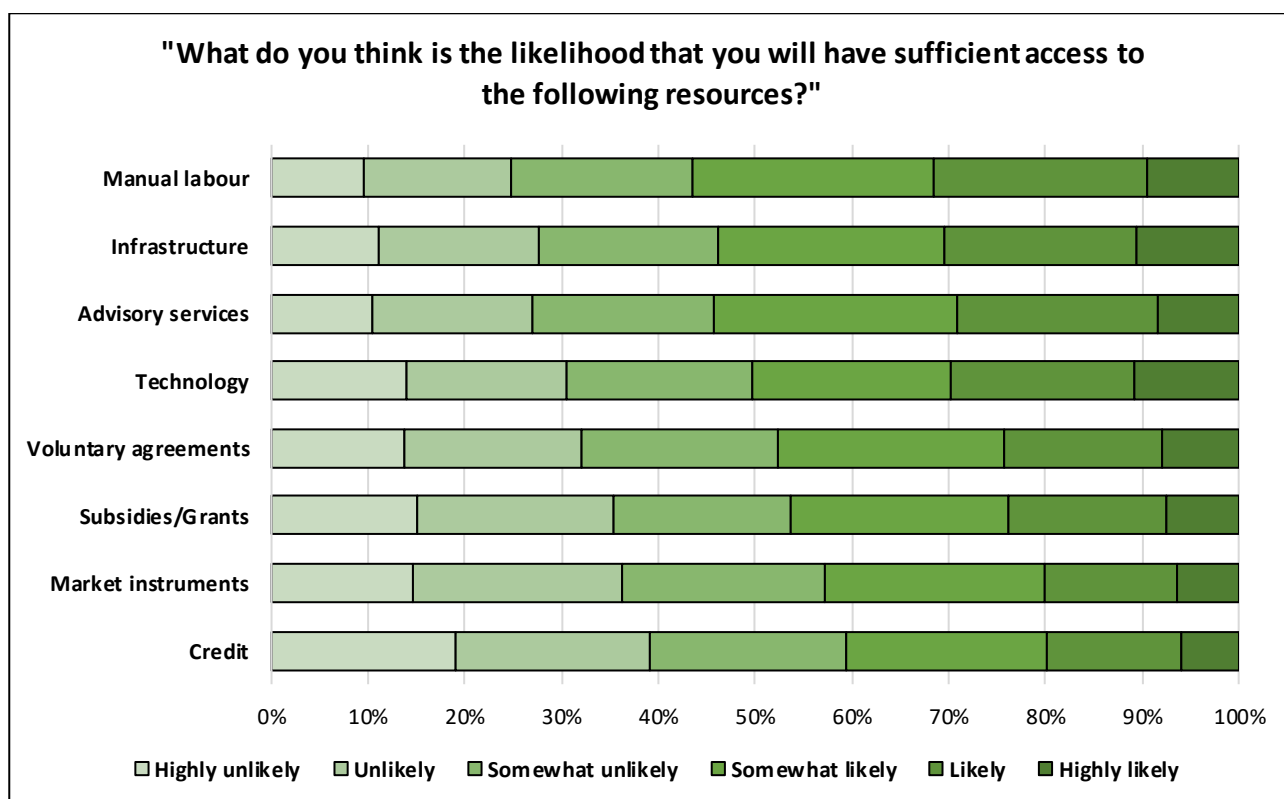


FIGURE 11. FREQUENCY OF RESPONSES PROVIDED ACROSS ALL SURVEY RESPONDENTS (N=2254). KEY RESOURCES ARE ORDERED FROM MOST IMPORTANT (TOP) TO LEAST IMPORTANT (BOTTOM) BASED ON MEAN RESPONSES.

Responses to the 8 items measuring perceived resource availability were crosstabulated by forest practitioner class and the relationship between the variables was analysed using a chi-square test. All 8 chi-square tests were significant, indicating a relationship between the two variables. The crosstabulations are presented in Table 13.

TABLE 13. MEAN RESPONSES BY FOREST PRACTITIONER CLASS TO THE STATEMENT "WHAT DO YOU THINK IS THE LIKELIHOOD THAT YOU WILL HAVE SUFFICIENT ACCESS TO THE FOLLOWING RESOURCES?" (MEASURED FROM -3 = STRONGLY DISAGREE TO 3= STRONGLY AGREE).

Resources	PuM	PM	PPM	FO	FOM	FMM	All	χ^2 test
Manual labour	0.45	0.54	0.23	0.03	0.45	0.04	0.20	.003
Technology	0.57	0.37	0.66	-0.36	0.45	-0.40	-0.03	<.001
Infrastructure	0.57	0.61	0.54	-0.16	0.30	-0.09	0.10	<.001
Credit or loans	-0.12	-0.13	-0.42	-0.71	-0.26	-0.91	-0.51	<.001
Advisory services	0.29	0.32	0.22	-0.11	0.67	-0.20	0.09	<.001
Subsidies or grants	0.33	0.16	0.32	-0.55	0.08	-0.68	-0.26	<.001
Market schemes	0.17	-0.04	0.12	-0.66	0.00	-0.90	-0.39	<.001
Voluntary agreements	0.36	0.16	0.57	-0.45	0.11	-0.54	-0.19	<.001
PuM: Public manager; PM= Private manager; PPM= Private-public manager; FO= Forest owner; FOM= Forest owner and manager. FMM= Family member manager; Total = sum of all forest practitioners								

The items measuring *resource availability* were analysed and reduced using principal axis factoring with varimax rotation. The results are presented in Table 14. A satisfactory two-factor solution was achieved explaining 59.05% of the variance of the 7 items retained in the analysis. The subscales showed appropriate levels of internal consistency (Cronbach alphas >.700). The two subscales were named *support mechanisms* and *operational resources*, as the items with the largest factor loadings grouping under each factor represented market and policy instruments that support the implementation of management activities (i.e., *market schemes, voluntary agreements, credits/loans, subsidies/grants*) and resources necessary for carrying out operational activities (i.e., *infrastructure, manual labour, technology*). The two continuous subscales developed from principal axis factor therefore represent a measure of perceived availability to two different types of resources.

TABLE 14. OUTPUTS OF THE FINAL ROTATED FACTOR MATRIX SOLUTION APPLYING PRINCIPAL AXIS FACTORING WITH VARIMAX ROTATION ON ITEMS MEASURING RESOURCE AVAILABILITY. HIGHEST FACTOR LOADING VALUE IN BOLD.

	Factors (availability)		Communalities
	Support mechanisms	Operational resources	Extraction
Market schemes	0.717	0.389	0.666
Subsidies or grants	0.679	0.382	0.607
Credit or loans	0.635	0.365	0.537
Voluntary agreements	0.633	0.473	0.624
Infrastructure	0.39	0.683	0.619
Technology	0.536	0.599	0.646
Manual labour	0.31	0.583	0.435
Cronbach's Alpha	0.863	0.787	-
% of Variance	33.071	25.985	-
Kaiser-Meyer-Olkin Measure of Sampling Adequacy			0.923
Bartlett's Test of Sphericity			<.001

One-way ANOVA tests were conducted to evaluate the relationship between forest practitioner classes and resource availability by applying the two subscales developed from the principal axis factoring analysis as a dependent variable in the ANOVA. The full set of results are available in [Appendix D](#).

The table shows that the ANOVA was statistically significant in the case of *support mechanisms* ($F(5,2248) = 18.249$, $p \leq .001$) and *operational resources* ($F(5,2248) = 4.152$, $p \leq .001$). However, variance was found to be unequal between the groups, and the group samples sizes are also unequal, necessitating caution with the interpretation of the significant ANOVA findings. Nevertheless, a Welch's tests confirmed the statistically significant findings between groups in the case of both the support mechanisms (availability) ($p < .001$) and the operational resources (availability) ($p < .001$).

The post-hoc LSD test results for the *support mechanism (availability)* subscale indicated that the mean score forest owners (FO) and family member managers (FMM) were statistically significantly lower than that of public managers (PuM), private managers (PM) and public private managers (PPM). The post-hoc LSD results for the *operational resources (availability)* subscale indicated that the mean score of forest owners (FO) were statistically significantly lower than that of public managers (PuM) and private managers (PM).

Figure 12 plots the means score for the *operational resources (availability)* and *support mechanisms (availability)* subscales according to each forest practitioner class to illustrate the directionality of differences between practitioner classes.

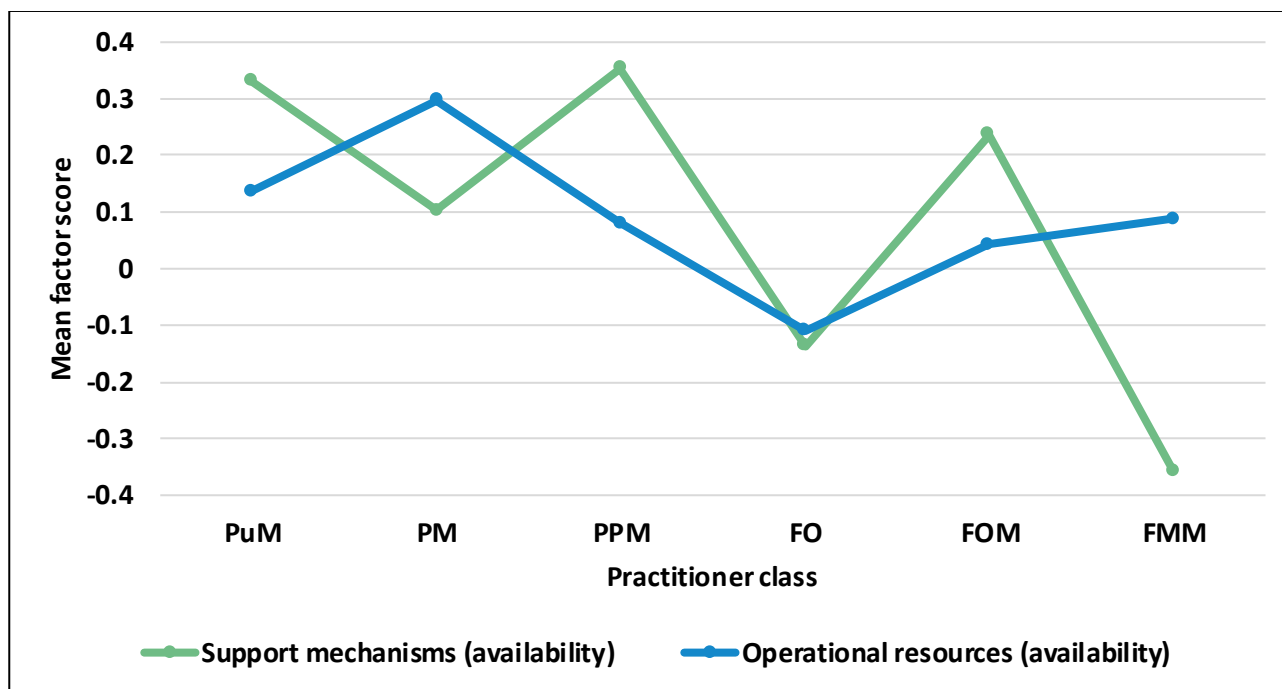


FIGURE 12. PLOT OF MEAN SCORES OF *SUPPORT MECHANISMS (AVAILABILITY)* AND *OPERATIONAL RESOURCES (AVAILABILITY)* SUBSCALE ACCORDING TO THE FOREST PRACTITIONER CLASSES. AS MEAN FACTOR SCORE INCREASES, THE FUTURE AVAILABILITY OF THE RESPECTIVE RESOURCE IS PERCEIVED TO INCREASES.

Behaviour: forest management activities

Forest practitioners were asked to report on their ongoing management practices. Given that multiple management activities are possible on a single forest stand and reporting on all activities was untenable, and instead, the survey requested that forest practitioners report on the most typical management activities ongoing in their “*prevalent forest type*”. The prevalent forest type was described as follows: “*The forest type is composed of forest stands that share similar tree species composition and forest structure. The prevalent forest type refers to the forest type of the largest area within your forest property*”. Therefore, a prevalent forest type may not represent the entire forest area owned or managed by the responding forest practitioner.

From the list of management activities which forest practitioners were asked to report on, a select number of activities can be classified as climate-smart forest management, in that, their implementation is associated either with enabling climate change mitigation, climate change adaptation, or biodiversity preservation (see: ForestPaths Deliverable 1.1). The activities included in this report are unmanaged forest areas, deadwood retention, and continuous cover forestry. This sub-chapter describes ongoing management activities, crosstabulates management activities against background factors, and presents outputs of regression models estimating the effects of behavioural factors and actual control factors on select management activities.

Entirely unmanaged forest areas

Respondents were asked to disclose to what extent their forest has unmanaged forest areas. Unmanaged forest areas were described as “*areas where no silvicultural activities take place whatsoever, regardless of whether this choice is intentional*”. Across all respondents (n=2254), about 24% reported that they own or manage a forest that is entirely unmanaged, with the total area of reportedly unmanaged forest ranging from 1 ha to 5000 ha.

Figure 13 depicts the reported frequency of unmanaged forest areas according to the six forest practitioner class. The chi-square test found a statistically significant relationship between the variables ($p < .001$). The figure illustrates that forest owners (FO) and family member managers (FMM) more frequently reported having an entirely unmanaged forest relative to private managers (PM), public managers (PuM), and private-public managers (PPM). Meanwhile, forest owners and managers (FOM) were less likely to report owning an entirely unmanaged forests compared to forest owners (FO).

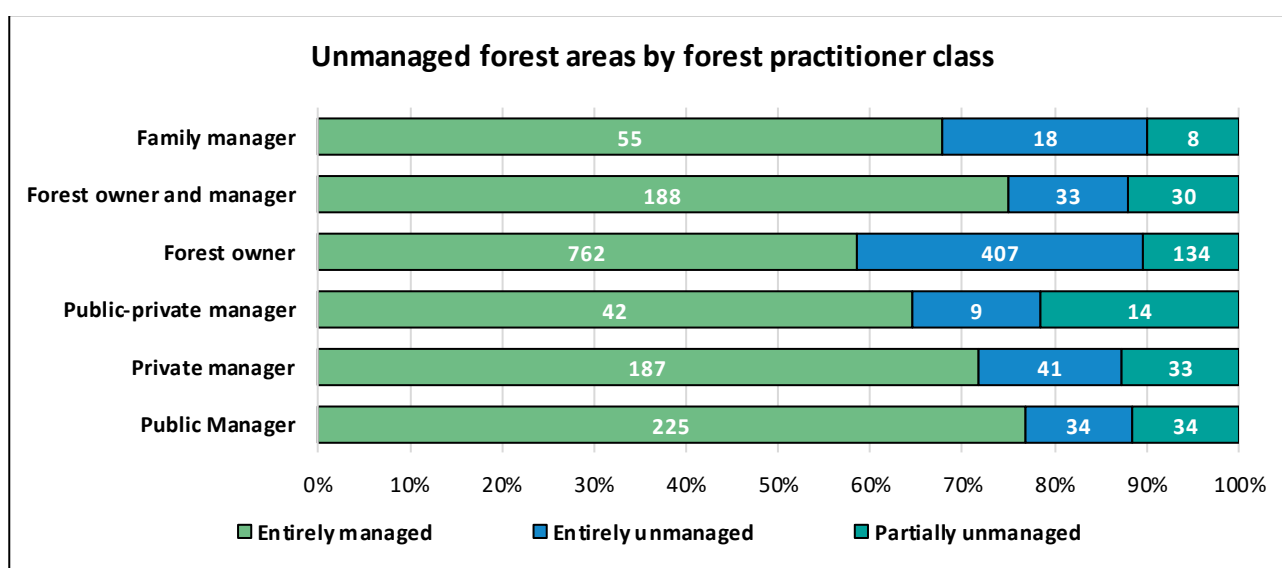


FIGURE 13. PERCENTAGE OF RESPONDENTS WITH UNMANAGED FOREST AREAS BY FOREST PRACTITIONER CLASS. VALUES WITHIN BARS REPRESENTS FREQUENCY OF RESPONSES.

Figure 14 depicts the reported frequencies of unmanaged forest areas on a country-wide basis. A chi-square test reported a statistically significant relationships between the variables ($p < .001$), however the finding should be interpreted with caution as the large number of groups and limited number of responses violates the assumption of expected frequencies. Figure 14 nevertheless depicts the wide range of reportedly entirely unmanaged forest across the countries represented in the survey, from 3% of respondents in the Netherlands, up to 38.4% of respondents in France.

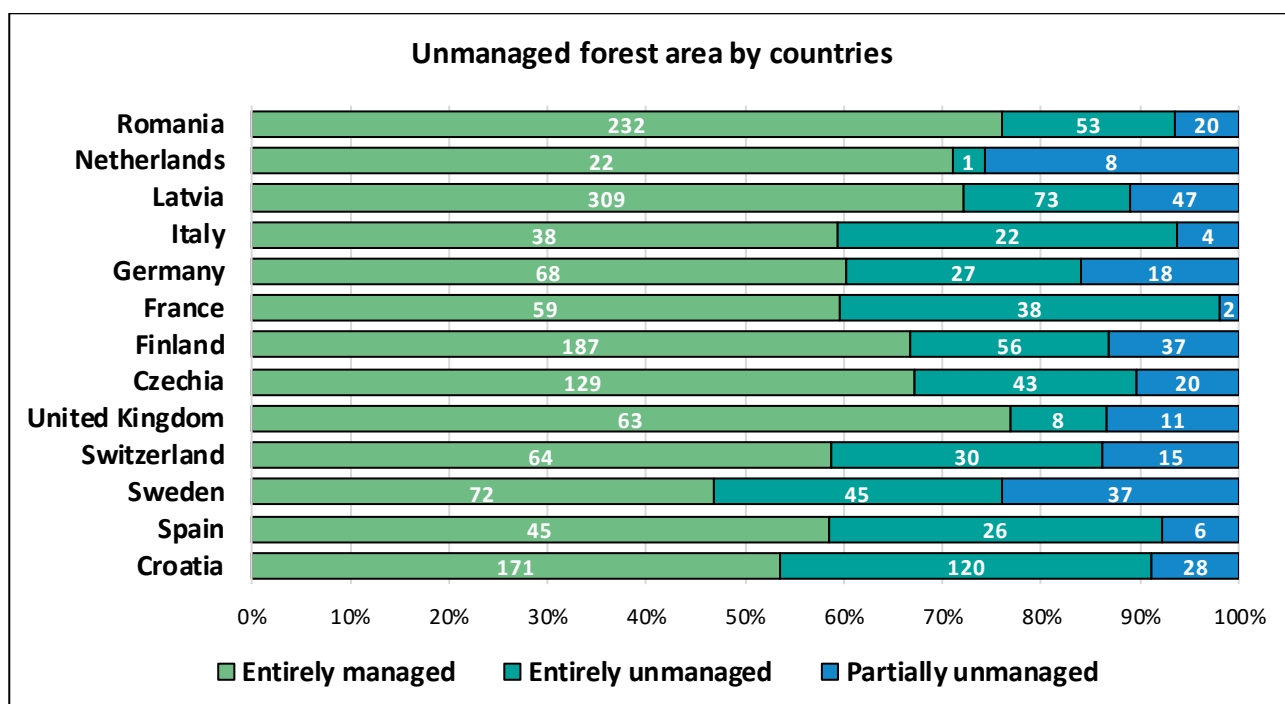


FIGURE 14. PERCENTAGE OF RESPONDENTS WITH UNMANAGED FOREST AREAS BY FOREST COUNTRY LOCATION. VALUES WITHIN BARS REPRESENTS FREQUENCY OF RESPONSES.

Figure 15 depicts the frequency of reported unmanaged forest areas relative to total area of the forest. A chi-square test reported a statistically significant relationship between the variables ($p < .001$). The figure illustrates that the most pronounced differences are that the number of reported unmanaged forests decreases as total forest size increases. Forest from 1-15 ha show a larger percentage of entirely unmanaged forest relative to those that are between 16-1000 ha. Meanwhile, only a small percentage of respondents owning or managing a forest of 1000+ ha reported that the entire forest is unmanaged.

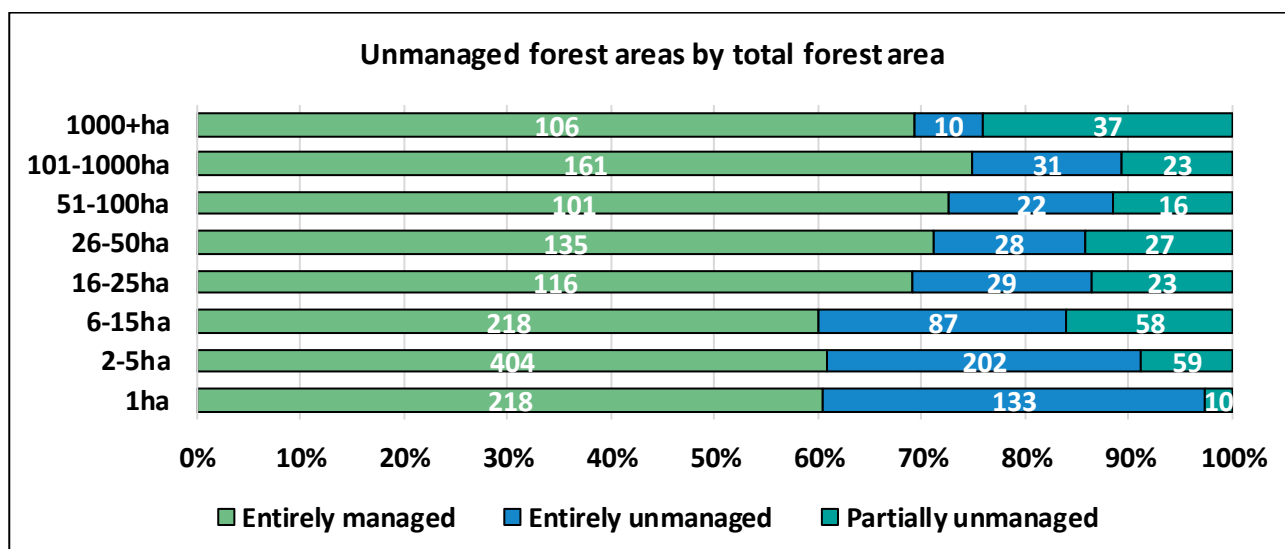


FIGURE 15. PERCENTAGE OF RESPONDENTS WITH UNMANAGED FOREST AREAS BY FOREST COUNTRY LOCATION. VALUES WITHIN BARS REPRESENTS FREQUENCY OF RESPONSES.

A binary regression model was implemented to estimate the effects of forest country location, practitioner class, total forest area, and eleven behavioural beliefs subscales on the likelihood of having an entirely unmanaged forest. The full model outputs are available in [Appendix E: Table 1](#).

The model employed responses from all 2254 respondents. The final showed an acceptable fit, as the AUC was good ($>.70$), the accuracy of predictions was acceptable ($>70\%$), and the Nagelkerke pseudo r^2 was acceptable ($>.20$), although other pseudo r^2 variables were of poorer fit ($0.12 - 0.16$). The model outputs show that several of the estimated variables were statistically significant in their relationship to having an entirely unmanaged forest. Table 15 lists the statistically significant variables in the model and the directionality of the effect on the likelihood of having an entirely unmanaged forest.

TABLE 15. EFFECTS OF STATISTICALLY SIGNIFICANT PREDICTOR VARIABLES ON THE LIKELIHOOD OF A FOREST PRACTITIONER HAVING AN ENTIRELY UNMANAGED FOREST. READING THE TABLE: ↓ INDICATES A DECREASED LIKELIHOOD. ↑ INDICATES AN INCREASED LIKELIHOOD). FOR CATEGORICAL PREDICTOR VARIABLES, THE DIRECTIONALITY OF AN EFFECT IS DETERMINED RELATIVE TO THE REFERENCE CATEGORY (R.C.). FOR CONTINUOUS PREDICTOR VARIABLES, THE DIRECTIONALITY OF THE EFFECT IS RELATIVE TO AN INCREASE IN THE CONTINUOUS VARIABLE.

Predictor variables	Variable effect on outcome
Provisioning services (importance)	↓
Forestry networks (approval)	↓
Citizens (approval)	↓
Forestry networks (importance)	↓
Support mechanisms (importance)	↓
Support mechanisms (availability)	↑
Practitioner class	
Public forest manager (PuM)	R.C.
Forest owner (FO)	↑
Forest Country	
Croatia	R.C.
Finland, Germany, Latvia, Netherlands, Romania, UK	↓
Forest Area	
1 ha	R.C.
16-25 ha, 26-50 ha, 51-100 ha, 101-1000 ha, 1000+ha	↓

Table 15 shows that only six of the eleven behavioural factor subscales were significant to predicting the likelihood of a forest practitioner having an entirely unmanaged forest. As *importance towards provisioning services* increases (e.g., timber production), the likelihood of having entirely unmanaged forest areas decreases. As *importance towards the opinions of forestry networks* increases (e.g., national or local forest authorities), the likelihood of having an entirely unmanaged forest area decreases. As *importance towards support mechanisms* increases, the likelihood of having an entirely unmanaged forest decreases. As the *availability of support mechanisms* (e.g., grants) increases, the likelihood of having entirely unmanaged forest areas increases. As the perceived *approval from forestry networks* and *approval from citizens* increases, the likelihood of having an entirely unmanaged forest decreases.

All of the background variables were significant to predicting the likelihood of a forest practitioner having an entirely unmanaged forest. In the case of forest area, as the size of the total forest area increases, the likelihood of having an entirely unmanaged forest decreases. In the case of forest country and forest practitioner class, the effects are interpreted relative to a reference level category. The results show that being a forest owner (FO) increases the likelihood of having an entirely unmanaged forest relative to being a public forest manager (PuM). Meanwhile, having a forest in Finland, Germany, Latvia, Netherlands, Romania and the United Kingdom decrease the likelihood of having an entirely unmanaged forest relative to Croatia.

Figure 16 plots the effects of forest practitioner class according to forest country on the probability of having an entirely unmanaged forest. The figure illustrates how the probability of having an entirely unmanaged forest is greatest for forest owners (FO), regardless of the forest country in question. However, there are differences in the probabilities between countries, as the Netherlands (NL), the United Kingdom (UK), Latvia (LV), Romania (RO), and Finland (FI) show the lowest probability to having entirely unmanaged forest.

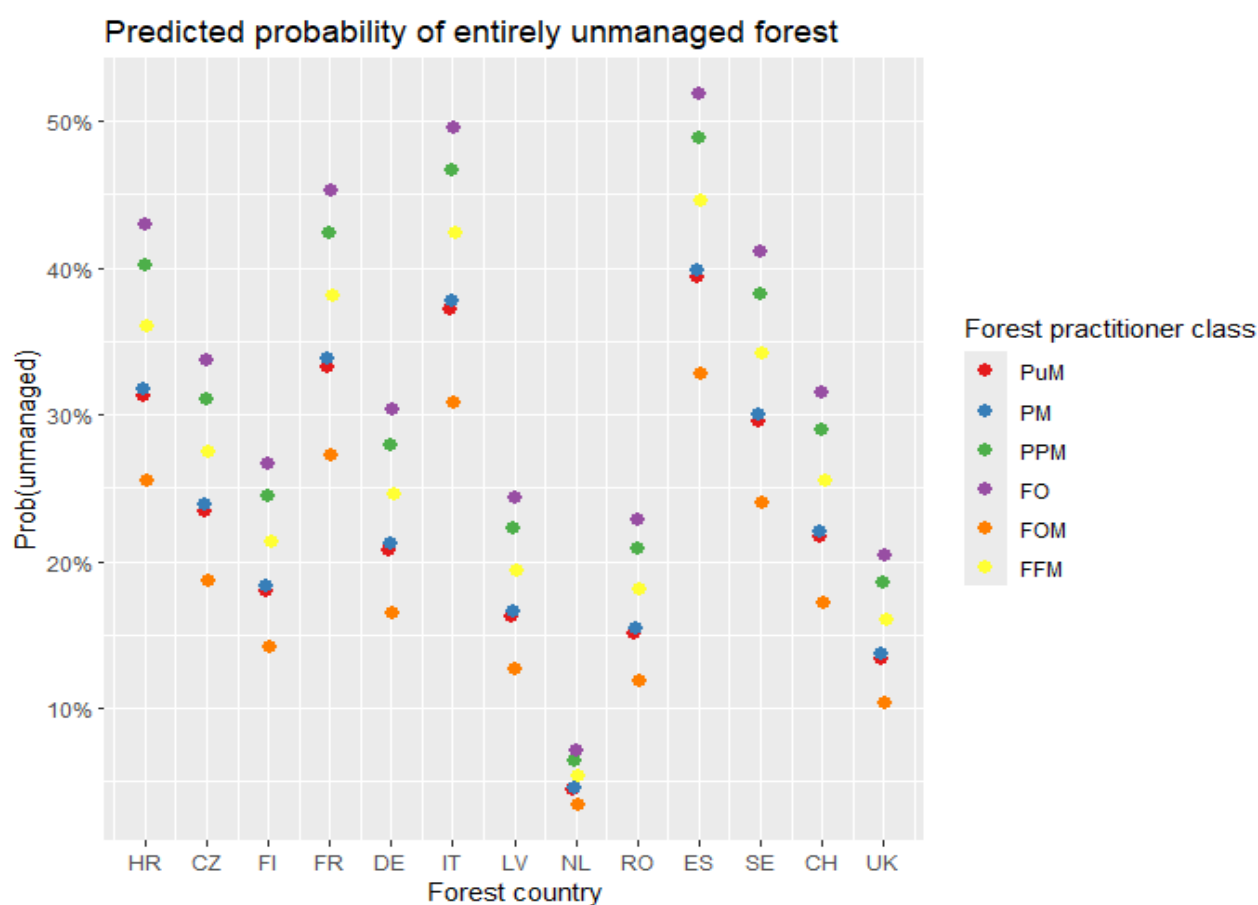


FIGURE 16. EFFECTS OF FOREST COUNTRY AND PRACTITIONER CLASS ON PROBABILITY OF HAVING AN ENTIRELY UNMANAGED FOREST.

Harvesting regimes

A total of 1464 respondents were asked to report on the management activities relating to the harvesting, thinning, and planting activities typically employed within their prevalent forest type. Based on the combinations of these activities, bundles of activities were classified into four different harvesting regimes: High Clearcutting, Low Clearcutting, High Continuous Cover Forestry (High CCF), and Low Continuous Cover Forestry (Low CCF). The definitions of the harvesting regimes are found in Table 16. Note that respondents who indicated their entire forest was left unmanaged were omitted from reporting on these activities.

TABLE 16. HARVESTING REGIME CLASSIFICATIONS DEFINED ACCORDING TO THE BUNDLES OF MANAGEMENT ACTIVITIES.

Harvest regimes	Definition
High Clearcutting	Clearcutting + Thinning from above OR thinning of all size classes
Low Clearcutting	Clearcutting + Thinning from below OR no thinning
High continuous cover forestry	Group selection OR Shelterwood OR Single tree selection + Thinning from above OR thinning of all size classes
Low continuous cover forestry	Group selection OR Shelterwood OR Single tree selection + Thinning from below OR no thinning

In the end, 24.5% of practitioners reported engaging in High Clearcutting, 15.2% reported engaging in Low Clearcutting, 45.2% reported engaging in High CCF, and 15.1% reported engaging in Low CCF within their prevalent forest type. Notably the portion of land area represented by these activities varies. The total summed prevalent forestland area across the set of respondents equalled 4,073,214 ha. Assuming that all respondents are responsible for independent forest areas, High Clearcutting is applied in 36% of the summed prevalent forestland area (1,471,655 ha), Low Clearcutting is applied in 5% (216,703 ha), High CCF is applied in 57% (2,337,376 ha), and Low CCF is applied in 1% (47,480 ha). Figure 17 depicts the differences in harvesting regimes according to each forest practitioner class. A chi-square test reported a statistically significant relationship between the variables ($p < .001$). More than 25% of forest owners and managers (FOM), public-private managers (PPM), and public managers (PuM) reported engaging in High Clearcutting.

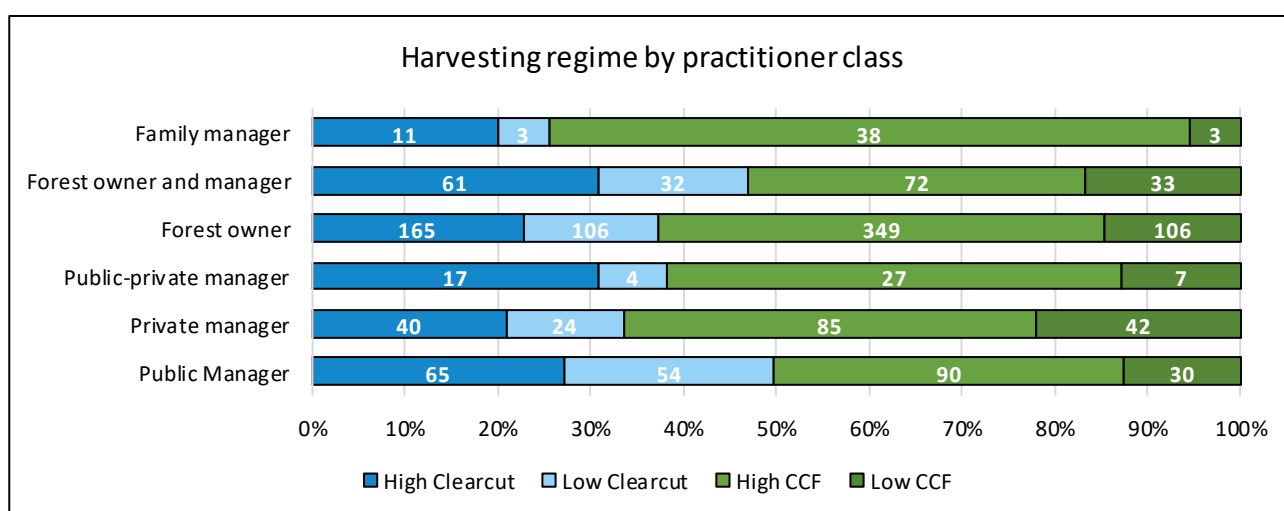


FIGURE 17. PERCENTAGE OF REPORTED HARVESTING REGIMES BY FOREST PRACTITIONER CLASS. VALUES WITHIN BARS REPRESENTS FREQUENCY OF RESPONSES.

Figure 18 depicts the differences in harvesting regimes reported across the 13 forest country locations. A chi-square test reported a statistically significant relationships between the variables ($p < .001$), however the finding should be interpreted with caution as the large number of country groups and limited number of observations violates the assumption of expected frequencies. Figure 18 nevertheless illustrates that High Clearcutting was reported as the typical harvest regime in more than 20% of cases within the United Kingdom, Switzerland, Sweden, Latvia, Germany, France, and Finland. Similarly, Low Clearcutting was reported as the typical harvest regime in more than 10% of cases in the United Kingdom, Sweden, Romania, Latvia, France, Finland, and Croatia. Thus, there is a clear divide between countries reporting a greater number of respondents engaged in clearcutting.

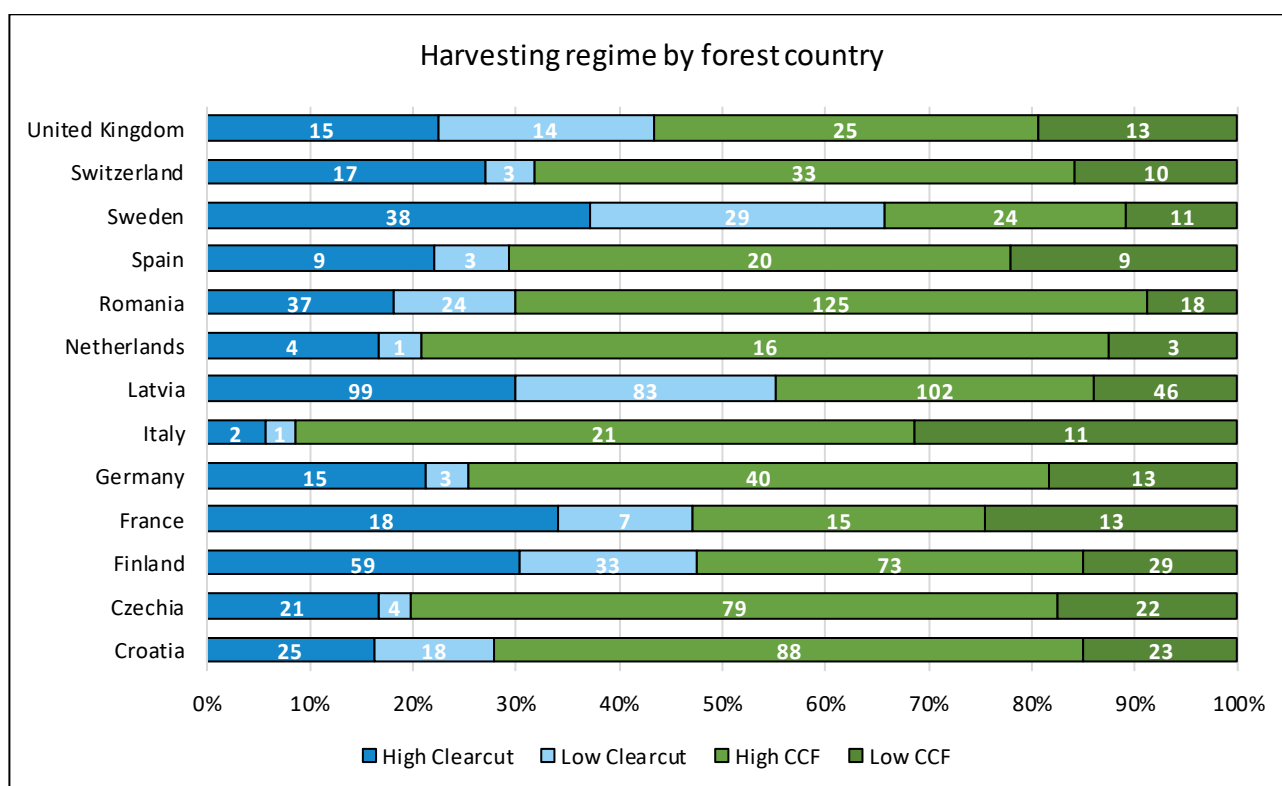


FIGURE 18. PERCENTAGE OF REPORTED HARVESTING REGIMES BY FOREST COUNTRY LOCATION. VALUES WITHIN BARS REPRESENTS FREQUENCY OF RESPONSES.

Figure 19 depicts the differences in harvesting regimes reported across the survey according to total forest area and prevalent forest type area. Chi-square tests reported a statistically significant relationships between the variables for both the case of total forest area and prevalent forest areas ($p < .001$). Overall, the figure illustrates a general increase in reported use of both High Clearcutting and Low Clearcutting as the size of total forest area and prevalent forest type area increase, with a flattening after reaching 101 hectares.

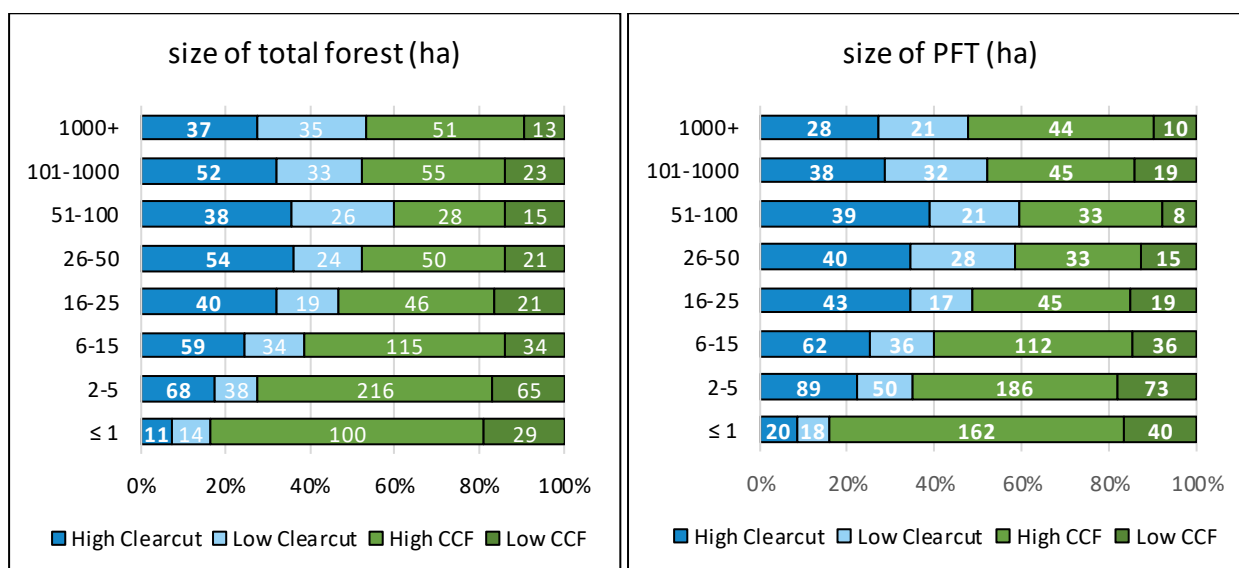


FIGURE 19. FREQUENCY OF REPORTED HARVESTING REGIMES BY TOTAL FOREST AREA (LEFT GRAPH) AND PREVALENT FOREST TYPE AREA (RIGHT GRAPH). VALUES WITHIN BARS REPRESENTS NUMBER OF OBSERVATIONS.

A multinomial logistic regression model was implemented to estimate the effects of forest country location, practitioner class, total forest area, prevalent forest area, and behavioural factors subscales on the likelihood of implementing the four harvesting regimes. The full model outputs are available in [Appendix E: Table 2](#).

The model employed responses from 1464 respondents. The model held a predictive accuracy of 52%. Low predictive power may result from either the need for a greater number of explanatory features in the model (e.g., behavioural factors missing from the model) or due to an imbalance between the harvesting regimes categories (e.g., large observation in the High CCF group), or both. The Nagelkerke pseudo r^2 was acceptable ($>.20$), while other pseudo r^2 values varied from acceptable to moderate in acceptability (0.26 - 0.12).

The final model resulted in two key findings. The first was that there are only statistically significant differences between the implementation of certain harvesting regimes alternatives. Unlike binary regression models that estimate probabilities between two outcomes in a dependent variable, multinomial regression models assess outcome alternatives as pairwise comparisons of expected probabilities between a reference outcome and an alternative outcome. In a model with four alternative outcomes, there are six pairwise comparisons. In this case, the model found statistically significant differences between four of the six pairwise comparisons (see: Table 17).

TABLE 17. P-VALUES FROM MULTINOMIAL REGRESSION MODELS. TABLE INDICATES PAIRWISE COMPARISONS WITH SIGNIFICANT DIFFERENCES. THE COMPARISON BETWEEN LOW CCF AND HIGH CLEARCUT WAS BORDERLINE SIGNIFICANT.

	High CCF	Low CCF	High Clearcutting	Low Clearcutting
High CCF		YES	YES	YES
Low CCF	.001		Border	NO
High Clearcut	<.001	0.078		NO
Low Clearcut	<.001	0.652	0.287	

The second key finding was that several of the estimated variables were statistically significant in their effect on the likelihood of implementing the four different harvesting regimes. Specifically, only five of the eleven behavioural factors were statistically significant, while all the background factors were statistically significant. Table 18 lists the final set of statistically significant variables in the model and the directionality of the variables effect on the likelihood of the outcome category versus the reference outcome category.

TABLE 18. EFFECTS OF STATISTICALLY SIGNIFICANT VARIABLES ON THE LIKELIHOOD OF IMPLEMENTING BETWEEN DIFFERENT HARVESTING REGIMES. ONLY PAIRWISE COMPARISONS BETWEEN THE REFERENCE OUTCOME CATEGORY AND THE ALTERNATIVE OUTCOME CATEGORIES THAT WERE STATISTICALLY SIGNIFICANT ARE INTERPRETED. HOW TO READ THE TABLE: THE DIRECTIONALITY OF AN EFFECT (↑= INCREASING, ↓= DECREASING) FOR CATEGORICAL PREDICTOR VARIABLES IS DETERMINED RELATIVE TO THE REFERENCE CATEGORY LEVEL (R.C.). FOR CONTINUOUS PREDICTOR VARIABLES, THE DIRECTIONALITY OF THE EFFECT IS RELATIVE TO AN INCREASE IN THE CONTINUOUS VARIABLE.

Reference outcome category Alternative outcome category	HI Clearcut HIGH CCF	HI Clearcut LOW CCF	HIGH CCF LOW CCF	HIGH CCF LI Clearcut
Regulatory services (importance)	↑			↓
Provisioning service (importance)	↓	↓		↑
Forestry networks (importance)	↓			
Citizens (importance)	↓		↑	↑
Support mechanisms (availability)		↓		
Forest Country				
Croatia (reference level)	R.C.	R.C.	R.C.	R.C.
Czechia				↓
Finland	↓			↑
France	↓		↑	
Germany				
Italy	↑	↑		↓
Latvia	↓			↑
Romania			↓	
Sweden	↓			↑
Practitioners				
PuM	R.C.	R.C.	R.C.	R.C.
PM	↑	↑		↓
PPM				↓
FMM			↓	↓
Total Forest Area				
1 ha	R.C.	R.C.	R.C.	R.C.
2-5 ha		↓		
6-15 ha	↓	↓		
16-25 ha	↓	↓		
26-50 ha	↓	↓		
51-100 ha	↓	↓		↑
101-1000 ha	↓	↓		↑
1000+ ha	↓	↓		↑

In the case of the *regulatory services (importance)* subscale, a practitioner's increasing importance towards management objectives that improve regulatory ecosystem services increases the likelihood of selecting High CCF over High Clearcutting and decreases the likelihood of selecting Low Clearcutting over High CCF. Figure 20 plots the effects of the *regulatory services (importance)* subscale on the alternative harvesting regimes outcomes. The plot depicts that increasing importance for regulatory objectives appears to increase the probability of High CCF selection and decrease the probability of selecting Low Clearcutting, High Clearcutting, and High Clearcutting.

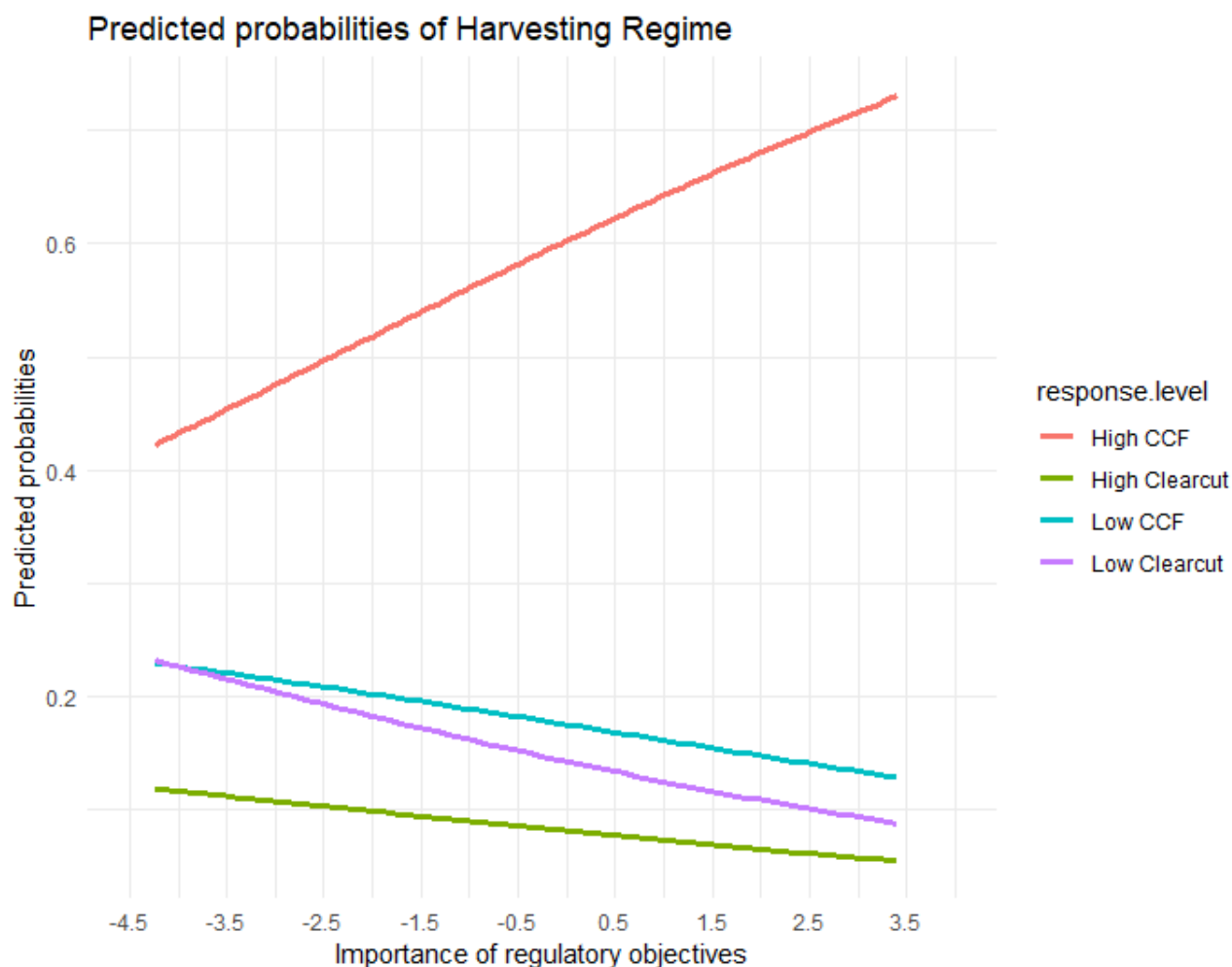


FIGURE 20. PROBABILITY PLOT FOR HARVESTING REGIMES BASED ON REGULATORY SERVICES (IMPORTANCE) SUBSCALE.

In the case of the *provisioning services (importance)* subscale, a practitioner's increasing importance for management objectives that enable provisioning ecosystem services decreases the likelihood of selecting High CCF over High Clearcutting, decreases the likelihood of selecting Low CCF over High Clearcutting, and increases the likelihood of selecting Low Clearcutting over High CCF. Figure 21 plots the effects of the *provisioning services (importance)* subscale on the alternative harvesting regimes outcomes. The plot depicts that increasing importance for provisioning services objectives appears to decrease the probability of High CCF and Low CCF selection while increasing the probability of both Low Clearcutting and High Clearcutting.

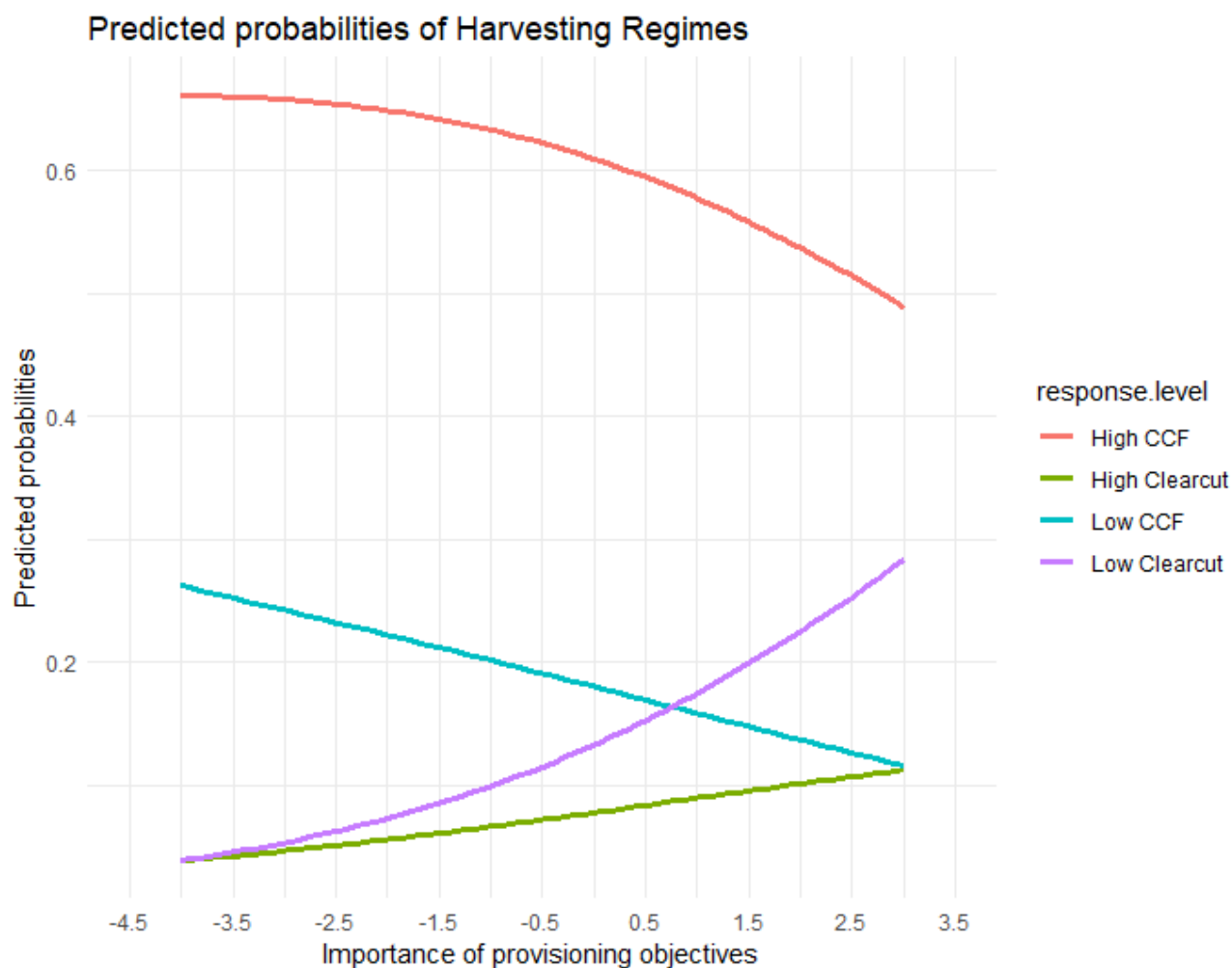


FIGURE 21. PROBABILITY PLOT FOR HARVESTING REGIMES BASED ON PROVISIONING SERVICES (IMPORTANCE) SUBSCALE.

In the case of the *forestry networks (importance)* subscale, a practitioner's increasing importance towards the opinions of forestry network members decreases the likelihood of selecting High CCF over High Clearcutting. Figure 22 plots the effects of the *forestry networks (importance)* subscale on the alternative harvesting regimes outcomes. The plot depicts that as importance for forestry network opinions increases, the probability of High CCF decreases, while the probability of implementing Low Clearcutting and High Clearcutting increases. Meanwhile, Low Clearcutting probability appears to increase only slightly.

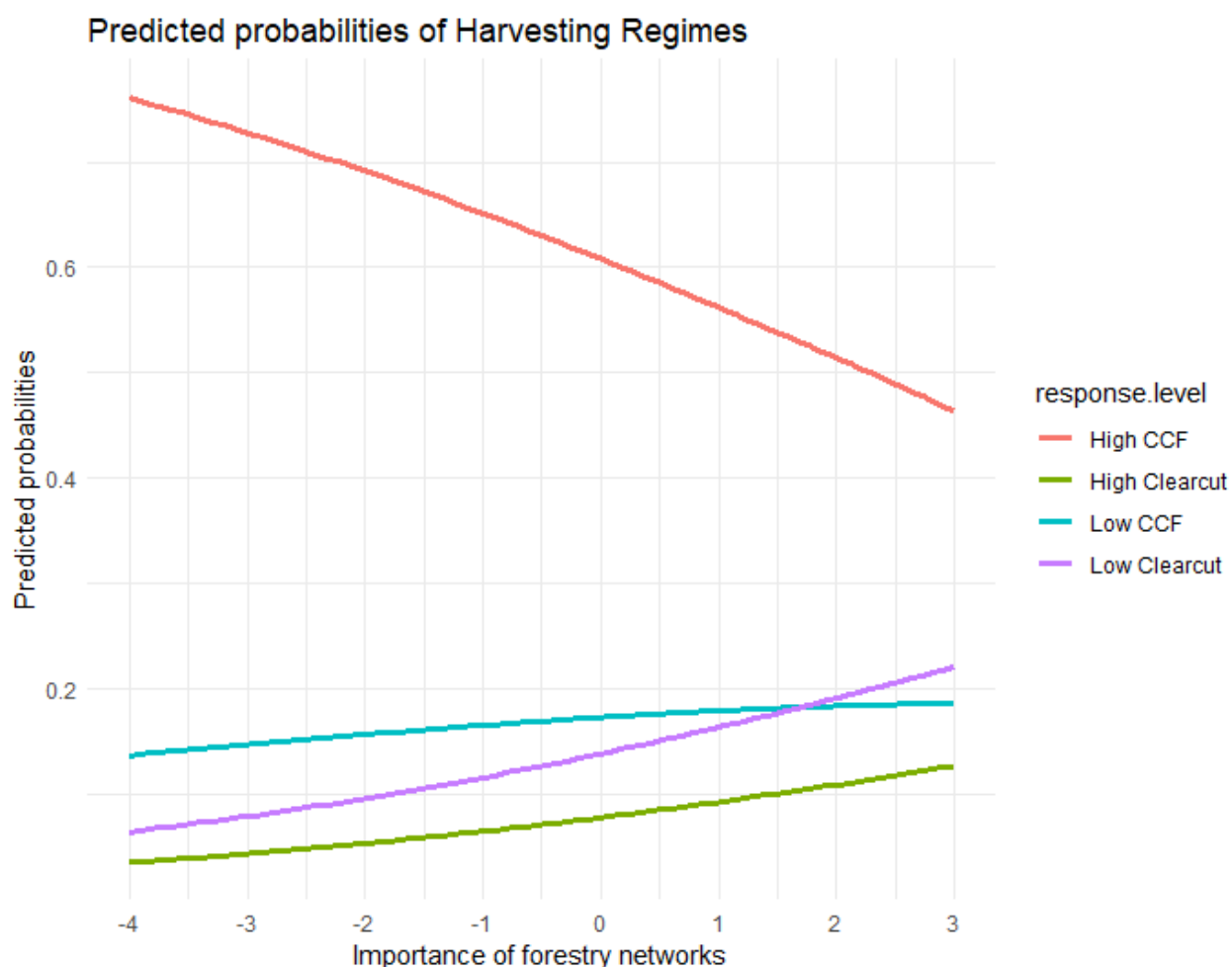


FIGURE 22. PROBABILITY PLOT FOR HARVESTING REGIMES BASED ON FORESTRY NETWORKS (IMPORTANCE) SUBSCALE.

In the case of the *citizens (importance)* subscale, a practitioner's increasing importance towards the opinions of general public citizens decreases the likelihood of selecting High CCF over High Clearcutting, increases the likelihood of selecting Low CCF over High CCF, and increases the likelihood of selecting Low Clearcutting over High CCF. Figure 23 plots the effects of the *citizens (importance)* subscale on the alternative harvesting regime outcomes. The plot depicts that increasing importance for forestry network opinions appears to decrease the probability of High CCF while increasing the probability of Low CCF and Low Clearcutting. Meanwhile, High Clearcutting probability appears to increase only slightly.

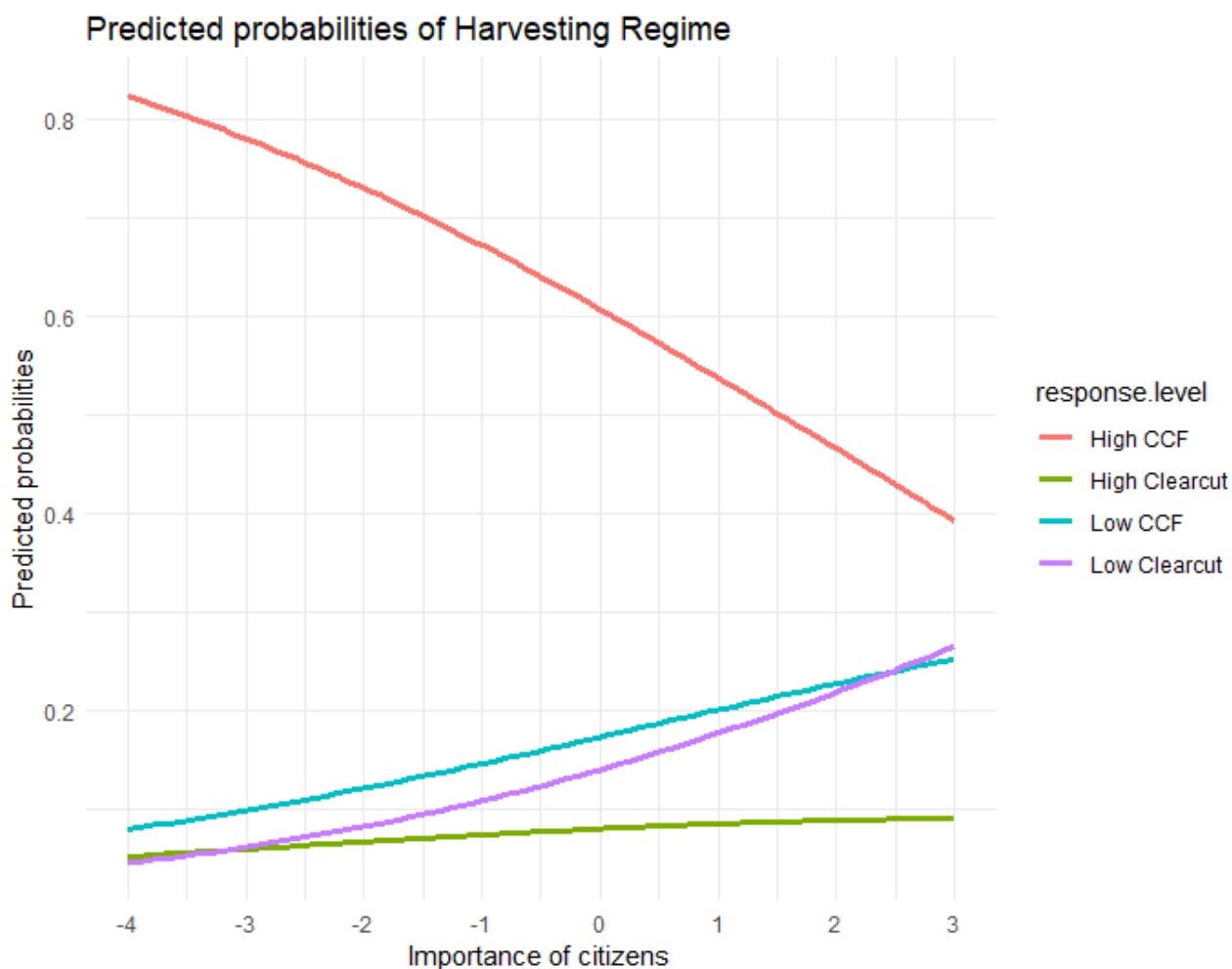


FIGURE 23. PROBABILITY PLOT FOR HARVESTING REGIMES BASED ON CITIZENS (IMPORTANCE) SUBSCALE.

In the case of the *support mechanisms (availability)* subscale, a practitioner's increasing belief that they will have access to support mechanisms required for implementing their forest management objectives decreases the likelihood of selecting Low CCF over High Clearcutting. Figure 24 plots the effect of the *support mechanism (availability)* subscale on the alternative harvesting regimes outcomes. The plot depicts that increased beliefs about the availability of access for support mechanism in the future is attributed to a decrease in the probability of selecting Low CCF and an increase in the probability of selecting High Clearcutting.

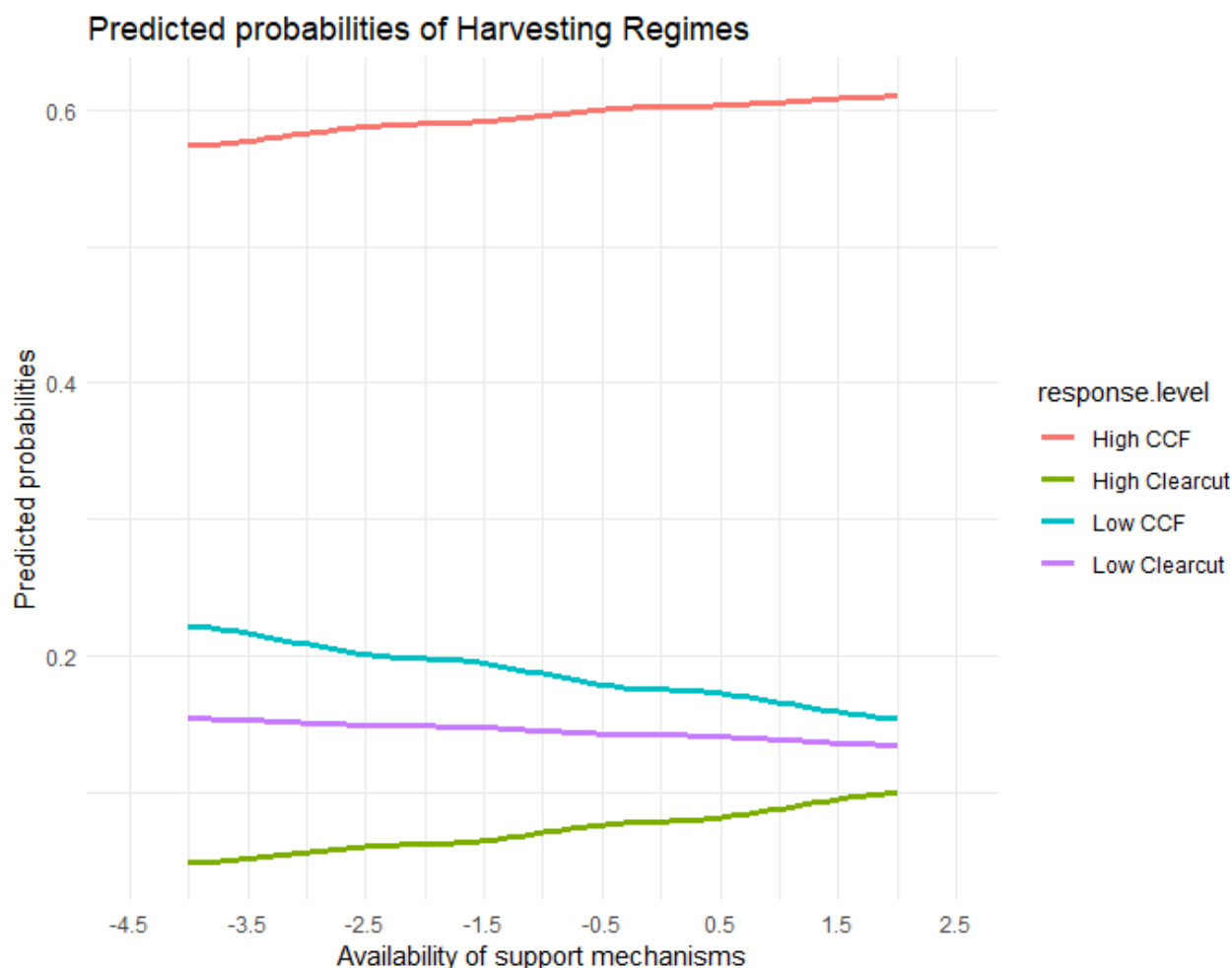


FIGURE 24. PROBABILITY PLOT FOR HARVESTING REGIMES BASED ON SUPPORT MECHANISMS (AVAILABILITY) SUBSCALE.

In the case of forest country effects on the probability of selecting the alternative harvesting regimes, Table 18 shows that the effects of country location are significant for the four pairwise selections. Note that Croatia is used as a reference level to compare country effects. In the case of High CCF over High Clearcutting being in Czechia, Finland, France, Germany, Italy, Latvia, Romania, and Sweden are significant different relative to the reference category of being in Croatia. Being in Finland, France, Latvia and Sweden the odds of selecting High CCF over High Clearcutting relative to if the forest was in Croatia. While in Italy, the odds of selecting High CCF over High Clearcutting increases in the case of a forest being in Italy compared to a forest being in Croatia. In the case of Low CCF over High Clearcutting, being in Italy over Croatia is statistically significantly likely to increase the probability of selecting Low CCF. In the case of Low CCF over High CCF, being in France increases the odds of selecting Low CCF and being in Romania decreases the odds of selecting Low CCF. Finally, In the case of Low Clearcutting over High CCF, being in Czechia and Italy decreases the odds of selecting High CCF while being in Finland, Latvia, or Sweden increases the odds. Figure 25 plots the effect of the country of the forest on each of the alternative four harvesting regimes outcomes. Relative to the significant findings, one key finding of the plots is that Sweden (SE), Finland (FI) and Latvia (LV) are the countries with the highest probabilities to engage in HI and Low Clearcutting and lowest probability to engage in High CCF.

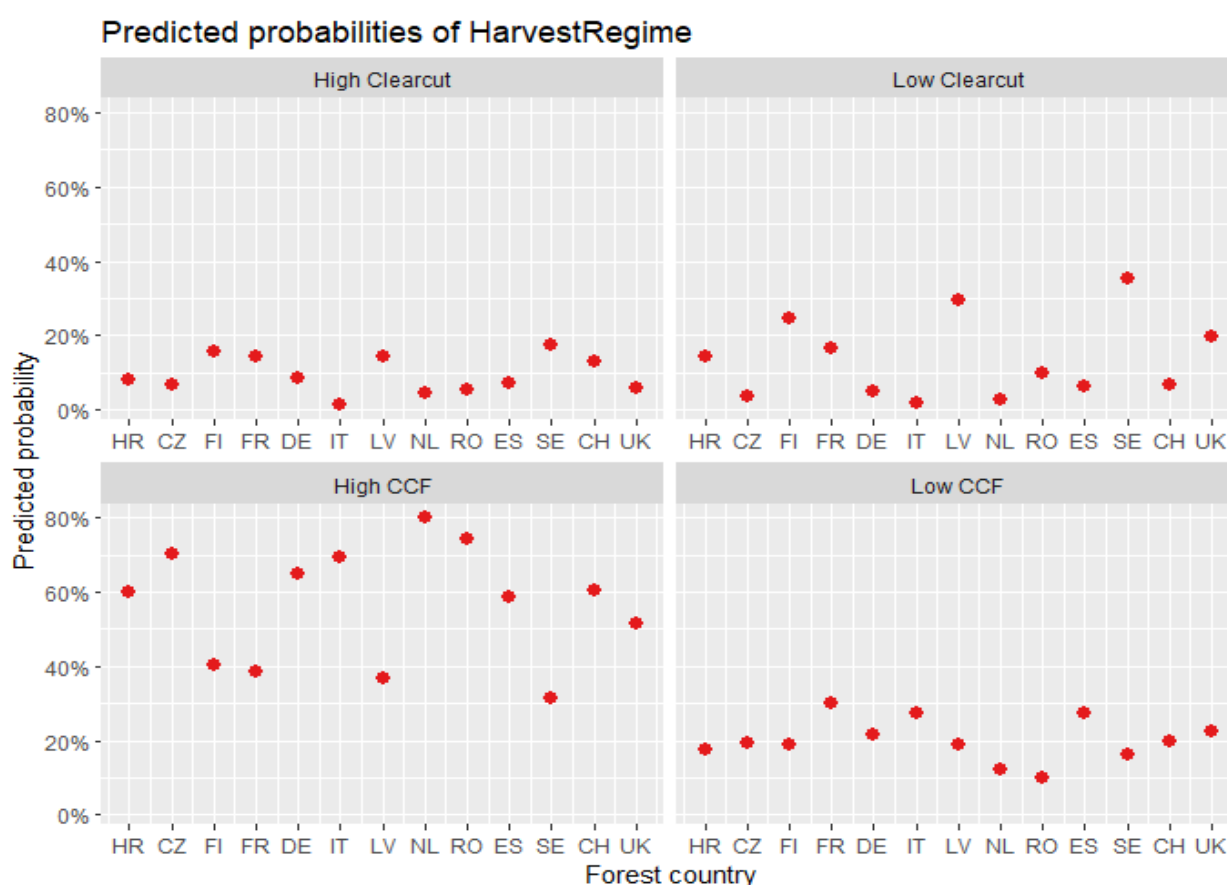


FIGURE 25. PROBABILITY PLOT FOR HARVESTING REGIMES BASED ON FOREST COUNTRY LOCATION: CROATIA (HR), CZECHIA (CZ), FINLAND (FI), FRANCE (FR), GERMANY (DE), ITALY (IT), THE NETHERLANDS (NL), SPAIN (ES), SWEDEN (SE), SWITZERLAND (CH), AND THE UNITED KINGDOM (UK).

In the case of practitioner class effects on the probability of selecting the alternative harvesting regimes, Table 18 shows that the effects of country location are significant for the four pairwise selections. When comparing High CCF over High Clearcutting, being a private manager (PM) increases the probability of selecting High CCF relative to if the practitioner was a public manager (PuM). The same is true when comparing Low CCF to High Clearcutting. In other words, private managers (PM) are more likely to select High CCF and Low CCF over High Clearcutting compared to PuM. When comparing Low CCF to High CCF, family members managers (FMM) are less likely to select Low CCF compared to public forest managers (PuM). Finally, when comparing Low Clearcutting to High CCF, private managers (PM), public-private managers (PPM), and family forest managers (FMM) are less likely to select Low Clearcutting compared to public managers (PuM). Figure 26 plots the effect of the practitioner class on each of the alternative harvesting regimes outcomes. Notable effects include that FMM report a much higher probability to select High CCF over other harvesting alternatives and PM and forest owners and managers (FOM) appear to show the highest probability of engaging in Low CCF.

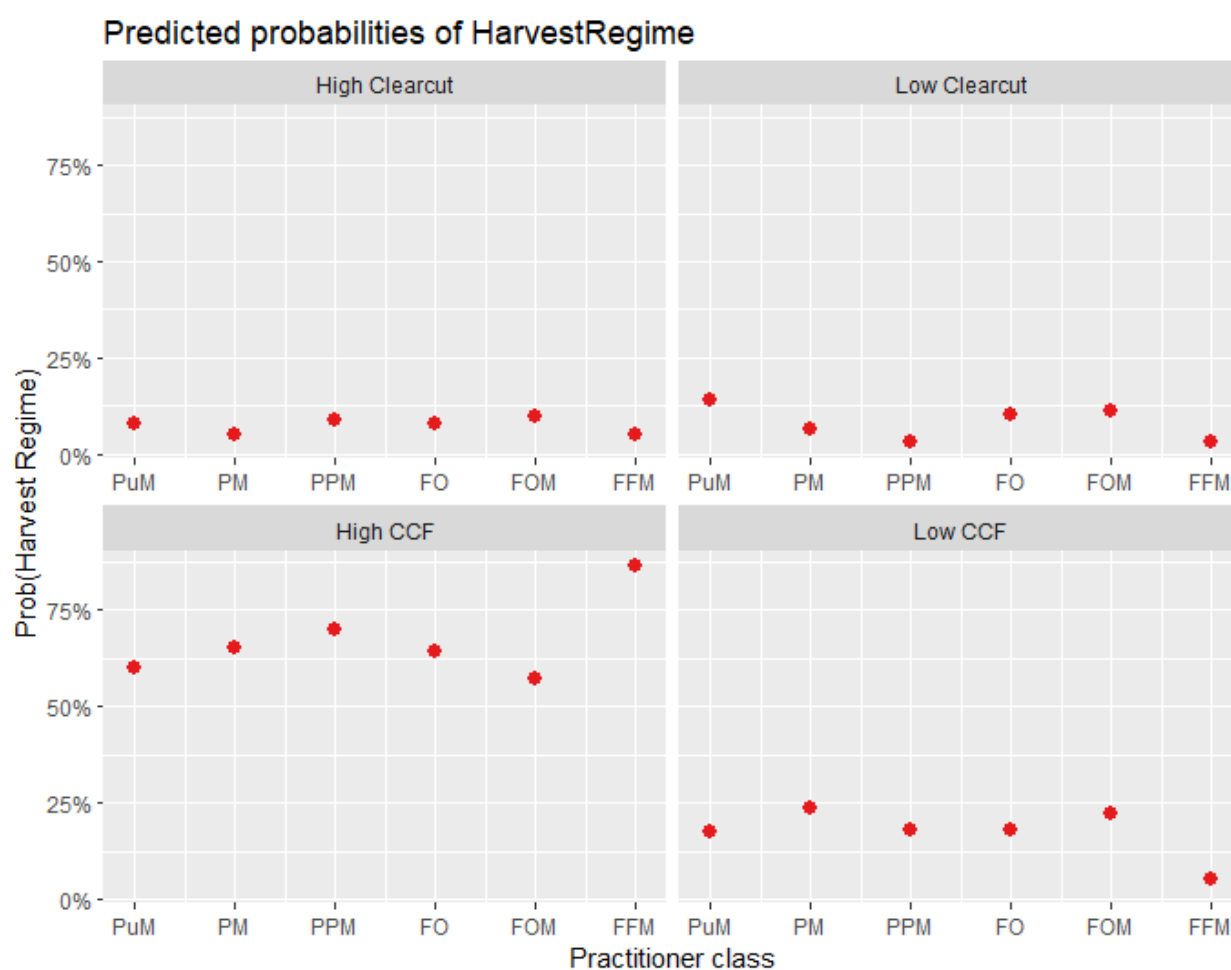


FIGURE 26. PROBABILITY PLOT FOR HARVESTING REGIMES BASED PRACTITIONER CLASS.

In the case of the total forest area's effects on the probability of selecting the alternative harvesting regimes, Table 18 shows that the effects of country location are significant for only three of the four pairwise comparisons. When comparing High CCF to High Clearcutting, the probability to select High CCF decreases

once forest area is larger than 5 hectares. When comparing Low CCF to High Clearcutting, the probability to select Low CCF decreases with forest areas larger than 1 hectare. Lastly, when comparing Low Clearcutting to High CCF, the probability of select Low Clearcutting increases if the forest size is greater than 50 hectares. Figure 27 plots the effect of the practitioner class on each of the alternative harvesting regimes outcomes. The notable effects include the increased probability of High Clearcutting up until forest area reaches 100 hectares, in which case there is a decline, the increased probability of Low Clearcutting with size, the decrease of High CCF with forest size, and the weak effect of forest size on Low CCF probabilities.

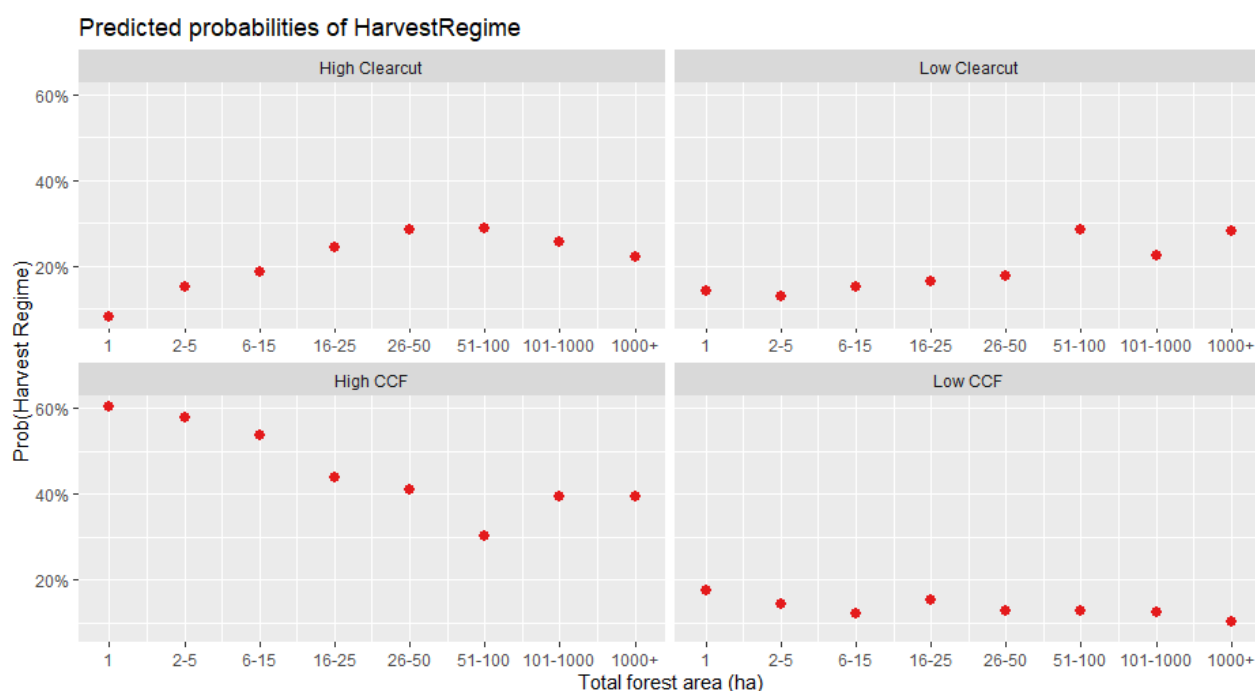


FIGURE 27. PROBABILITY PLOT FOR HARVESTING REGIMES BASED SIZE OF TOTAL FOREST AREA.

Deadwood management

Respondents were asked to disclose what type of deadwood management practice they typically applied in their prevalent forest area. Respondents who indicated that their entire forest was left unmanaged were omitted from reporting on this management activity. Of the 1712 respondents who reported managing their forest, about 34% reported primarily retaining deadwood, 14% reported primarily proliferating deadwood (i.e., increasing the amount of deadwood in their forest), and about 50% reported primarily removing deadwood.

Figure 28 depicts the differences in reported deadwood management practices according to each forest practitioner class. A chi-square test reported a statistically significant relationship between the variables ($p < .001$). A larger percentage of public managers (PuM) and public-private managers (PPM) reported proliferating deadwood relative to the other practitioner classes. There is also a higher proportion of respondents selecting the “I don’t know” option, indicating greater uncertainty (“I don’t know”) among forest practitioners that own their forest (i.e., FO, FOM).

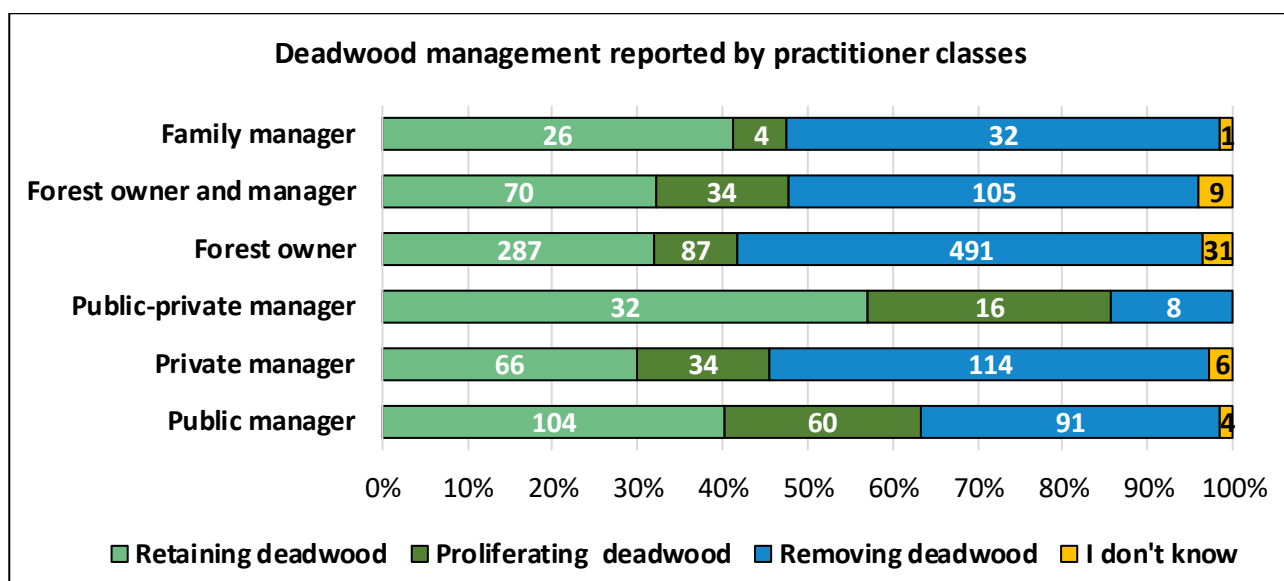


FIGURE 28. REPORTED TYPICAL DEADWOOD MANAGEMENT PRACTICE IMPLEMENTED IN THE PREVALENT FOREST AREA ACCORDING TO PRACTITIONER CLASS. VALUES WITHIN BARS REPRESENTS FREQUENCY OF RESPONSES.

Figure 29 depicts the differences in reported deadwood management based on the forest country. A chi-square test reported a statistically significant relationship between the variables ($p < .001$). The figure illustrates the wide range of reported deadwood management practices, for example, the practice of removing deadwood can vary from as little as 25% in France to as much as 70% in Croatia and Czechia.

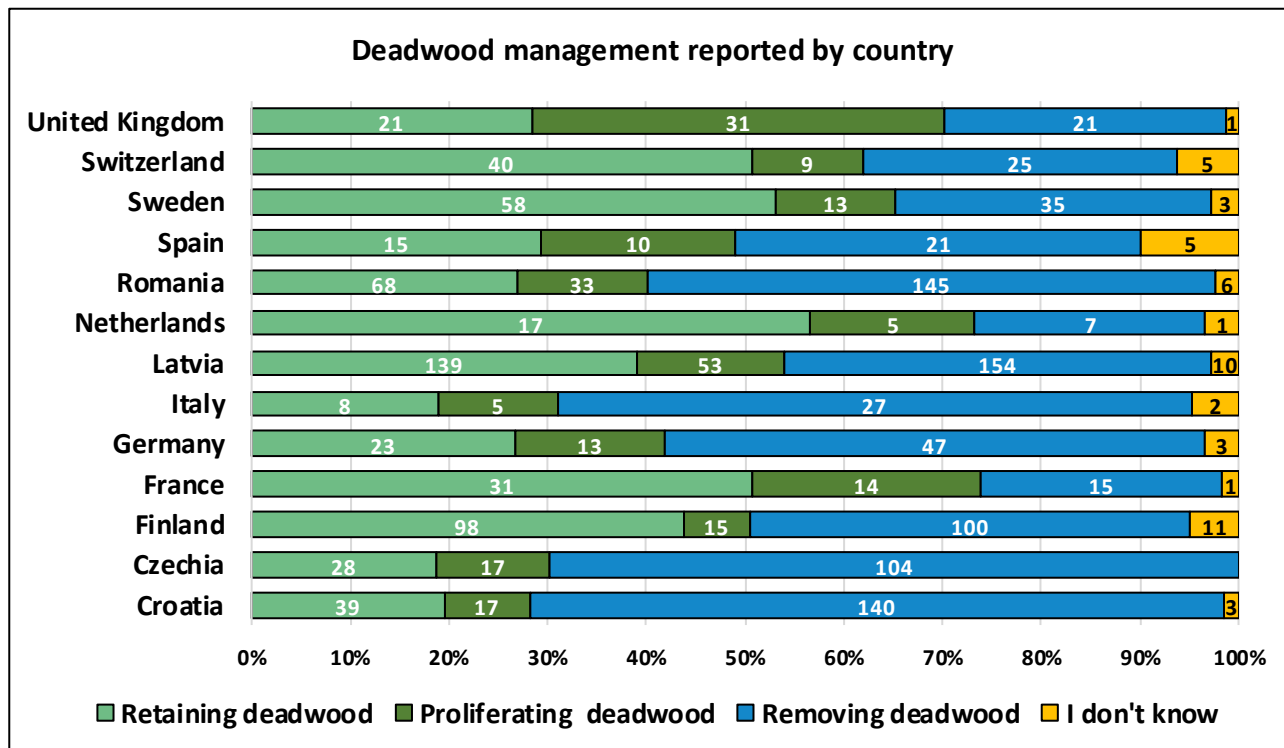


FIGURE 29. REPORTED TYPICAL DEADWOOD MANAGEMENT PRACTICE IMPLEMENTED IN THE PREVALENT FOREST TYPE ACCORDING TO THE FOREST COUNTRY LOCATION. VALUES WITHIN BARS REPRESENTS FREQUENCY OF RESPONSES.

Figure 30 depicts the differences in reported deadwood management based on the total forest size and prevalent forest size. A chi-square test reported a statistically significant relationships between the variables ($p < .001$). Note that the graphs largely illustrate a trend indicating that the removal of deadwood decreases as the size of the forest increases.

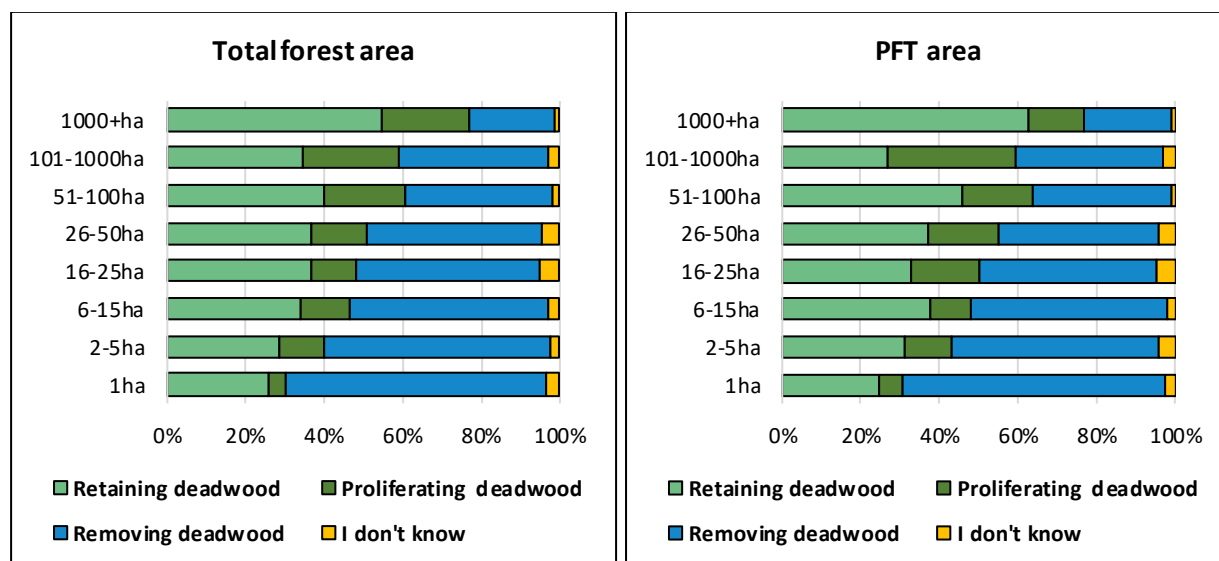


FIGURE 30. FREQUENCY OF REPORTED TYPICAL DEADWOOD MANAGEMENT PRACTICES BY TOTAL FOREST AREA (LEFT GRAPH) AND PREVALENT FOREST TYPE (PFT) AREA (RIGHT GRAPH).

A multinomial logistic regression model was implemented to estimate the effects of forest country location, practitioner class, total forest area, and the behavioural factors subscales on the likelihood of implementing one of the four deadwood management systems. However, the model ultimately held an extremely poor fit, with a predictive accuracy of 30%, which is equivalent to less than chance of randomly assigning one of the three outcomes to a respondent (33%). Due to the poor fit, the model is not reported. Fitness indicators and outputs are available in [Appendix E: Table 3](#).

General public survey results

The general public survey dataset consists of panel members responding to the general public survey distributed by a polling agency across 13 European countries. After cleaning the datasets, the final general public dataset consisted of 23,293 respondents. The breakdown of respondents according to country are presented in Figure 31.

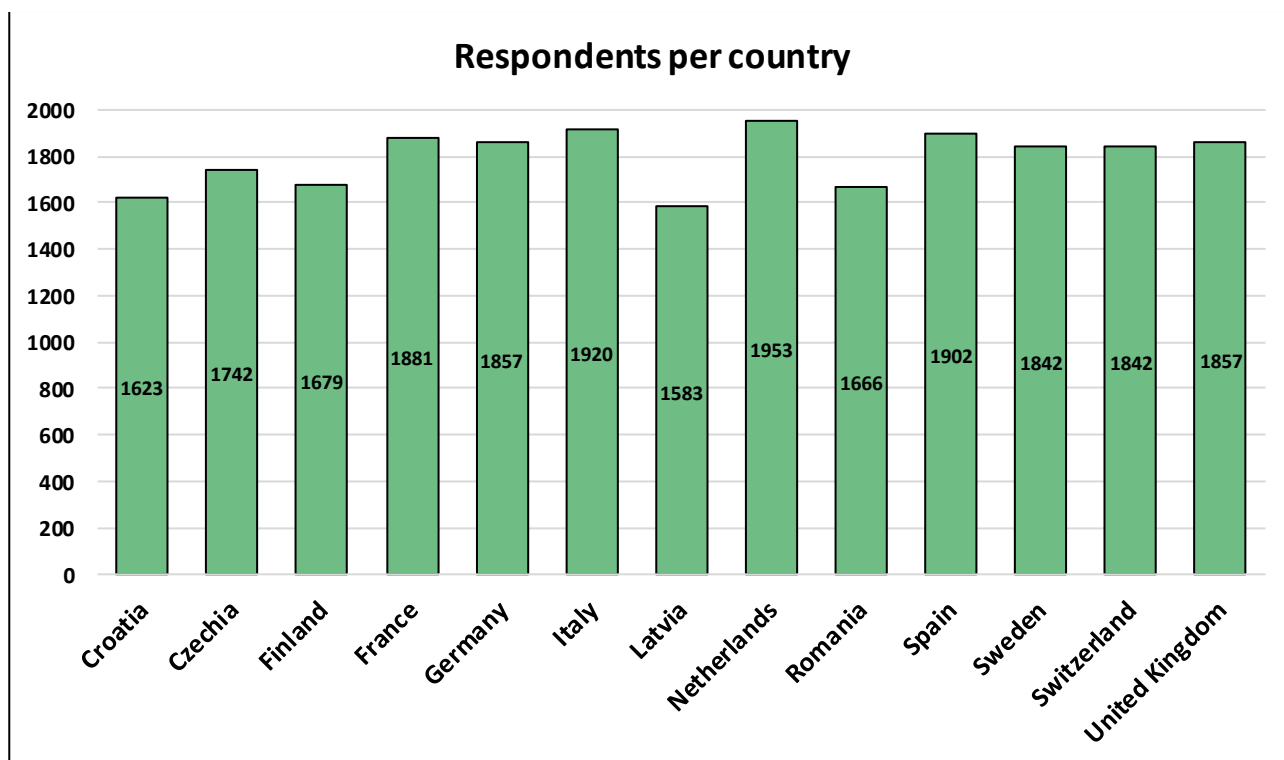


FIGURE 31. GENERAL PUBLIC SURVEY RESPONDENTS ACROSS 13 EUROPEAN COUNTRIES. FREQUENCY OF RESPONSES PER COUNTRY SHOWN WITHIN THE BARS.

Societal values towards forest

To measure societal values towards forest, respondents were asked “How important do you think it is that forest in [respondent’s country] provide the following benefits to society?”. Following, respondents were presented with 15 different forest benefits and asked to evaluate the benefit on a four point scale ranging from *not at all important* (1) to *very important* (4) (see: [Appendix C: Question 6](#)).

When examining responses to the 15 items measuring societal values towards forest, the respondents altogether (n=23,347), on average, rated the most important benefit to be *wildlife habitats* ($\mu=3.59$, $SD=.667$). Following was three-way tie between *biodiversity* ($\mu=3.48$, $SD=.714$), *regulating the environment* ($\mu=3.48$, $SD=.716$), and *natural hazard reduction* ($\mu=3.48$, $SD=.710$). The least important benefits were providing *hunting of fishing areas* ($\mu=2.50$, $SD=.984$) and providing *places for people to gather* ($\mu=2.79$, $SD=.896$). Figure 32 depicts responses from across the entire survey.

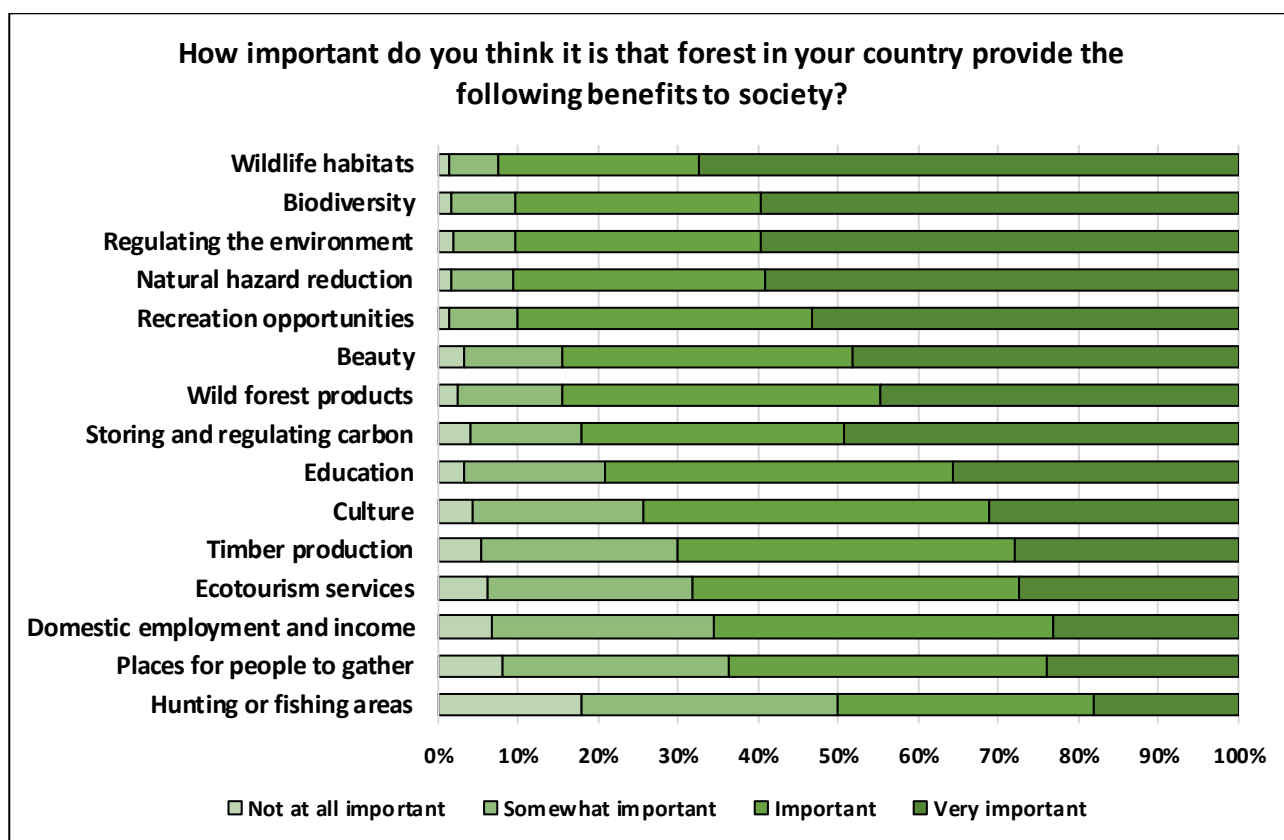


FIGURE 32. FREQUENCY OF RESPONSES IN PERCENTAGES ACROSS ALL SURVEY RESPONDENTS (N=23,347). MANAGEMENT OBJECTIVES ARE ORDERED IN RANK FROM MOST IMPORTANT (TOP) TO LEAST IMPORTANT (BOTTOM) BASED ON THE MEAN RESPONSE.

Responses to the 15 items measuring societal values towards forest were crosstabulated according to the respondent's country and the relationship between the two variables was analysed using a chi-square test. All 15 chi-square tests were significant ($p < .001$) indicating a relationship between forest values and country location. The crosstabulations are presented in Table 19. The mean country responses align with the overall survey finding that *beauty*, *biodiversity habitats*, *regulating the environment*, and *natural hazard reductions* are perceived to be the most important benefits provided by forest across the 13 individual countries. Meanwhile, that forest provide *opportunities for hunting or fishing* is generally perceived as the least important benefit. Notably, respondents from Sweden, Finland, and Romania tend to, on average, rate the importance of *hunting and fishing* higher than respondents from other countries.

TABLE 19. RESPONSE MEANS BY COUNTRY TO THE STATEMENT “HOW IMPORTANT DO YOU THINK IT IS THAT FOREST PROVIDE THE FOLLOWING BENEFITS TO SOCIETY” MEASURED FROM 1 = NOT AT ALL IMPORTANT TO 4= VERY IMPORTANT. VALUES ARE PRESENTED ON A HEAT MAP FROM SMALLEST VALUES IN RED TO LARGEST VALUES IN GREEN.

	Netherlands	Latvia	Croatia	Spain	Sweden	Switzerland	United Kingdom	Czechia	Finland	France	Germany	Italy	Romania	All
Hunting or fishing areas	2.00	2.75	2.73	2.44	3.00	2.33	2.25	2.38	2.91	2.34	2.28	2.28	3.02	2.50
Places for people to gather	2.75	2.70	3.02	2.67	2.99	2.81	2.78	2.67	2.63	2.33	2.76	3.04	3.20	2.79
Domestic employment & income	2.48	2.94	3.10	2.85	3.15	2.57	2.77	2.68	3.23	2.73	2.47	2.73	3.09	2.82
Ecotourism services	2.37	3.03	3.18	2.82	3.01	2.73	2.77	2.74	3.06	2.80	2.52	3.28	3.44	2.89
Timber production	2.27	2.87	2.93	2.93	3.26	3.01	2.70	2.89	3.15	3.00	2.89	3.02	3.16	2.92
Culture	2.76	2.97	3.12	3.25	2.96	2.82	2.90	2.97	3.08	2.94	2.77	3.33	3.27	3.01
Education	2.92	2.93	3.12	3.35	3.08	3.06	3.16	3.05	2.89	3.10	2.91	3.50	3.41	3.12
Wild forest products	2.76	3.26	3.24	3.34	3.37	3.32	3.06	3.08	3.56	3.25	3.36	3.40	3.54	3.27
Storing and regulating carbon	2.86	3.31	3.54	3.35	3.00	3.44	3.26	3.00	3.08	3.43	3.54	3.18	3.63	3.27
Beauty	3.43	3.33	3.59	3.24	3.11	3.28	3.19	3.04	3.19	3.16	3.14	3.56	3.66	3.30
Recreation opportunities	3.27	3.33	3.49	3.35	3.51	3.52	3.35	3.28	3.47	3.37	3.55	3.42	3.61	3.42
Biodiversity	3.28	3.36	3.65	3.60	3.29	3.62	3.36	3.09	3.53	3.59	3.62	3.66	3.62	3.48
Regulating the environment	3.18	3.25	3.63	3.62	3.49	3.61	3.38	3.33	3.24	3.54	3.65	3.63	3.72	3.48
Natural hazard reduction	3.25	3.23	3.63	3.60	3.52	3.59	3.33	3.33	3.30	3.50	3.53	3.72	3.70	3.48
Wildlife habitats	3.45	3.35	3.73	3.57	3.67	3.74	3.64	3.01	3.59	3.64	3.77	3.74	3.67	3.59

Societal perceptions towards forest practitioners

To capture societal perceptions towards forest practitioners, respondents were presented with three different statements evaluating A) public forest managers, B) private citizens, or C) private companies. The first statement was “*I trust how [forest practitioner A/B/C] manage forest*”. This dimension is referred to as trustworthiness. The second statement was “*[Forest practitioner A/B/C] manage forest in a good way*”. This dimension is referred to as approbation. The third statement was “*[Forest practitioner A/B/C] consider the needs of society when managing their forest*”. This dimension is referred to as adherence. Respondents were asked to evaluate each statement on a six-point scale ranging from *strongly disagree* (-3) to *strongly agree* (3). Figure 33 depicts the frequency of responses to the statements across the entire survey.

When examining trustworthiness of forest practitioners, altogether respondents (n=23,347), on average, rated public managers as the most trustworthy ($\mu=0.57$, $SD=1.67$), followed by private citizens ($\mu=0.33$, $SD=1.66$), and private companies ($\mu=0.11$, $SD=1.71$) respectively. When examining approbation for forest practitioners, altogether respondents (n=23,347), on average, rated public managers highest ($\mu=0.59$, $SD=1.61$), followed by private citizens ($\mu=0.42$, $SD=1.59$), and lastly private companies ($\mu=0.22$, $SD=1.63$). When examining adherence of forest practitioners, altogether respondents (n=23,347), on average, rated public managers highest ($\mu=0.56$, $SD=1.60$), followed by private citizens ($\mu=0.13$, $SD=1.65$), and lastly private companies ($\mu=0.00$, $SD=1.68$).

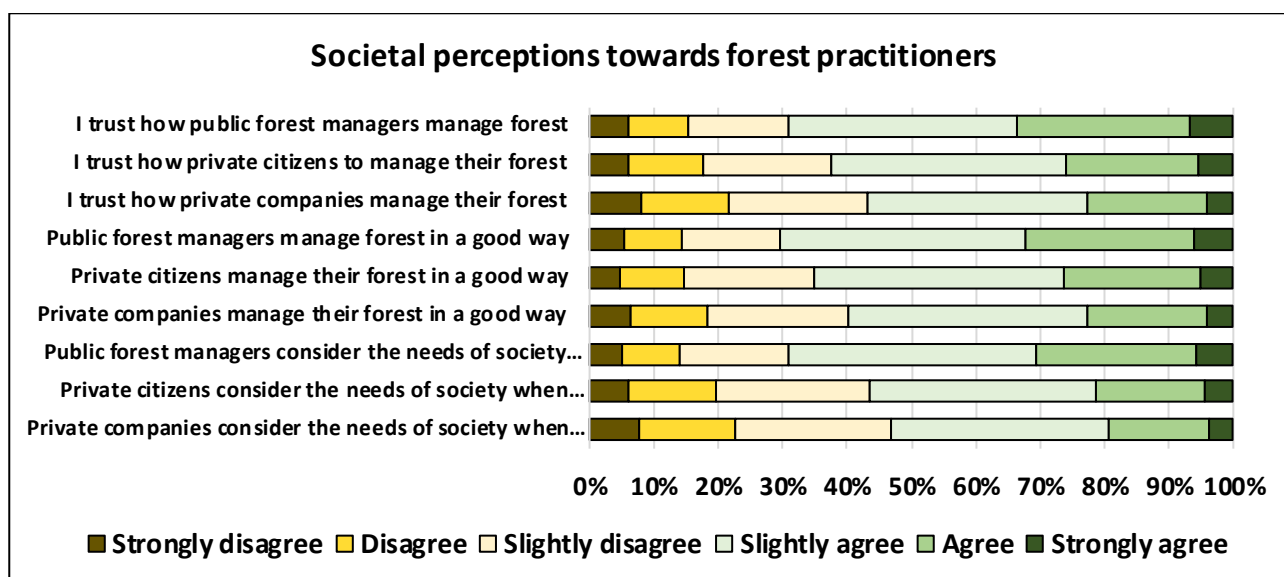


FIGURE 33. FREQUENCY OF RESPONSES IN PERCENTAGE TO SOCIETAL PERCEPTIONS TOWARDS FOREST PRACTITIONERS AND TRUSTWORTHINESS OF THEIR FOREST MANAGEMENT ACROSS ALL SURVEY RESPONDENTS (N=23,347).

Responses to the 9 statements measuring societal perceptions towards forest practitioners were crosstabulated according to the respondent's country and the relationship between the two variables was analysed using a chi-square test. All 9 chi-square tests were significant ($p < .001$) indicating a relationship between the variables. The crosstabulations are presented in Table 20.

TABLE 20. RESPONSE MEANS TO STATEMENTS MEASURING SOCIETAL PERCEPTIONS TOWARDS FOREST PRACTITIONERS BY COUNTRY. RESPONSES MEASURED ON A SIX-POINT SCALE FROM -3 = STRONGLY DISAGREE TO 3= STRONGLY AGREE. VALUES ARE PRESENTED ON A HEAT MAP FROM SMALLEST VALUES (IN RED) TO LARGEST VALUES (IN GREEN).

	"Consider needs of society" (adherence)			"Good management" (approbation)			"I trust" (trustworthiness)		
	Private company	Private citizen	Public manager	Private company	Private citizen	Public manager	Private company	Private citizen	Public manager
Croatia	-0.71	-0.39	-0.19	-0.56	-0.13	-0.32	-0.79	-0.32	-0.39
Czechia	0.15	0.22	0.60	0.24	0.45	0.57	0.24	0.36	0.53
Finland	0.39	0.53	0.93	0.75	1.02	1.03	0.63	0.92	1.07
France	-0.25	-0.14	0.61	-0.10	0.06	0.64	-0.19	-0.01	0.64
Germany	-0.08	0.20	0.60	0.32	0.66	0.75	0.26	0.54	0.78
Italy	0.27	0.38	0.58	0.41	0.49	0.46	0.20	0.37	0.38
Latvia	-0.07	-0.12	0.44	0.32	0.39	0.63	0.34	0.38	0.68
Netherlands	0.43	0.48	1.09	0.62	0.78	1.26	0.55	0.67	1.25
Romania	-0.51	-0.44	-0.39	-0.46	-0.43	-0.64	-0.61	-0.51	-0.65
Spain	-0.26	-0.17	0.20	-0.09	0.11	0.15	-0.15	0.22	0.18
Sweden	0.19	0.36	0.55	0.37	0.75	0.60	0.24	0.58	0.58
Switzerland	0.25	0.38	1.09	0.56	0.70	1.22	0.51	0.64	1.21
United Kingdom	0.04	0.28	0.99	0.30	0.50	1.12	0.07	0.28	0.98

The tabulations presented in Table 20 reflect the overall findings from Figure 33, in that trustworthiness, approbation, and adherence are highest for public managers, then private citizens, and lastly private companies. Notably, trust in all three types of forest practitioners is especially low in Croatia (HR) and Romania (RO), as is reflected by the negative mean score. Meanwhile, trust in all three forest practitioners is especially high in Finland, the Netherlands, and Switzerland. Trustworthiness private companies and private citizens is negative in France, Romania, and Spain. Likewise, trust in companies is quite low in the United Kingdom despite the high amount of trust placed public practitioners.

Societal knowledge about forest management practices

To measure societal knowledge about different forest, management practices, respondents were asked “How aware are you of the following forest management activities and terminology”. Following, respondents were presented with 10 different forest management practices and their definitions. Respondents self-identified their level of knowledge on a four point scale ranging from “Never heard of it before” to “Have expert knowledge of it”.

Figure 34 depicts the frequency of responses across the entire survey for each forest management activity. Across all the activities, few respondents reported having expert knowledge on the different management practices. On the other hand, many respondents reported never having heard of the management practices before. Overall, *reforestation* appears to be the management practice for which respondents have the most knowledge, with 5% of respondents reporting having expert knowledge and only 9% of respondents having never heard the term before. Meanwhile, respondents reported having the least overall knowledge about *ash fertilization*, as more than 40% of respondents claim they never heard of the term before and only 2% reported having expert knowledge of the practice.

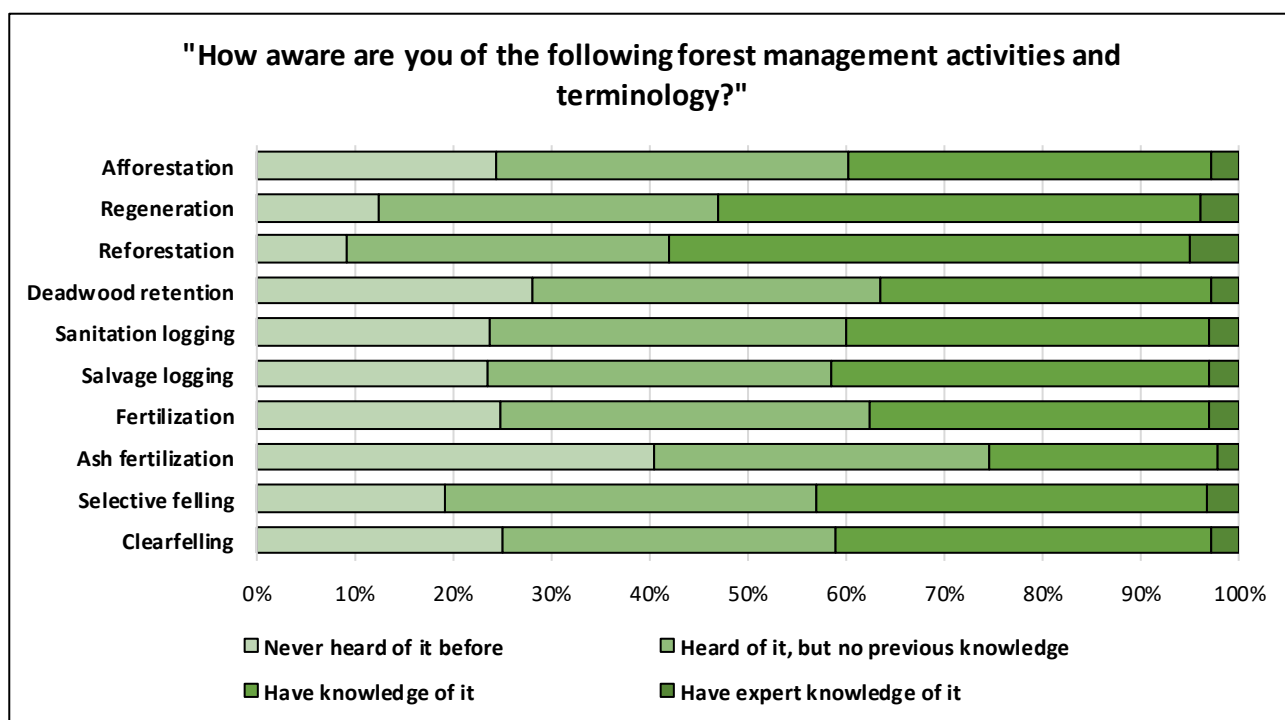


FIGURE 34. PERCENTAGE OF RESPONSES TO STATEMENT “HOW AWARE ARE YOU OF THE FOLLOWING FOREST MANAGEMENT ACTIVITIES AND TERMINOLOGY?” ACCORDING TO ALL COUNTRIES (N=23,347).

Responses to the 10 items measuring societal knowledge towards forest management activities were crosstabulated according to the respondent's country and the relationship between the two variables was analysed using a chi-square test. All 10 chi-square tests were significant ($p < .001$) indicating a relationship between the variables. The crosstabulations are presented in Table 21.

Overall, the crosstabulation largely mirrors the survey-wide findings. *Ash fertilization* appears to be the management activity which least respondents are familiar with. Knowledge towards *ash fertilization* is low across all countries but is highest in Finland and Italy. Meanwhile, knowledge of reforestation is depicted as relatively high across all countries except Latvia, the Netherlands, and Sweden.

Another notable trend is that, in general, respondents from Finland appear to have the highest reported knowledge towards all forest management activities. On the other hand, respondents from the Netherlands appear to have relatively less knowledge of all activities compared to other country respondents. This is closely followed by Switzerland and the United Kingdom, except that both countries show exceptionally high knowledge about the term *reforestation* and *regeneration*.

TABLE 21. MEANS TO STATEMENTS MEASURING SOCIETAL KNOWLEDGE TOWARDS FOREST MANAGEMENT ACTIVITIES BY COUNTRY. RESPONSES MEASURED ON A FOUR-POINT SCALE FROM 1= NO KNOWLEDGE TO 4= HAVE EXPERT KNOWLEDGE. VALUES ARE PRESENTED ON A HEAT MAP, WITH SMALLEST VALUES IN RED TO LARGEST VALUES IN GREEN.

	Clearfelling	Selective felling	Ash fertilization	Fertilization	Salvage logging	Sanitation logging	Deadwood retention	Reforestation	Regeneration	Afforestation
Croatia	2.33	2.61	2.05	2.24	2.51	2.35	2.17	2.82	2.66	2.76
Czechia	2.19	2.30	2.06	2.16	2.49	2.44	2.49	2.64	2.72	2.55
Finland	2.83	2.35	2.21	2.68	2.45	2.56	2.42	2.49	2.68	2.47
France	1.94	2.51	1.93	2.01	2.07	2.24	2.07	2.71	2.35	1.72
Germany	2.42	2.05	1.74	2.1	2.23	1.85	2.28	2.58	2.27	2.51
Italy	2.20	2.43	2.12	2.29	2.31	2.37	1.92	2.75	2.42	2.00
Latvia	2.28	2.2	1.74	1.78	2.25	2.29	2.12	2.22	2.47	2.17
Netherlands	1.78	2.09	1.59	1.89	1.7	2.05	2.12	2.17	1.97	2.07
Romania	2.03	2.47	1.93	2.29	2.35	2.42	2.02	2.7	2.58	2.38
Spain	1.94	2.36	2.01	2.38	2.29	2.27	1.86	2.79	2.60	1.91
Sweden	2.61	1.89	1.62	2.19	2.24	2.03	2.04	2.11	2.43	1.96
Switzerland	2.22	2.23	1.84	1.97	2.21	2.05	2.23	2.62	2.37	2.22
United Kingdom	1.79	2.05	1.56	2.09	1.75	1.67	1.8	2.44	2.37	1.81

Societal perceptions towards forest management activities

To measure societal acceptance towards forest management activities, respondents were asked “How acceptable to you are the following management activities”. Following, respondents were presented with the list of 10 forest management practices and their definitions. Respondents evaluated their acceptability on a six-point scale from ranging from “Highly unacceptable” to “Highly acceptable”.

Figure 35 depicts the frequency of responses across the entire survey for each forest management activity. *Clearcutting* represented the least acceptable forest management practice, with more than half of respondents finding the practice unacceptable to some degree (53%). It was also the practice that received the most variability in terms of responses. *Fertilization* was the second least acceptable practice, with a quarter of respondents (25%) finding the practice unacceptable to some degree. The third least acceptable practice was *Deadwood Retention*, with a fifth of respondents (20%) finding the practice to some degree unacceptable. The remaining practices (i.e., afforestation, regeneration, reforestation, sanitation logging, salvage logging, ash fertilization, and selective felling) show similar degrees of unacceptability, ranging from 5% to 15%.

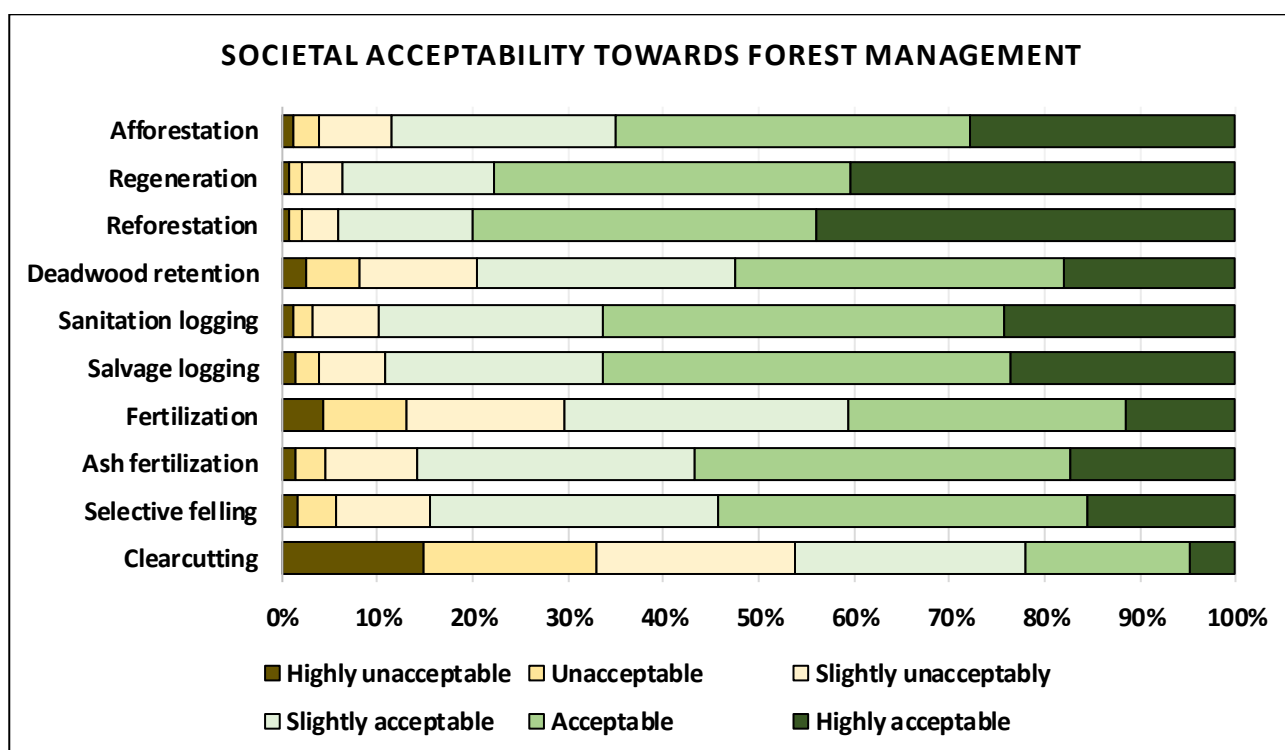


FIGURE 35. FREQUENCY OF RESPONSES IN PERCENTAGE TO SOCIETAL ACCEPTANCE TOWARDS 10 FOREST MANAGEMENT ACTIVITIES ACROSS ALL SURVEY RESPONDENTS (N=23,347).

Responses to the 10 items measuring societal acceptance towards forest management activities were crosstabulated according to the respondent's country and the relationship between the two variables was analysed using a chi-square test. All 10 chi-square tests were significant ($p < .001$) indicating a relationship between the variables. The crosstabulations are presented in Table 22. The crosstabulations largely mirror the survey-wide findings in that clearcutting is, on average, perceived as the least acceptable activity across all countries. However, there is some degree of ambivalence towards clearcutting in Croatia, where the average mean value for acceptability is close to zero. Meanwhile, respondents in Germany and Italy, on average, perceive the practice extremely unfavourably.

TABLE 22. RESPONSE MEANS TO STATEMENTS MEASURING SOCIETAL ACCEPTANCE TOWARDS THE 10 FOREST MANAGEMENT ACTIVITIES BY COUNTRY. RESPONSES WERE MEASURED ON A SIX-POINT SCALE FROM -3 = HIGHLY UNACCEPTABLE TO 3= HIGHLY ACCEPTABLE. VALUES ARE PRESENTED ON A HEAT MAP, FROM SMALLEST VALUES IN RED TO LARGEST VALUES IN GREEN.

	Clearcutting	Selective felling	Salvage logging	Sanitation logging	Ash fertilization	Fertilization	Deadwood retention	Reforestation	Regeneration	Afforestation
Croatia	0.04	1.41	1.80	1.71	1.60	1.15	0.98	2.36	2.28	2.15
Czechia	-0.34	1.09	1.38	1.54	1.35	0.80	1.06	1.99	2.02	1.54
Finland	-0.09	1.79	1.81	1.92	1.66	0.82	1.55	2.07	2.13	1.74
France	-0.13	1.47	1.82	1.69	1.65	0.48	1.21	2.20	2.02	1.55
Germany	-0.98	1.39	1.63	1.52	1.21	0.45	1.46	2.17	1.75	1.91
Italy	-0.97	0.88	1.48	1.53	1.53	0.91	0.82	2.17	2.09	1.70
Latvia	0.31	1.20	1.62	1.65	1.26	0.59	0.98	1.76	2.07	1.42
Netherlands	-0.43	1.14	1.34	1.46	0.90	0.59	1.46	1.97	1.77	1.78
Romania	-0.38	1.37	1.47	1.88	1.53	1.46	0.79	2.37	2.28	2.08
Spain	0.19	1.25	1.80	1.78	1.59	1.37	0.93	2.07	2.07	1.40
Sweden	-0.09	1.56	1.69	1.78	1.44	0.57	1.39	1.82	1.97	1.10
Switzerland	-0.62	1.36	1.71	1.60	1.32	0.18	1.37	2.15	1.86	1.60
United Kingdom	-0.07	1.22	1.63	1.60	1.22	0.55	1.37	2.08	2.11	1.48
Total	-0.29	1.31	1.63	1.66	1.40	0.75	1.19	2.09	2.03	1.65

Factors shaping societal acceptance towards forest management

Binary regression models were implemented to estimate the effects of forest values, trust towards forest practitioners, environmental attitudes, and forestry knowledge on acceptance towards forest management activities. One binary regression model was run for each of the ten management activities presented in the survey. This subchapter reports only on significant findings from the models. The full model outputs are available in [Appendix F](#). Table 23 provides an overview of the significant findings across the 10 models.

TABLE 23. OUTPUTS OF BINARY REGRESSION MODEL. EFFECTS OF STATISTICALLY SIGNIFICANT PREDICTOR VARIABLES ON THE LIKELIHOOD OF ACCEPTING THE FOREST MANAGEMENT ACTIVITY. READING THE TABLE: ↓ INDICATES A DECREASED LIKELIHOOD. ↑ INDICATES AN INCREASED LIKELIHOOD. FOR CATEGORICAL PREDICTOR VARIABLES, THE DIRECTIONALITY OF AN EFFECT IS DETERMINED RELATIVE TO THE REFERENCE CATEGORY (R.L.). FOR CONTINUOUS PREDICTOR VARIABLES, THE DIRECTIONALITY OF THE EFFECT IS RELATIVE TO AN INCREASE IN THE VARIABLE.

	Selective cutting	Ash Fertilization	Afforestation	Salvage cutting	Reforestation	Fertilization	Deadwood retention	Clearfelling	Sanitation logging	Regeneration
Public (trust)	↑	↑	↑	↑	↑		↑	↑	↑	↑
Citizens (trust)			↓			↓		↓		
Companies (trust)	↑	↑	↑	↑		↑		↑		
Regulatory (FV1)	↑	↑	↑	↑	↑	↓	↑	↓	↑	↑
Cultural (FV2)		↑	↑					↑		
Provisioning (FV3)	↑	↑		↑		↑		↑	↑	
Ecological values	↑	↑	↑	↑	↑	↑	↑	↓	↑	↑
Knowledge										
1 (least)	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>
2	↑	↑	↑		↑	↑	↑	↑	↑	↑
3	↑	↑	↑	↑	↑	↑	↑	↓	↑	↑
4 (most)	↑	↑			↑	↑	↑	↓	↑	
Country										
HA	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>
CZ	↓		↓	↓		↓	↑	↓	↓	↓
FI	↑				↑	↓	↑	↓		
FR			↓		↓	↓	↑	↓	↓	↓
DE		↓	↓	↓	↓	↓	↑		↓	↓
IT	↓	↓	↓	↓	↓	↓		↓	↓	↓
LV			↓			↓	↑	↓		
NL		↓		↓		↓	↑	↑		
RO				↓		↑		↓		
ES			↓		↓	↑	↑	↓		↓
SE	↑		↓	↓		↓	↑	↓		↓
CH	↓	↓	↓	↓	↓	↓	↑		↓	↓
UK		↓	↓			↓	↑			
Forest visits										
Never	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>
Yearly	↑	↑	↑	↑						↑
Monthly	↑	↑	↑	↑	↑			↓	↑	↑
Weekly	↑	↑	↑	↑			↑	↓		↑
2-3x per week	↑		↑							↑
4+ per week	↑	↑	↑	↑		↓				↑
Age										
18-29	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>	<i>r.l.</i>
30-39	↑	↑	↑	↑			↑		↑	↑
40-49	↑	↑	↑	↑	↑		↑		↑	↑
50-64	↑	↑	↑	↑	↑		↑		↑	↑
65+	↑	↑		↑	↑			↓	↑	↑



The final model outputs resulted in five key findings. The first key finding was a confirmation of the conceptual model for acceptability towards forest management activities (Figure 2), in that forest values, environmental attitudes, and trust were all significant predictors in estimating acceptability for different forest management activities. This was true across the 10 different models.

The second key finding is that forest values effects differ depending on the forest management activity. In the case of regulatory objectives, increased importance being placed on regulatory objectives increases acceptance towards all of the management activities except fertilization and clearcutting. In the case of cultural objectives, importance towards cultural objectives increases acceptability for three activities *ash fertilization, afforestation, and clearcutting*. The variable was not significant in impacting acceptability of other activities. In the case of provisioning objectives, as importance increases, so does acceptability towards selective cutting, ash fertilization, salvage cutting, fertilization, clearfelling, and sanitation logging (i.e., essentially, all of the activities associated with cultivating and harvesting).

The third key finding is the effect of environmental attitudes, which are measured through two variables (i.e., the NEP scale and frequency of visitation to a forest). The NEP scale was significant for all the management activities and showed that as environmental attitudes increased so does acceptance towards all the management activities except clearcutting. A similar effect is found with forest visitation, in that for seven of the management activities, increased frequency of forest visitation is associated with an increase acceptability towards forest management practices. The exception is with clearcutting, as is mirrored in the NEP scale. This suggests most forest management activities are not directly opposed to environmentally friendly worldviews, although clearcutting might be the exception.

The fourth key finding is the unique effects of trust on acceptability. What is unique to these models compared to prior research is that three measures of trust each representing a different types of forest practitioners were estimated on acceptability. In the case of *trust towards public managers*, the effect is significant in 8 out of 9 models and the directionality confirms the hypothesis that increased trust leads to increased acceptability. For *trust towards companies managing forest*, the variable was significant in 6 out of 9 models and the directionality confirm the hypothesis that increased trust leads to increased acceptability. Finally, in the case of *trust towards private citizens managing forest*, the variable was only significant in 3 out of 9 models (afforestation, fertilization, clearcutting) but the effects indicate that as trust for citizens increases, acceptability towards these activities decreases. This effect is opposite to what is hypothesized. Altogether, the effects suggest a greater need for understanding on how trust towards different practitioner classes affects acceptability for different forest management activities. Alternatively, it may be worthwhile merging the trust measures into a global variable and observing the effects.

The fifth and final key finding is that unique effects found in the model estimating acceptability towards clearcutting relative to the other management activities. Noticeably, most variables produce an opposite effect than what is found across the other 8 models. For example, while knowledge is theorized to improve acceptability, in the case of clearcutting, increased knowledge decreases acceptability towards clearcutting. Similarly, increased environmental attitudes (measured by the NEP scale) results in increased disapproval for clearcutting. Likewise, the more important that respondents find different regulatory services to be the less approving they are of clearcutting. Likewise, the oldest respondent group (ages 65+) have a higher probability of disapproving of clearcutting than the younger reference level group (ages 18-29).

Conclusions

Forest management objectives and the most important benefits to society

Climate-smart forestry and restoration management represent pathways for responding to the various socio-ecological pressures threatening forest ecosystems. While climate-smart forestry aims to enable climate change mitigation and climate change adaptation, forest landscape restoration aims to restore forest ecosystem functions like biodiversity, wildlife habitat, and carbon storage. Whereas climate-smart forestry and restoration conceptually centre various forest ecosystem services, it could be argued that the delivery of regulatory ecosystem services (e.g., climate regulation, preserving biodiversity) are emphasized as key management priorities. To understand whether forest practitioners and society would agree with these priorities, as well as if there is consensus between the parties over which ecosystem services are most important, both parties were asked to evaluate how important they find different forest ecosystem services.

In the case of forest practitioner survey, respondents ultimately rated various regulatory ecosystem services as the most important forest management objectives (i.e., preserving biodiversity, reducing and biotic forest disturbances, mitigating climate change, and improving forest soil and watershed quality). On the other hand, provisioning ecosystem services specifically for income (e.g., ecotourism services, timber, wild forest products) were rated as least important. However, provisioning ecosystem services for non-commercial uses was regarded with more intermittent importance, alongside various cultural ecosystem services (e.g., safeguarding cultural heritage sites, creating opportunities for upholding traditional knowledge, creating beautiful forest areas, etc.). Critically, different groups of forest practitioners (e.g., forest owners versus forest managers) have differing evaluations for management objectives. For example, public managers rated both cultural ecosystem services and provisioning ecosystem services as more important than forest owners, challenging project interviews with public forest managers who related that income is not a core activity of their forest management and represents a side objective (see: ForestPaths Deliverable 1.2). Critical to the discussion on climate-smart forestry and restoration, however, is that no differences were found between the practitioner classes and their views towards enabling regulatory ecosystem services, as all practitioners tend to evaluate these objectives with equally high importance. In the context of achieving the aims of climate-smart forestry and restoration, this could be seen as an alignment between the objectives of climate-smart forestry restoration and the objectives which forest practitioners find most important.

In the case of the general public survey, respondents rated the most important forest benefits to be various regulatory ecosystem services (e.g., wildlife habitats, biodiversity, regulating the environment, and natural hazard reduction), and reflect the same forest management objectives that forest practitioners rated as most important. One notable point of departure, however, is that *storing and regulating carbon*—essentially the regulatory process most directly linked to climate change mitigation—was comparatively viewed as less important than other regulatory processes presented in the survey. For example, beauty and recreation were rated as more important than storing and regulating carbon. Hence, while the high degree of societal importance for regulatory objectives aligns to the objectives of climate-smart forestry and restoration, there are potential discrepancies in the sense that a large degree of importance is also placed on cultural ecosystem services, like beauty and aesthetics. Negotiating potential trade-offs between these societal preferences is therefore something to be considered when enabling climate-smart forestry and restoration management.

Ultimately, the outcomes of the forest practitioner survey and the general public survey suggest that there is value alignment between the most important forest benefits and forest management objectives. However, as is discussed in the following subchapters, value alignment alone does not ensure societal acceptance for management practices, nor does it guarantee that practitioners are able to implement the management objectives they find most important.

At the intersection of values, norms, and societal acceptance for forest management

The general public appears to accept the aims of climate-smart forest and restoration management, given their proclivity for regulatory ecosystem services. The ensuing question is whether valuing regulatory ecosystem services impacts acceptability towards forest management practices associated with climate-smart forestry and restoration, as well as how other factors might impact acceptance for climate-smart forestry and restoration management.

Ten forest management activities were presented within the general public survey for evaluation. These activities represent a range of approaches for enabling various management aims and objectives. Of special interest when considering acceptability for climate-smart forestry and restoration is the comparison of two alternative harvesting approaches—clearcutting and selection felling—as these alternatives have vastly different impacts on forest structure, the delivery of ecosystem services, and thereby meeting climate-smart forestry and restoration aims (Puettmann et al., 2015; Bauhus et al., 2017).

Based on the survey findings, clearcutting was perceived rather ambivalently, with 53% of the respondents disapproving and 46% approving of the activity. In comparison, selective felling is looked upon positively, with only 9.9% of survey respondents disapproving of the activity. For both activities, acceptability is influenced by the respondent's forest values, environmental attitudes, trust in forest practitioners, knowledge about forestry, country location, and age. However, these factors affected acceptance in markedly different ways.

In the case of value towards regulatory ecosystem services, as this forest value increases, so does acceptance towards selective felling. The opposite effect occurs in the case of clearcutting, where increased value for regulatory ecosystem services decreases acceptance for clearcutting. Given that many respondents placed a high value on regulatory ecosystem services, this likely contributes to why clearcutting is viewed so disapprovingly. On the one hand, this presents an opportunity for climate-smart forestry and restoration, in cases where forest practitioners would move away from clearcutting to more selective felling regimes, like continuous cover forestry. However, in contexts where clearcutting is applied, for example, as a conversion activity for transitioning from forest monocultures into more diverse structures (e.g., ForestPaths Deliverable 1.2; Brunner et al., 2025), practitioners need to navigate engagements with society carefully to avoid diminishing trust by breaking societal expectation of what is considered acceptable. This is especially important given that the findings in this study indicate that reducing trust will reduce approval for *all* management activities.

Environmental attitudes produced an effect similar to value towards regulatory ecosystems services, where increasing pro-environmental attitudes are associated with increased acceptability towards selective felling and decreased acceptability for clearcutting. This suggests that clearcutting is not perceived as an environmentally friendly activity (Dunlap et al., 2000) and will garner less support from environmentally

conscious societal members. For the case of implementing selective harvesting to meet climate-smart forestry and restoration aims, this presents an opportunity to garner societal support, as recent preliminary research suggests that society is again on an upward trend towards environmental consciousness (Penker and Wardana, 2025 [preprint]) after a period of decline in the early 2000's (Franzen and Vogl, 2013).

When zooming out and considering the effects of forest values, environmental attitudes, trust, and knowledge on acceptance towards forest management activities presented in the survey that go beyond harvesting, it is interesting to note that most activities were received positively. Notably, increased trust in public forest managers increased acceptability of all management activities. At the same time, the survey finds that trust for companies and private forest owners is often low or negative, whereas trust in public forest managers is generally positive but somewhat low. The exception is Romania and Croatia, where trust it is largely negative. Ultimately, trust between society and forest practitioners presents both a weakness and opportunity for acceptance of climate-smart forestry and restoration management activities. Values can be difficult to change over time (see: Rawluk et al., 2019)—and in any case society largely approves of the forest benefits that climate-smart forestry and restoration aim to achieve—therefore improving relations, communication, and engagement between society and forest practitioners may be decisive on the path to enabling acceptance for climate-smart forestry and restoration.

Forest management activities and their drivers

Forest practitioners appear largely aligned with achieving the aims of climate-smart forestry and restoration, given that the majority of practitioners view the delivery of regulatory ecosystem services as the most important forest management objectives. What remains challenging to address, however, is pinpointing the drivers of climate-smart forestry and restoration management practices *per se*, given the challenge in categorizing different management activities as “climate-smart” (see: Cooper and MacFarlane, 2023). Therefore, instead of categorizing individual forest management activities as “climate-smart”, the factors impacting the implementation of alternative harvest regimes are explored, given that harvesting regimes impacts forest structure, the delivery of ecosystem services, and the possibility to meeting climate-smart forestry and restoration aims (Puettmann et al., 2015; Bauhus et al., 2017).

When looking at the forest management activities reported by forest practitioners, approximately 24% of practitioners reported not engaging in any kind of forest management, while the remaining 76% of practitioners reported managing at least some areas of their forest. Among these respondents managing their forest, 24.5% engage in high clearcutting, 15.2% engage in low clearcutting, 45.2% engage in high continuous cover forestry, and 15.1% engage in low continuous cover forestry. Thus, respondents are overall more likely to engage in continuous cover forestry (ca. 60%) rather than clearcutting (ca. 40%).

When it comes to the role of forest values in shaping management decisions, increased value for regulatory ecosystem service was linked to an increased likelihood of engaging in continuous cover forestry over clearcutting. The opposite effect is found for provisioning ecosystem services, which increases the likelihood of engaging in clearcutting over continuous cover forestry. Nevertheless, 40% of practitioners report engaging in clearcutting. Given that provisioning ecosystem services, especially for income, were regarded among the least important forest management objectives, while regulatory ecosystem services were the most important, this signals the weightiness of additional factors on shaping and constraining the implementation of alternative harvesting regimes (see also: Nichiforel et al., 2018; Deuffic et al., 2018). In

other words, there is more at play in decision making than the preferences and values of the forest practitioner alone.

When examining the overall factors that shape the decisions to implement between the four different harvesting regimes, the significant factors included norms (i.e., the opinions of local citizens and forestry network members), resources (i.e., the availability of policy support mechanisms, like subsidies, grants, and voluntary agreements), the forest practitioner type, the forest country location, and the total size of the forest. Considering that the predictive accuracy of the model was lower than expected, this indicates that other significant factors are likely missing from the model. For example, that practitioner class influences preferences for harvesting regimes likely indicates value differences found between practitioners that are missing from the model. Likewise, country location is likely a proxy for both environmental factors (e.g., biogeophysical condition) and societal constraints, such as policy frameworks or regulations, found between countries (see also: Suvanto et al., 2025).

Ultimately, this study aimed to improve understanding of the different factors affecting the implementation of climate-smart forest management and restoration activities among forest practitioners, as well as the role of social acceptability and its potential to impact the uptake of climate-smart forestry and restoration. The findings ultimately indicate an alignment between the aims of climate smart forestry and restoration, the ecosystem services most valued by society, the forest management objectives deemed most important by forest practitioners. However, a variety of context-dependent factors impact the implementation of the management objectives that would achieve climate-smart forestry and restoration objectives.

References

1. Bauhus, J., Forrester, D. I., & Pretzsch, H. (2017). Mixed-Species Forests: The Development of a Forest Management Paradigm. In H. Pretzsch, D. I. Forrester, & J. Bauhus (Eds.), *Mixed-Species Forests: Ecology and Management* (pp. 1-25). Berlin, Heidelberg: Springer Berlin Heidelberg.
2. Bowditch E, Santopuoli G, Binder F et al (2020) What is climate-smart forestry? A definition from a multinational collaborative process focused on mountain regions of Europe. *Ecosyst Serv* 43. <https://doi.org/10.1016/j.ecoser.2020.101113>
3. Bowditch, E., Santopuoli, G., Neroj, B. z., Svetlik, J., Tominson, M., & Pohl, V. (2022). Application of climate-smart forestry – Forest manager response to the relevance of European definition and indicators. *Trees, Forests and People*, 9.
4. Brown, T. A. (2015). *Confirmatory factor analysis for applied research* (2nd ed.). The Guilford Press.
5. Brunner, A., Valkonen, S., Goude, M., Hanssen, K. H., & Erefur, C. (2025). Definitions and Terminology: What Is Continuous Cover Forestry in Fennoscandia? In P. Rautio, J. Routa, S. Huuskonen, E. Holmström, J. Cedergren, & C. Kuehne (Eds.), *Continuous Cover Forestry in Boreal Nordic Countries* (pp. 11-43). Cham: Springer Nature Switzerland.
6. Cooper, L., & MacFarlane, D. (2023). Climate-Smart Forestry: Promise and risks for forests, society, and climate. *PLOS Climate*, 2(6): e0000212. <https://doi.org/10.1371/journal.pclm.0000212>
7. de Groot, R. S., Wilson, M. A., & Boumans, R. M. J. (2002). A typology for the classification, description and valuation of ecosystem functions, goods and services. *Ecological Economics*, 41(3), 393-408. [https://doi.org/10.1016/S0921-8009\(02\)00089-7](https://doi.org/10.1016/S0921-8009(02)00089-7)
8. Deuffic P., Sotirov M., and Arts B. (2018). “Your policy, my rationale”. How individual and structural drivers influence European forest owners’ decisions. *Land Use Policy* 79:1024–1038; <https://doi.org/10.1016/j.landusepol.2016.09.021>
9. Dunlap, R. E., Liere, K. D. V., Mertig, A. G., & Jones, R. E. (2000). Measuring Endorsement of the New Ecological Paradigm: A Revised NEP Scale. *Journal of Social Issues*, 56(3), 425-442.
10. Eriksson, L., Björkman, C., & Klapwijk, M. J. (2017). General Public Acceptance of Forest Risk Management Strategies in Sweden: Comparing Three Approaches to Acceptability. *Environment and Behavior*, 1-28. doi:<https://journals.sagepub.com/doi/10.1177/0013916517691325>
11. Fahey, R. T., Alveshire, B. C., Burton, J. I., D’Amato, A. W., Dickinson, Y. L., Keeton, W. S., . . . Hardiman, B. S. (2018). Shifting conceptions of complexity in forest management and silviculture. *Forest Ecology and Management*, 421, 59-71. <https://doi.org/10.1016/j.foreco.2018.01.011>
12. Filotas, E., L. Parrott, P. J. Burton, R. L. Chazdon, K. D. Coates, L. Coll, S. Haeussler, K. Martin, S. Nocentini, K. J. Puettmann, F. E. Putz, S.W. Simard, and C. Messier. (2014). Viewing forests through the lens of complex systems science. *Ecosphere* 5(1):1. <http://dx.doi.org/10.1890/ES13-00182.1>
13. Fischer, A. P. (2018). Forest landscapes as social-ecological systems and implications for management. *Landscape and Urban Planning*, 177, 138-147. <https://doi.org/10.1016/j.landurbplan.2018.05.001>
14. Ford, R. M., Williams, K. J. H., Smith, E. L., & Bishop, I. D. (2014). Beauty, Belief, and Trust Toward a Model of Psychological Processes in Public Acceptance of Forest Management. *Environment and Behavior*, 46(4), 403-529. doi:<https://journals.sagepub.com/doi/10.1177/0013916512456023> <https://www.sciencedirect.com/science/article/abs/pii/S1462901121002240>
15. ForestPaths (2024). D1.1 Forest management approaches across Europe [Online PDF](#).
16. ForestPaths (2024). D1.2 Key factors influencing forest practitioners’ decisions. [Online PDF](#)
17. ForestPaths (2025). D1.3 Decision rules, parameters, and narratives for modelling. [Online PDF](#)
18. Hair, J., Babin, B., Anderson, R., & Black, W. (2018). *Multivariate Data Analysis* (8th Eds.). Cengage Learning EMEA
19. HoliSoils (2025). Analysis of feasibility & trade-offs between conventional forest & climate-smart forestry (CSF) management and willingness to adopt CSF management. HoliSoils Project Deliverable 4.6.



<https://holisoils.eu/wp-content/uploads/2025/07/Deliverable-4.6-Analysis-of-feasibility-and-trade-offs.pdf>

20. Franzen, A., & Vogl, D. (2013). Two decades of measuring environmental attitudes: A comparative analysis of 33 countries. *Global Environmental Change*, 23(5), 1001-1008. <https://doi.org/10.1016/j.gloenvcha.2013.03.009>
21. Gežík, V., Brnkaľáková, S., Bašťáková, V., Kluvánková, T. (2022). Economic and Social Perspective of Climate-Smart Forestry: Incentives for Behavioral Change to Climate-Smart Practices in the Long Term. In: Tognetti, R., Smith, M., Panzacchi, P. (eds) *Climate-Smart Forestry in Mountain Regions. Managing Forest Ecosystems*, vol 40. Springer, Cham. https://doi.org/10.1007/978-3-030-80767-2_12
22. IPCC (2014) *Climate Change, Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press.
23. König, L. A., Mohren, F., Schelhaas, M.-J., Astigarraga, J., Cienciala, E., Flury, R., ... Nabuurs, G.-J. (2025). Combining national forest inventories reveals distinct role of climate on tree recruitment in European forests. *ECOLOGICAL MODELLING*, 505, 111112. <https://doi.org/10.1016/j.ecolmodel.2025.111112>
24. Jones, N., Gleridou, C., Dimitrakopoulos, P. G., & Evangelinos, K. I. (2012). Investigating social acceptability for public forest management policies as a function of social factors. *Forest Policy and Economics*, 14(1), 148-155. <https://doi.org/10.1016/j.forpol.2011.07.015>
25. Haines-Young, R., Potschin, M. (2010). The links between biodiversity, ecosystem services and human well-being. In D. G. Raffaelli & C. L. J. Frid (Eds.), *Ecosystem Ecology* (1st ed., pp. 110–139). Cambridge University Press. <https://doi.org/10.1017/CBO9780511750458.007>
26. Hernández-Carrasco, D., Tylianakis, J. M., Lytle, D. A., & Tonkin, J. D. Ecological and evolutionary consequences of changing seasonality. *Science*, 388(6750), eads4880. doi:10.1126/science.ads4880
27. Kendal, D., Ordóñez, C., Davern, M., Fuller, R. A., Hochuli, D. F., van der Ree, R., ... Threlfall, C. G. (2022). Public satisfaction with urban trees and their management in Australia: The roles of values, beliefs, knowledge, and trust. *Urban Forestry & Urban Greening*, 73, 127623. <https://doi.org/10.1016/j.ufug.2022.127623>
28. McFarlane, B. L., Parkins, J. R., & Watson, D. O. T. (2012). Risk, knowledge, and trust in managing forest insect disturbance. *Canadian Journal of Forest Research*, 710-719.
29. Menéndez-Miguélez, M., Rubio-Cuadrado, A., Bauhus, J., Cañellas, I., Crowther, T., de-Miguel, S., ... Alberdi, I. (2025). A comprehensive analysis of forest restoration practices across Europe: Ecological, economic, social and policy dimensions. *ECOLOGICAL INDICATORS*, 173, 113348. <https://doi.org/10.1016/j.ecolind.2025.113348>
30. Messier, C., Puettmann, K., Chazdon, R., Andersson, K. P., Angers, V. A., Brotons, L., ... Levin, S. A. (2015). From Management to Stewardship: Viewing Forests As Complex Adaptive Systems in an Uncertain World. *Conservation Letters*, 8(5), 368-377. doi:https://doi.org/10.1111/conl.12156
31. Nabuurs GJ, Delacote P, Ellison D et al (2017) By 2050 the mitigation effects of EU forests could nearly double through climate-smart forestry. *Forests* 8(12):484. <https://doi.org/10.3390/f8120484>
32. Nichiforel, L., Keary, K., Deuffic, P., Weiss, G., Thorsen, B. J., Winkel, G., ... Bouriaud, L. (2018). How private are Europe's private forests? A comparative property rights analysis. *Land Use Policy*, 76, 535-552. doi:10.1016/j.landusepol.2018.02.034
33. Padrón RS, Gudmundsson L, Decharme B, Ducharne A, Lawrence DM, Mao J, Peano D, Krinner G, Kim H, Seneviratne SI. (2020). Observed changes in dry-season water availability attributed to human-induced climate change. *Nature Geoscience* 13: 477–481.
34. Patacca, M., Lindner, M., Lucas-Borja, M. E., Cordonnier, T., Fidej, G., Gardiner, B., Hauf, Y., Jasinevičius, G., Labonne, S., Linkevičius, E., Mahnken, M., Milanovic, S., Nabuurs, G.-J., Nagel, T. A., Nikinmaa, L., Panyatov, M., Bercak, R., Seidl, R., Ostrogović Sever, M. Z. ... Schelhaas, M.-J. (2023). Significant increase



- in natural disturbance impacts on European forests since 1950. *Global Change Biology*, 29, 1359–1376. <https://doi.org/10.1111/gcb.16531>
35. Penker, M., Wardana R. [Preprint](2025). 30 Years of Environmental Attitudes and Behaviours. A Longitudinal Study on Environmental Change and National Affluence in European Societies using ISSP Data (1993-2020). <https://doi.org/10.4232/1.14332>
 36. Puettmann, K.J., Coates, K.D., Messier, C.C., (2009). *A Critique of Silviculture: Managing for Complexity*. Cambridge University Press.
 37. Puettmann, K. J., Wilson, S. M., Baker, S. C., Donoso, P. J., Drössler, L., Amente, G., . . . Bauhus, J. (2015). Silvicultural alternatives to conventional even-aged forest management - what limits global adoption? *Forest Ecosystems*, 2(1), 8. doi:10.1186/s40663-015-0031-x
 38. Rawluk, A., Ford, R., Anderson, N., & Williams, K. (2019). Exploring multiple dimensions of values and valuing: a conceptual framework for mapping and translating values for social-ecological research and practice. *Sustainability Science*, 14, 1187–1200.
 39. Santer, B. D., Po-Chedley, S., Zelinka, M. D., Cvijanovic, I., Bonfils, C., Durack, P. J., . . . Zou, C.-Z. (2018). Human influence on the seasonal cycle of tropospheric temperature. *Science*, 361: 6399. doi:10.1126/science.aas8806
 40. Scherpenhuijzen, N., West, T. A. P., Debonne, N., Oostdijk, S., Adame, P., Astrup, R., & Verburg, P. H. (2025). Mapping forest management regimes in Europe. *Forest Ecology and Management*, 594, 122940. doi:<https://doi.org/10.1016/j.foreco.2025.122940>
 41. Schreier M. (2012). *Qualitative content analysis in practice*. Sage Publishing, Los Angeles, California, USA. 280pp.
 42. Schreier, M. (2018). Sampling and generalization. In *The SAGE Handbook of Qualitative Data Collection* (pp. 84-97). SAGE Publications Ltd, <https://doi.org/10.4135/9781526416070>
 43. Seidl R, Schelhaas MJ, Lexer MJ. Unraveling the drivers of intensifying forest disturbance regimes in Europe. *Global Change Biology*. 2011; 17(9):2842–2852. DOI: 10.1111/j.1365-2486.2011.02452.x
 44. Senf, C., & Seidl, R. (2021a). Post-disturbance canopy recovery and the resilience of Europe's forests. *Global Ecology and Biogeography*, 31, 25–36. <https://doi.org/10.1111/geb.13406>
 45. Senf, C., & Seidl, R. (2021b). Mapping the forest disturbance regimes of Europe. *Nature Sustainability*, 4(1), 63–70. <https://doi.org/10.1038/s41893-020-00609-y>
 46. Spathelf, P., Stanturf, J., Kleine, M., Jandl, R., Chiatante, D., & Bolte, A. (2018). Adaptive measures: integrating adaptive forest management and forest landscape restoration. *Annals of Forest Science*, 75(2), 55. <https://doi.org/10.1007/s13595-018-0736-4>
 47. St-Laurent, PG., Hagerman, S., Findlater, K. M., & Kozak, R. (2019). Public trust and knowledge in the context of emerging climate-adaptive forestry policies. *Journal of Environmental Management*, 242, 474-486. doi:<https://doi.org/10.1016/j.jenvman.2019.04.065>
 48. Suvanto, S., Esquivel-Muelbert, A., Schelhaas, M.-J., Astigarraga, J., Astrup, R., Cienfiala, E., . . . Pugh, T. A. M. (2025). Understanding Europe's Forest Harvesting Regimes. *Earth's Future*, 13(2), e2024EF005225. doi:<https://doi.org/10.1029/2024EF005225>
 49. Verkerk, P. J., Costanza, R., Hetemäki, L., Kubiszewski, I., Leskinen, P., Nabuurs, G. J., . . . Palahí, M. (2020). Climate-Smart Forestry: the missing link. *Forest Policy and Economics*, 115, 102164. <https://doi.org/10.1016/j.forpol.2020.102164>
 50. Verkerk, P.J., Delacote, P., Hurmekoski, E., Kunttu, J., Matthews, R., Mäkipää, R., Mosley, F., Perugini, L., Reyer, C. P. O., Roe, S., Trømborg, E. (2022). Forest-based climate change mitigation and adaptation in Europe. From Science to Policy 14. European Forest Institute. <https://doi.org/10.36333/fs14>
 51. Weiss, G., Lawrence, A., Hujala, T., Lidestav, G., Nichiforel, L., Nybakk, E., . . . Živojinović, I. (2019). Forest ownership changes in Europe: State of knowledge and conceptual foundations. *Forest Policy and Economics*, 99, 9-20. <https://doi.org/10.1016/j.forpol.2018.03.003>



52. Zhu, X., & Lu, C. (2017). Re-evaluation of the New Ecological Paradigm scale using item response theory. *Journal of Environmental Psychology*, 54, 79-90. <https://doi.org/10.1016/j.jenvp.2017.10.005>



Appendix A. Forest Practitioner Interview Guide

1. Please state the size of your forest area
2. Please describe your forest
3. Do you actively manage your forests? How?
4. Do you set aside some parts of the forest from active forest management? Do your forests have some protection status?
5. Is your forest certified?
6. What objectives do you have from your forest? Why do you have these objectives?
7. Which factors are most important when deciding how to manage forests?
8. Have you received or are you applying for public grants for forest management or tree planting or other forest practices?
9. Is there something in your current forest management that you'd consider to be supportive to biodiversity and combating climate change?
10. Is there something that you would be willing to implement in your forest management that would be supportive to biodiversity and combating climate change?
11. Under which circumstances would you be willing to implement these practices?
12. Is there something else that you consider to be important but that we did not cover?

Appendix B. Forest Practitioner Survey

[SURVEY INTRODUCTION]

Thank you for your interest in our survey.

Climate change is transforming European forests. This transformation has implications on future forest management decisions. The aim of this survey is to assess how forest management trajectories may evolve in response to climate change. The survey is distributed across thirteen European countries and collects views from forest owners, forest managers and the general public towards acceptable forest management practices.

The survey is led by the European Forest Institute (EFI) and Natural Resources Institute Finland (LUKE) under a collaboration between three European research projects: ForestPaths, FORWARDS, and HoliSoils. Additional information is available on the project homepages:

ForestPaths: <https://ForestPaths.eu/>

FORWARDS: <https://forwards-project.eu/>

HoliSoils: <https://holisoils.eu/>

By completing the survey, you will support the development of European forest management recommendations. Your answers will only be used for research purposes. Answers cannot be linked to individual respondents. Your personal data is treated confidentially and is only available to project researchers.

ForestPaths receives funding from the European Union's Horizon Europe Research and Innovation Programme under grant agreement No. 101056755, as well as from the United Kingdom Research and Innovation Council (UKRI). FORWARDS receives funding from the European Union's European Research Executive Agency under grant agreement No. 101084481. HoliSoils receives funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 10100289.

[AREA 2 - RESPONDENT IDENTIFICATION (OWNER/MANAGER/GENERAL PUBLIC)]

The following question determines if you represent the views of a *forest practitioner* or the *general public*.

1. Please identify yourself.

- ☐ I own a forest.
- ☐ I am responsible for managing a forest, but I do not own the forest.
- ☐ Both of the above.
- ☐ None of the above.

[AREA 3A – PREAMBLE: FOREST OWNERS]

You are representing the views of a private forest owner.

The survey contains four sections and takes approximately 15-20 minutes to complete. We recommend that you complete the survey on a desktop or tablet. You may begin the survey on a mobile device and switch to a desktop or tablet at any time.

- Section 1 asks about the characteristics of your forest.
- Section 2 asks about ongoing management activities in your forest.
- Section 3 asks about your views on forest management.
- Section 4 asks about your views on financial compensation for forest management.

[AREA 3B – PREAMBLE: FOREST MANAGERS]

You are representing the views of a forest manager managing a forest owned by another party. Please note the survey refers to the activities carried out in the forest you manage as “your forest” and “your management objectives”, even though you do not own the forest.

The survey contains three sections and takes approximately 10-15 minutes to complete. We recommend that you complete the survey on a desktop or tablet. You may begin the survey on a mobile device and switch to a desktop or tablet at any time.

- Section 1 asks about the characteristics of the forest holdings you manage.
- Section 2 asks about ongoing management activities in the forest you are managing.
- Section 3 asks about your views on forest management.

[AREA 4A – FOREST HOLDINGS: FOREST OWNER]

Section 1. The following section asks about the characteristics of your forest.

2. In which country is your forest located?

- ☐ Croatia
- ☐ Czechia
- ☐ Finland
- ☐ France
- ☐ Italy
- ☐ Germany
- ☐ The Netherlands
- ☐ Latvia
- ☐ Romania
- ☐ Spain
- ☐ Sweden
- ☐ Switzerland,
- ☐ The United Kingdom
- ☐ Other. Please describe:

3. How did you become a forest owner?

- ☐ Transfer of ownership within family (e.g., family inheritance; purchase from family member)
- ☐ Purchase from entity outside the family
- ☐ Marriage
- ☐ Restitution
- ☐ Other. Please describe:

4. Approximately how many years have you been a forest owner?

_____ years

5. What is the approximate total area of forest you own?

_____ hectares

6. Are there areas of your forest that are left unmanaged? *In this context, unmanaged areas refer to areas where no silvicultural activities take place whatsoever, regardless of whether this choice is intentional.*

- ☐ The entire forest is managed.
- ☐ The entire forest is unmanaged.
- ☐ Only some areas of the forest are unmanaged. Please estimate the total number of hectares that are unmanaged: [Please specify]

[AREA 4B – FOREST HOLDINGS: FOREST MANAGER]

Section 1. The following section asks about the characteristics of the forest you are responsible for managing.

2. In which country are the forest you manage located?

- ☐ Croatia
- ☐ Czechia
- ☐ Finland
- ☐ France
- ☐ Italy
- ☐ Germany
- ☐ The Netherlands
- ☐ Latvia
- ☐ Romania
- ☐ Spain
- ☐ Sweden
- ☐ Switzerland,
- ☐ The United Kingdom
- ☐ Other. Please describe: [---]

3. Who owns the forest(s) you are managing? (tick all that apply)

- ☐ Public ownership by the state at national level.
- ☐ Public ownership by the state at sub-national level.
- ☐ Public ownership by local government (e.g., municipality or equivalent).
- ☐ Private ownership by individual or family.
- ☐ Private ownership by private business entity.
- ☐ Private ownership by private institution (e.g., church, foundation, etc.).
- ☐ Contested ownership (e.g., due to restitution or family inheritance dispute).
- ☐ A family member
- ☐ I do not know who owns the forest.
- ☐ Other (please specify):

4. Approximately how many years have you been a forest manager?

_____ years.

5. What is the approximate total area of the forest(s) you manage?

_____ hectares.

6. Among the forests you manage, are there areas that are left unmanaged? In this context, unmanaged areas refer to areas where no silvicultural activities take place whatsoever, regardless of whether this choice is intentional.

- ☐ The entire forest is managed.
- ☐ The entire forest is unmanaged.
- ☐ Only some areas of the forest are unmanaged.
Please estimate the total number of hectares that are unmanaged: [specify]

[AREA 5 – PREVALENT FOREST TYPE: OWNERS + MANAGERS]

Section 2. This section asks about ongoing management activities in your forest.

The following page asks you to identify the prevalent forest type within your forest property. In this context, the forest type is composed of forest stands that share similar tree species composition and forest structure. The prevalent forest type refers to the forest type of the largest area within your forest property. Please answer the following questions with your prevalent forest type in mind.

7. What is the dominant tree species found in the prevalent forest type?

[\[Dropdown list of 5-6 species\]](#), queries according to the forest country]

8. What is the secondary tree species found in the prevalent forest type, if any?

[\[Dropdown list of 5-6 species\]](#), queries according to the forest country]

9. Approximately how much area of the prevalent forest type does the dominant tree species cover?

- ☐ More than 80% of the prevalent forest area.
- ☐ Less than 80% of the prevalent forest area.
- ☐ I do not know.

10. Are the stands in the prevalent forest type primarily even-aged or uneven-aged?

- ☐ Even-aged (i.e., more than 80% of trees within a stand are of similar age and size).
- ☐ Uneven-aged (i.e., more than 20% of trees in a stand are of dissimilar age and size).
- ☐ I do not know

11. What is the estimated area of the prevalent forest type within your total forest property? *Note: the area of the prevalent forest type cannot exceed your total forest property.*

_____hectares.

In the previous question, you described your prevalent forest type. Next, select the typical forest management activities implemented in the prevalent forest type. Typical activities refer to the most frequently implemented option among the list of choices.

12. What is the typical cutting regime used within the prevalent forest type?

- A) Clear felling
- B) Clear felling with retention of seed trees
- C) Group selection
- D) Shelterwood
- E) Single tree selection
- F) No cutting regimes
- G) I don't know

13. What is the typical thinning regime used within the prevalent forest type?

- A) Thinning from above (selects larger trees for harvest, leaving smaller trees on site)
- B) Thinning from below (selects smaller trees for harvest, leaving larger trees on site)
- C) Thinning of all size classes
- D) No thinning regime
- E) I don't know

14. What is the typical regeneration method used within the prevalent forest type?

- A) Natural regeneration
- B) Plantings
- C) Seedlings
- D) Coppice
- E) I don't know

15. Is the prevalent forest type typically regenerated using native or exotic tree species?

- A) Native species
- B) Exotic species
- C) A mix of both
- D) I don't know

16. What is the most typical type of planting material used to regenerate the prevalent forest type?

- A) Regular, non-certified planting material (e.g., no preference for genetic material)
- B) Regular, certified planting material (e.g., recognized national provenances)
- C) Improved planting material (e.g., from national tree breeding program)
- D) Certified endemic material
- E) Non-endemic material
- F) I don't know

17. Species composition

- A) Maintaining current forest species composition
- B) Shifting towards broadleaves dominated forest
- C) Shifting towards conifers dominated forest
- D) Shifting to mixed species forest
- E) I don't know

18. What is the typical post-disturbance management approach used within the prevalent forest type?

- A) Salvage logging with planting
- B) Salvage logging with natural regeneration
- C) Leaving all wood with natural regeneration on the area affected by disturbances
- D) No post-disturbance management
- E) I don't know

19. What is the typical agroforestry system used within the prevalent forest type?

- A) No agroforestry system
- B) Livestock grazing
- C) Alley cropping
- D) Combination livestock grazing and alley cropping
- E) Other agroforestry systems
- F) I don't know

20. What is the typical deadwood management system used within the prevalent forest type?

- A) Retaining of deadwood
- B) Proliferation of deadwood
- C) Removal of deadwood
- D) I don't know

21. What is the typical stand tending system used within the prevalent forest type?

- A) Removal of undergrowth (e.g., clearing shrubbery)
- B) Precommercial thinning
- C) Neither of the above systems
- D) I don't know

[AREA 7. FOREST MANAGEMENT PERCEPTIONS: OWNERS + MANAGERS]

Section 3. This section asks about your views on forest management.

22. How important do you find the following forest management objectives?

	<i>Extremely important</i>	<i>Very important</i>	<i>Moderately important</i>	<i>Somewhat important</i>	<i>Slightly important</i>	<i>Not at all important</i>
Generating income from timber.	☐	☐	☐	☐	☐	☐
Generating income from a wild forest product (e.g., cork, nuts, berries, medicinal plants, mushrooms, game meat, etc.).	☐	☐	☐	☐	☐	☐
Generating income from a recreational service, such as ecotourism lodging, nature tours, hunting concessions, etc.	☐	☐	☐	☐	☐	☐
Producing wild forest products (e.g., cork, nuts, berries, mushrooms, game meat) for non-commercial uses, such as collection for household use.	☐	☐	☐	☐	☐	☐
Producing timber for non-commercial uses, such as collecting firewood for household use.	☐	☐	☐	☐	☐	☐
Creating opportunities for recreation, such as walking, picnicking, birdwatching, hunting, etc.	☐	☐	☐	☐	☐	☐
Creating accessible forest areas (e.g., forest paths, recreational trails).	☐	☐	☐	☐	☐	☐
Ensuring safe forest areas (e.g., forest paths, recreational trails).	☐	☐	☐	☐	☐	☐
Biodiversity preservation.	☐	☐	☐	☐	☐	☐
Improving forest soil quality.	☐	☐	☐	☐	☐	☐
Improving local watershed quality.	☐	☐	☐	☐	☐	☐
Mitigating climate change by, for example, increasing forest carbon sinks.	☐	☐	☐	☐	☐	☐
Reducing biotic forest disturbances caused by sources such as pest, fungi, or disease.	☐	☐	☐	☐	☐	☐
Reducing abiotic forest disturbances caused by sources such as forest fires, drought, or windthrow.	☐	☐	☐	☐	☐	☐
Safeguarding cultural heritage sites, such as areas important to the family or community.	☐	☐	☐	☐	☐	☐
Creating opportunities for upholding traditional knowledge among family, friends, or community members (e.g., how to ski, fish, hunt, forage, manage the forest).	☐	☐	☐	☐	☐	☐
Creating beautiful forest areas (e.g., forest paths, recreational trails).	☐	☐	☐	☐	☐	☐



23. To what extent do you believe that implementing your forest management objectives will lead to the following outcomes.

	<i>Strongly agree</i>	<i>Agree</i>	<i>Slightly agree</i>	<i>Slightly disagree</i>	<i>Disagree</i>	<i>Strongly disagree</i>
Income from timber sales.	☐	☐	☐	☐	☐	☐
Income from the sale of a wild forest product (e.g., cork, nuts, berries, medicinal plants, mushrooms, etc.).	☐	☐	☐	☐	☐	☐
Income from a recreational service, such as ecotourism lodging, nature tours, or hunting concessions.	☐	☐	☐	☐	☐	☐
Production of wild forest product (e.g., cork, nuts, berries, mushrooms) for non-commercial use.	☐	☐	☐	☐	☐	☐
Production of timber for non-commercial use.	☐	☐	☐	☐	☐	☐
Opportunities for recreation, such as hiking, collecting wild forest products, birdwatching, or hunting.	☐	☐	☐	☐	☐	☐
Accessible forest areas (e.g., forest paths, recreational trails).	☐	☐	☐	☐	☐	☐
Safe forest areas (e.g., forest paths, recreational trails).	☐	☐	☐	☐	☐	☐
Beautiful forest areas (e.g., forest paths, recreational trails).	☐	☐	☐	☐	☐	☐
Biodiversity preservation.	☐	☐	☐	☐	☐	☐
Improved forest soil quality.	☐	☐	☐	☐	☐	☐
Improved local watershed quality.	☐	☐	☐	☐	☐	☐
Climate change mitigation.	☐	☐	☐	☐	☐	☐
A reduction in biotic forest disturbances caused by pest, fungi, disease, etc.	☐	☐	☐	☐	☐	☐
A reduction in abiotic forest disturbances caused by fires, drought, windthrow, etc.	☐	☐	☐	☐	☐	☐
Safeguarding cultural heritage sites important to the family or community.	☐	☐	☐	☐	☐	☐
Opportunities for sharing traditional knowledge among family, friends, or community members (e.g., how to ski, fish, hunt, forage, manage the forest).	☐	☐	☐	☐	☐	☐

24. Please evaluate the following statements. "Overall, I believe that implementing my forest management objectives is..."

Good	☐	☐	☐	☐	☐	☐	☐	Bad
Important	☐	☐	☐	☐	☐	☐	☐	Unimportant
Convenient	☐	☐	☐	☐	☐	☐	☐	Inconvenient
Harmful	☐	☐	☐	☐	☐	☐	☐	Beneficial

25. If you had to give an opinion, to what extent do you think that the following individuals would approve or disapprove of the implementation of your forest management objectives?

	<i>Strongly approve</i>	<i>Approve</i>	<i>Somewhat approve</i>	<i>Don't care</i>	<i>Somewhat disapprove</i>	<i>Disapprove</i>	<i>Strongly disapprove</i>
My family members	☐	☐	☐	☐	☐	☐	☐
My friends	☐	☐	☐	☐	☐	☐	☐
My neighbours	☐	☐	☐	☐	☐	☐	☐
The general public	☐	☐	☐	☐	☐	☐	☐
Other forest owners in my region	☐	☐	☐	☐	☐	☐	☐
Local forest owner's association	☐	☐	☐	☐	☐	☐	☐
Local forest authority	☐	☐	☐	☐	☐	☐	☐
National forest authority	☐	☐	☐	☐	☐	☐	☐

26. How important are the opinions of the following individuals regarding your decision to implement your forest management objectives?

	<i>Extremely important</i>	<i>Very important</i>	<i>Moderately important</i>	<i>Somewhat important</i>	<i>Slightly important</i>	<i>Not at all important</i>
Family members	☐	☐	☐	☐	☐	☐
My friends	☐	☐	☐	☐	☐	☐
My neighbours	☐	☐	☐	☐	☐	☐
The general public	☐	☐	☐	☐	☐	☐
Other forest owners in my region	☐	☐	☐	☐	☐	☐
Local forest owner's association	☐	☐	☐	☐	☐	☐
Local forest authority	☐	☐	☐	☐	☐	☐
National forest authority	☐	☐	☐	☐	☐	☐

27. Ultimately, how strongly would you agree or disagree with the following statements about society's impact on your choice of forest management objectives?

	<i>Strongly agree</i>	<i>Agree</i>	<i>Slightly agree</i>	<i>Slightly disagree</i>	<i>Disagree</i>	<i>Strongly disagree</i>
I feel pressure to implement my forest management objectives.	☐	☐	☐	☐	☐	☐
People don't want me to implement my forest management objectives.	☐	☐	☐	☐	☐	☐
I feel pressure to change my forest management objectives.	☐	☐	☐	☐	☐	☐
In general, people approve of my forest management objectives.	☐	☐	☐	☐	☐	☐

28. How important would access to the following resources be for implementing your forest management objectives?

	<i>Extremely important</i>	<i>Very important</i>	<i>Moderately important</i>	<i>Somewhat important</i>	<i>Slightly important</i>	<i>Not at all important</i>
Manual labour	☐	☐	☐	☐	☐	☐
Technology (e.g., GPS equipment, forest machinery)	☐	☐	☐	☐	☐	☐
Infrastructure (e.g., forest roads)	☐	☐	☐	☐	☐	☐
Credit or loans	☐	☐	☐	☐	☐	☐
Advisory services offering trainings, reports, information portals, or other information	☐	☐	☐	☐	☐	☐
Subsidies or grants	☐	☐	☐	☐	☐	☐
Market instruments (e.g., carbon credits, payment for ecosystem services)	☐	☐	☐	☐	☐	☐
Voluntary agreements (e.g., forest certifications)	☐	☐	☐	☐	☐	☐

29. What do you think is the likelihood that you will have sufficient access to the following resources?

	<i>Highly unlikely</i>	<i>Unlikely</i>	<i>Somewhat unlikely</i>	<i>Somewhat likely</i>	<i>Likely</i>	<i>Highly likely</i>
Manual labour	☐	☐	☐	☐	☐	☐
Technology (e.g., GPS equipment, forest machinery)	☐	☐	☐	☐	☐	☐
Infrastructure (e.g., forest roads)	☐	☐	☐	☐	☐	☐
Credit or loans	☐	☐	☐	☐	☐	☐
Advisory services offering trainings, reports, information portals, or other information	☐	☐	☐	☐	☐	☐
Subsidies or grants	☐	☐	☐	☐	☐	☐
Market instruments (e.g., carbon credits, payment for ecosystem services)	☐	☐	☐	☐	☐	☐
Voluntary agreements (e.g., forest certification)	☐	☐	☐	☐	☐	☐

30. Please indicate how strongly you agree or disagree with the following statements.

	<i>Strongly agree</i>	<i>Agree</i>	<i>Slightly agree</i>	<i>Slightly disagree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
I anticipate I will implement my forest management objectives.	☐	☐	☐	☐	☐	☐
I intend to implement my forest management objectives.	☐	☐	☐	☐	☐	☐
I want to implement my forest management objectives.	☐	☐	☐	☐	☐	☐
It is difficult to implement my forest management objectives.	☐	☐	☐	☐	☐	☐
I can implement my forest management objectives if I want to.	☐	☐	☐	☐	☐	☐
I have the necessary resources to implement my forest management objectives.	☐	☐	☐	☐	☐	☐

31. Lastly, please evaluate your views on the following statements about forest management.

	<i>Strongly agree</i>	<i>Agree</i>	<i>Slightly agree</i>	<i>Slightly disagree</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
The basis of my forest management decisions is the law, legislations, and regulations.	☐	☐	☐	☐	☐	☐
The basis of my forest management decisions is upholding traditions.	☐	☐	☐	☐	☐	☐
The basis of my forest management decisions is the market and market conditions.	☐	☐	☐	☐	☐	☐
The basis of my forest management decisions is expertise and knowledge.	☐	☐	☐	☐	☐	☐
The basis of my forest management decisions is the normative pressure I feel.	☐	☐	☐	☐	☐	☐
The basis of my forest management decisions is what I believe is best for my forest.	☐	☐	☐	☐	☐	☐

[AREA 8. FINANCIAL COMPENSATION: FOREST OWNERS]

Section 4. This final section asks for your views on monetary compensation for various forest management activities. Please read the questions carefully before answering.

32. Have you ever intentionally implemented any of the following forest management activities in any of your forest stands? Please read the questions carefully before answering, as the proposed activities might be atypically implemented.

- i. **Retained at least 10 m³/ha of standing or fallen deadwood in a forest stand with low risk of forest fire?** *This equals roughly 15-20 stems of over 20 centimetres diameter per hectare.*

☐ Yes ☐ No ☐ This activity cannot be implemented in my forest ☐ I don't know

- ii. **Implemented continuous cover forestry in 20% or more of your total forest area?** Continuous cover forestry refers to a silvicultural system that largely maintains the forest cover of a forest stand by cutting single trees, groups of trees, or using a shelterwood system, all of which all avoid clearcutting of the entire tree cover.

☐ Yes ☐ No ☐ This activity cannot be implemented in my forest ☐ I don't know

- iii. **At final felling, reserved at least 5% of the trees in an even-aged stand as retention trees?** *This equals roughly 10 m³/ha (15-20 stems) when logging 200 m³/ha.*

☐ Yes ☐ No ☐ This activity cannot be implemented in my forest ☐ I don't know

- iv. **Left undisturbed forest buffer strips of 20 meters or more adjacent to any body of water?**

☐ Yes ☐ No ☐ This activity cannot be implemented in my forest ☐ I don't know

- v. **Lengthened the rotation period of a forest stand at low risk of forest disturbances by at least 25% of the typical rotation period?** *For example, lengthening the rotation period in a stand from 80 to 100 years.*

☐ Yes ☐ No ☐ This activity cannot be implemented in my forest ☐ I don't know

- vi. **Left all the logging residues in a recently logged forest stand?** *For example, not harvesting logging residues for bioenergy.*

☐ Yes ☐ No ☐ This activity cannot be implemented in my forest ☐ I don't know

[ITEM ONLY APPEARS FOR SELECTED COUNTRIES: FINLAND, LATVIA, SWEDEN]

- i. **Applied continuous cover forestry in a peatland forest stand of 20% or more hectares.** Continuous cover forestry refers to a silvicultural system that largely maintains the forest cover of a forest stand by cutting single trees, groups of trees, or using a shelterwood system, all of which all avoid clearcutting of the entire tree cover.

☐ Yes ☐ No ☐ This activity cannot be implemented in my forest ☐ I don't know



Q33 ONLY APPEARS IF RESPONDENT SELECTS "NO" IN RESPONSE TO Q30]

33. Imagine that in the future you could be financially compensated for the loss of income associated with changing your current forest management regime to an alternative that supports biodiversity preservation or climate change mitigation. The financial compensation scheme requires you to implement a ten-year forest management plan. The compensation you receive is based on a percentage of estimated income loss from forgoing your typical forest management regime. In addition, you are compensated for the direct costs of implementing the alternative management activity. You receive a full payment when the forest management plan is accepted. After ten years, the forest is audited. If the management plan was not implemented, you must pay back the money in full. Given these contractual terms, what percentage of compensation would you request for changing from your current harvesting regime to the alternatives provided below? Note that if you ask for too high a payment, the potential payer may not accept your offer.		Payment percentage you require for estimated income loss and direct cost.							I would not participate for any amount of compensation	This activity cannot be implemented in my forest
		0%	25%	50%	75%	100%	125%	150%	Over 150%	
1. Retain at least 10 m³/ha of standing or fallen deadwood in a forest stand with low risk of forest fire? This equals roughly 15-20 stems of over 20 centimetres diameter per hectare.		☐	☐	☐	☐	☐	☐	☐	☐	☐
2. Implement continuous cover forestry in 20% or more of your total forest area? Continuous cover forestry refers to a silvicultural system that largely maintains the forest cover of a forest stand by cutting single trees, groups of trees, or using a shelterwood system, all of which all avoid clearcutting of the entire tree cover.		☐	☐	☐	☐	☐	☐	☐	☐	☐
3. At final felling, reserve at least 5% of the trees in an even-aged stand as retention trees? This equals roughly 10 m³/ha (15-20 stems) when logging 200 m³/ha.		☐	☐	☐	☐	☐	☐	☐	☐	☐
4. Leave undisturbed forest buffer strips of 20 meters or more adjacent to any body of water?		☐	☐	☐	☐	☐	☐	☐	☐	☐
5. Lengthen the rotation period of a forest stand at low risk of forest disturbances by at least 25% of the typical rotation period? For example, lengthening the rotation period in a stand from 80 to 100 years.		☐	☐	☐	☐	☐	☐	☐	☐	☐
6. Left all the logging residues in a recently logged forest stand? For example, not harvesting logging residues for bioenergy.		☐	☐	☐	☐	☐	☐	☐	☐	☐
7. Implement continuous cover forestry in 20% of a peatland forest stand. Continuous cover forestry refers to a silvicultural system that largely maintains the forest cover of a forest stand by cutting single trees, groups of trees, or using a shelterwood system, all of which all avoid clearcutting of the entire tree cover.		☐	☐	☐	☐	☐	☐	☐	☐	☐



Appendix C. General Public Survey

Thank you for your interest in our survey.

Climate change is transforming European forests. This transformation has implications on future forest management decisions. The aim of this survey is to assess how forest management trajectories may evolve in response to climate change. The survey is distributed across thirteen European countries and collects views from forest owners, forest managers and the general public towards acceptable forest management practices.

The survey is led by the European Forest Institute (EFI) and Natural Resources Institute Finland (LUKE) under a collaboration between three European research projects: ForestPaths, FORWARDS, and HoliSoils. Additional information is available on the project homepages:

ForestPaths: <https://ForestPaths.eu/>

FORWARDS: <https://forwards-project.eu/>

HoliSoils: <https://holisoils.eu/>

By completing the survey, you will support the development of European forest management recommendations. Your answers will only be used for research purposes. Answers cannot be linked to individual respondents. Your personal data is treated confidentially and is only available to project researchers.

ForestPaths receives funding from the European Union's Horizon Europe Research and Innovation Programme under grant agreement No. 101056755, as well as from the United Kingdom Research and Innovation Council (UKRI). FORWARDS receives funding from the European Union's European Research Executive Agency under grant agreement No. 101084481. HoliSoils receives funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 10100289.

1. Are you...

- ☐ Male
- ☐ Female
- ☐ Prefer to self-describe:
- ☐ Choose not to say

2. How old are you?

- ☐ 18-29 years
- ☐ 30-39 years
- ☐ 40-49 years
- ☐ 50-65 years
- ☐ 65+ years

3. Where do you live?

[Multiple choice: NUTS2 or 3 regions provided based on panel country]

4. Please identify yourself

- ☐ I own a forest.
- ☐ I am responsible for managing a forest, but I do not own the forest.
- ☐ Both.
- ☐ None of the above.

You are representing views from the general public. The survey will contain three sections and takes approximately 5 minutes to complete.

- Section 1 asks what you value about forests.
- Section 2 asks about your thoughts on society's relationship with nature.
- Section 3 asks about your views on forest management.

Section 1. This section explores what you value about forests in [*Panel Country*].

5. How frequently do you visit a forest? The visit can be done for any purpose, including passing through a forest during a daily commute.

- ☐ Never
- ☐ At least once per year
- ☐ At least once per month
- ☐ At least once per week
- ☐ 2-3 times per week
- ☐ 4-6 times per week
- ☐ Daily

6. How important do you think it is that forest in the [respondent country] provide the following benefits to society?

	Not at all important	Somewhat important	Important	Very important
A habitat for wildlife	☐	☐	☐	☐
Biodiversity conservation	☐	☐	☐	☐
Aesthetically beautiful areas	☐	☐	☐	☐
A place to create memories	☐	☐	☐	☐
A space for people to gather	☐	☐	☐	☐
Educational areas	☐	☐	☐	☐
Domestic employment	☐	☐	☐	☐
Timber production	☐	☐	☐	☐
Wild forest products (e.g., cork, nuts, mushroom, berries, honey)	☐	☐	☐	☐
Recreation opportunities (e.g., hiking, hunting, birdwatching)	☐	☐	☐	☐
Ecotourism services (e.g., forest lodges, nature tours, hiking trails)	☐	☐	☐	☐
Creating cultural identities	☐	☐	☐	☐
Storing carbon	☐	☐	☐	☐
Regulating local water quality supplies	☐	☐	☐	☐
Natural hazard reduction (e.g., flood, avalanche, drought)	☐	☐	☐	☐

Section 2. This section explores your thoughts on society's relationship with nature.

7. How strongly do you agree or disagree with the following statements about society's relationship to the natural environment?

	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
We are approaching the limit of the number of people the earth can support.	☐	☐	☐	☐	☐	☐
When humans interfere with nature it often produces disastrous consequences.	☐	☐	☐	☐	☐	☐
Humans are severely abusing the environment.	☐	☐	☐	☐	☐	☐
Plants and animals have as much right as humans to exist.	☐	☐	☐	☐	☐	☐
Despite our special abilities, humans are still subject to the laws of nature.	☐	☐	☐	☐	☐	☐
The Earth is like a spaceship with very limited room and resources.	☐	☐	☐	☐	☐	☐
The balance of nature is very delicate and easily upset.	☐	☐	☐	☐	☐	☐
If things continue on their present course, we will soon experience a major ecological catastrophe.	☐	☐	☐	☐	☐	☐

Section 3. This section explores your views on forest management in the United Kingdom.

8. Forest can be owned and managed by different groups of people, for example private citizens, private companies, or government entities. These various owners and managers are referred to as *forest practitioners*. If you had to give an opinion, how strongly would you agree or disagree with the following statements about how forest practitioners are managing forests in the [Panellist Country]?

	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
Private companies consider the needs of society when managing their forest in [Panel Country].	☐	☐	☐	☐	☐	☐
Private citizens consider the needs of society when managing their forest in [Panel Country].	☐	☐	☐	☐	☐	☐
Public forest managers consider the needs of society when managing forest in [Panel Country].	☐	☐	☐	☐	☐	☐
Private companies in [Panel Country] manage their forest in a good way.	☐	☐	☐	☐	☐	☐
Private citizens in [Panel Country] manage their forest in a good way.	☐	☐	☐	☐	☐	☐
Public forest managers in [Panel Country] manage forest in a good way.	☐	☐	☐	☐	☐	☐
I trust how private companies in [Panel Country] manage their forest.	☐	☐	☐	☐	☐	☐
I trust how private citizens in [Panel Country] manage their forest.	☐	☐	☐	☐	☐	☐
I trust how public forest managers manage forest in the [Panel Country].	☐	☐	☐	☐	☐	☐



9. There are many technical terms in forestry. How aware are you of the following forest management activities and terminology?	Never heard of it before	Heard of it, but no previous knowledge	Have knowledge of it	Have expert knowledge of it
Clearfelling (also known as "clearcutting"): a harvesting approach, where all trees in a forest stand are uniformly harvested.	☐	☐	☐	☐
Selective felling: a harvesting approach, where only a select set of individual trees or groups of trees in a forest stand are harvested.	☐	☐	☐	☐
Ash fertilization: a silvicultural practice, where fertilizer made from burned wood, peat, or agrobiomass is applied to a forest stand.	☐	☐	☐	☐
Fertilization: a silvicultural practice, where synthetic fertilizer (e.g., phosphorus, nitrogen) is applied to a forest stand.	☐	☐	☐	☐
Salvage logging: a silvicultural practice, where trees are harvested after they have been damaged or died off due to a natural disturbance (e.g., windthrow, fire, or pest outbreaks).	☐	☐	☐	☐
Sanitation logging: a silvicultural practice, where trees are harvested to prevent pest outbreaks (e.g., fungus, insects).	☐	☐	☐	☐
Deadwood retention: a silvicultural practice, where trees that are damaged or die off due to natural disturbance are left in the forest.	☐	☐	☐	☐
Reforestation: the re-establishment of forest on a site that was once forested, but not in recent years.	☐	☐	☐	☐
Regeneration: the establishing of forest on a recently harvested forest site by planting or natural regeneration.	☐	☐	☐	☐
Afforestation: the establishment of forest in non-forested land (e.g., meadow to forest; farm to forest).	☐	☐	☐	☐

10. There are many technical terms in forestry. How aware are you of the following forest management activities and terminology?	Highly unacceptable	Unacceptable	Slightly unacceptable	Slightly acceptable	Acceptably	Highly acceptable
Clearfelling (also known as "clearcutting"): a harvesting approach, where all trees in a forest stand are uniformly harvested.	☐	☐	☐	☐	☐	☐
Selective felling: a harvesting approach, where only a select set of individual trees or groups of trees in a forest stand are harvested.	☐	☐	☐	☐	☐	☐
Ash fertilization: a silvicultural practice, where fertilizer made from burned wood, peat, or agrobiomass is applied to a forest stand.	☐	☐	☐	☐	☐	☐
Fertilization: a silvicultural practice, where synthetic fertilizer (e.g., phosphorus, nitrogen) is applied to a forest stand.	☐	☐	☐	☐	☐	☐
Salvage logging: a silvicultural practice, where trees are harvested after they have been damaged or died off due to a natural disturbance (e.g., windthrow, fire, or pest outbreaks).	☐	☐	☐	☐	☐	☐
Sanitation logging: a silvicultural practice, where trees are harvested to prevent pest outbreaks (e.g., fungus, insects).	☐	☐	☐	☐	☐	☐
Deadwood retention: a silvicultural practice, where trees that are damaged or die off due to natural disturbance are left in the forest.	☐	☐	☐	☐	☐	☐
Reforestation: the re-establishment of forest on a site that was once forested, but not in recent years.	☐	☐	☐	☐	☐	☐
Regeneration: the establishing of forest on a recently harvested forest site by planting or natural regeneration.	☐	☐	☐	☐	☐	☐
Afforestation: the establishment of forest in non-forested land (e.g., meadow to forest; farm to forest).	☐	☐	☐	☐	☐	☐

You have nearly completed the survey. Please briefly tell us more about yourself before submitting your responses.

11. Highest educational qualification

- ☐ None
- ☐ Primary education (up to 10 years)
- ☐ Secondary education (primary +3 years)
- ☐ Vocational qualification (secondary + 2-3 years)
- ☐ University degree, Bachelor's (secondary + 3-4 years)
- ☐ University degree, Master's (Bachelor's + 1-2 years)
- ☐ University degree, Doctoral degree (Master's + 3-4 years)
- ☐ Other:

12. What is your combined household annual income before tax?

- ☐ Less than 10,000EUR
- ☐ 10,000EUR - 19,999EUR
- ☐ 20,000EUR - 29,999EUR
- ☐ 30,000EUR - 39,999EUR
- ☐ 40,000EUR - 49,999EUR
- ☐ 50,000EUR - 59,999EUR
- ☐ 60,000EUR - 69,999EUR
- ☐ 70,000EUR - 79,999EUR
- ☐ 80,000EUR - 89,999EUR
- ☐ 90,000EUR - 99,999EUR
- ☐ 100,000EUR - 149,999EUR
- ☐ 150,000EUR - 200,000EUR
- ☐ Over 200,000EUR
- ☐ Choose not to say



Appendix D: ANOVA and Post-Hoc tests

TABLE 24. TESTS OF HOMOGENEITY OF VARIANCES (LEVENE'S TEST).

Subscales	Levene Statistic	df1	df2	Sig.
Regulating services (importance)	4.834	5	2248	0.001
Cultural services (importance)	11.69	5	2248	0.001
Provisioning services (importance)	1.951	5	2248	0.083
Forestry networks (approval)	2.837	5	2248	0.015
Citizens (approval)	2.645	5	2248	0.022
Forestry networks (importance)	9.74	5	2248	0.001
Citizens (importance)	5.698	5	2248	0.001
Operational resources (importance)	5.605	5	2248	0.001
Support mechanisms (importance)	6.284	5	2248	0.001
Support mechanisms (availability)	0.575	5	2248	0.719
Operational resources (availability)	1.038	5	2248	0.393

TABLE 25. ROBUST TESTS OF EQUALITY OF MEANS (WELCH'S TEST).

	Statistic	df1	df2	Sig.
Regulating services (importance)	1.591	5	336.312	0.162
Cultural services (importance)	10.625	5	332.958	<.001
Provisioning services (importance)	12.514	5	332.347	<.001
Forestry networks (approval)	12.233	5	337.344	<.001
Citizens (approval)	4.673	5	332.4	<.001
Forestry networks (importance)	20.25	5	334.351	<.001
Citizens (importance)	10.156	5	334.731	<.001
Operational resources (importance)	9.77	5	332.636	<.001
Support mechanisms (importance)	5.932	5	332.321	<.001
Support mechanisms (availability)	10.521	5	331.207	<.001
Operational resources (availability)	4.344	5	328.389	<.001

TABLE 26. ONE WAY ANALYSIS OF VARIANCE (ANOVA) TEST.

Subscales		Σ Squares	$\bar{x}$ Square	F (5, 2248)	Sig.
Regulating services (importance)	Between Groups	8.381	1.676	1.243	0.286
	Within Groups	3031.95	1.349		
	Total	3040.33			
Cultural services (importance)	Between Groups	55.199	11.04	8.121	<.001
	Within Groups	3055.982	1.359		
	Total	3111.181			
Provisioning services (importance)	Between Groups	92.587	18.517	12.291	<.001
	Within Groups	3386.885	1.507		
	Total	3479.472			
Forestry networks (approval)	Between Groups	76.277	15.255	11.45	<.001
	Within Groups	2995.061	1.332		
	Total	3071.338			
Citizens (approval)	Between Groups	34.406	6.881	4.535	<.001
	Within Groups	3411.045	1.517		
	Total	3445.45			
Forestry networks (importance)	Between Groups	90.65	18.13	15.819	<.001
	Within Groups	2576.417	1.146		
	Total	2667.067			
Citizens (importance)	Between Groups	58.398	11.68	9.459	<.001
	Within Groups	2775.628	1.235		
	Total	2834.026			
Operational resources (importance)	Between Groups	78.028	15.606	8.528	<.001
	Within Groups	4113.651	1.83		
	Total	4191.678			
Support mechanisms (importance)	Between Groups	52.82	10.564	4.996	<.001
	Within Groups	4753.691	2.115		
	Total	4806.511			
Support mechanisms (availability)	Between Groups	91.244	18.249	10.33	<.001
	Within Groups	3971.216	1.767		
	Total	4062.46			
Operational resources (availability)	Between Groups	45.573	9.115	4.152	<.001
	Within Groups	4934.594	2.195		
	Total	4980.167			

TABLE 27. TAMHANE'S POST-HOC TEST FOR CULTURAL SERVICES (IMPORTANCE) ANOVA

(I) forest practitioner	(J) forest practitioner	$\bar{x}$ Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower	Upper
PuM	PM	0.058	0.080	1.000	-0.177	0.293
	PPM	0.408	0.151	0.120	-0.048	0.864
	FO	0.384	0.064	0.001	0.196	0.572
	FOM	0.412	0.098	0.001	0.124	0.700
	FMM	0.382	0.157	0.228	-0.090	0.854
PM	PuM	-0.058	0.080	1.000	-0.293	0.177
	PPM	0.350	0.153	0.311	-0.110	0.810
	FO	0.326	0.067	0.001	0.127	0.524
	FOM	0.354	0.100	0.007	0.059	0.649
	FMM	0.324	0.159	0.492	-0.152	0.800
PPM	PuM	-0.408	0.151	0.120	-0.864	0.048
	PM	-0.350	0.153	0.311	-0.810	0.110
	FO	-0.024	0.145	1.000	-0.464	0.416
	FOM	0.004	0.163	1.000	-0.484	0.492
	FMM	-0.026	0.204	1.000	-0.635	0.583
FO	PuM	-0.384	0.064	0.001	-0.572	-0.196
	PM	-0.326	0.067	0.001	-0.524	-0.127
	PPM	0.024	0.145	1.000	-0.416	0.464
	FOM	0.028	0.088	1.000	-0.232	0.288
	FMM	-0.002	0.152	1.000	-0.458	0.455
FOM	PuM	-0.412	0.098	0.001	-0.700	-0.124
	PM	-0.354	0.100	0.007	-0.649	-0.059
	PPM	-0.004	0.163	1.000	-0.492	0.484
	FO	-0.028	0.088	1.000	-0.288	0.232
	FMM	-0.030	0.169	1.000	-0.533	0.473
FMM	PuM	-0.382	0.157	0.228	-0.854	0.090
	PM	-0.324	0.159	0.492	-0.800	0.152
	PPM	0.026	0.204	1.000	-0.583	0.635
	FO	0.002	0.152	1.000	-0.455	0.458
	FOM	0.030	0.169	1.000	-0.473	0.533
	FOM	0.030	0.169	1.000	-0.473	0.533

TABLE 28. LSD POST-HOC ANOVA TEST FOR PROVISIONING SERVICES (IMPORTANCE) SUBSCALE.

(I) Forest practitioner	(J) Forest practitioner	$\bar{x}$ Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
PuM	PM	0.120	0.104	0.249	-0.084	0.325
	PPM	-0.002	0.168	0.990	-0.332	0.328
	FO	0.395	0.079	0.001	0.239	0.550
	FOM	-0.095	0.106	0.370	-0.302	0.112
	FMM	0.578	0.154	0.001	0.276	0.880
PM	PuM	-0.120	0.104	0.249	-0.325	0.084
	PPM	-0.123	0.170	0.471	-0.456	0.211
	FO	0.274	0.083	0.001	0.111	0.437
	FOM	-0.215	0.109	0.048	-0.428	-0.002
	FMM	0.458	0.156	0.003	0.152	0.764
PPM	PuM	0.002	0.168	0.990	-0.328	0.332
	PM	0.123	0.170	0.471	-0.211	0.456
	FO	0.397	0.156	0.011	0.091	0.703
	FOM	-0.093	0.171	0.588	-0.428	0.242
	FMM	0.580	0.204	0.005	0.179	0.981
FO	PuM	-0.395	0.079	0.001	-0.550	-0.239
	PM	-0.274	0.083	0.001	-0.437	-0.111
	PPM	-0.397	0.156	0.011	-0.703	-0.091
	FOM	-0.489	0.085	0.001	-0.655	-0.323
	FMM	0.184	0.141	0.192	-0.092	0.459
FOM	PuM	0.095	0.106	0.370	-0.112	0.302
	PM	0.215	0.109	0.048	0.002	0.428
	PPM	0.093	0.171	0.588	-0.242	0.428
	FO	0.489	0.085	0.001	0.323	0.655
	FMM	0.673	0.157	0.001	0.365	0.980
FMM	PuM	-0.578	0.154	0.001	-0.880	-0.276
	PM	-0.458	0.156	0.003	-0.764	-0.152
	PPM	-0.580	0.204	0.005	-0.981	-0.179
	FO	-0.184	0.141	0.192	-0.459	0.092
	FOM	-0.673	0.157	0.001	-0.980	-0.365



TABLE 29. TAMAHANES POST-HOC ANOVA TEST FOR FORESTRY NETWORKS (APPROVAL) SUBSCALE.

(I) Forest practitioner	(J) Forest practitioner	$\bar{x}$ Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
PuM	PM	0.184	0.085	0.372	-0.066	0.434
	PPM	0.080	0.155	1.000	-0.387	0.547
	FO	0.488	0.070	0.001	0.282	0.694
	FOM	0.229	0.093	0.189	-0.044	0.503
	FMM	0.366	0.126	0.065	-0.011	0.743
PM	PuM	-0.184	0.085	0.372	-0.434	0.066
	PPM	-0.104	0.154	1.000	-0.568	0.360
	FO	0.304	0.068	0.001	0.104	0.504
	FOM	0.045	0.091	1.000	-0.223	0.314
	FMM	0.182	0.125	0.911	-0.192	0.556
PPM	PuM	-0.080	0.155	1.000	-0.547	0.387
	PM	0.104	0.154	1.000	-0.360	0.568
	FO	0.408	0.147	0.098	-0.036	0.852
	FOM	0.149	0.159	0.998	-0.327	0.626
	FMM	0.286	0.180	0.842	-0.253	0.824
FO	PuM	-0.488	0.070	0.001	-0.694	-0.282
	PM	-0.304	0.068	0.001	-0.504	-0.104
	PPM	-0.408	0.147	0.098	-0.852	0.036
	FOM	-0.259	0.078	0.014	-0.488	-0.030
	FMM	-0.122	0.116	0.995	-0.470	0.225
FOM	PuM	-0.229	0.093	0.189	-0.503	0.044
	PM	-0.045	0.091	1.000	-0.314	0.223
	PPM	-0.149	0.159	0.998	-0.626	0.327
	FO	0.259	0.078	0.014	0.030	0.488
	FMM	0.137	0.131	0.995	-0.253	0.526
FMM	PuM	-0.366	0.126	0.065	-0.743	0.011
	PM	-0.182	0.125	0.911	-0.556	0.192
	PPM	-0.286	0.180	0.842	-0.824	0.253
	FO	0.122	0.116	0.995	-0.225	0.470
	FOM	-0.137	0.131	0.995	-0.526	0.253



TABLE 30. TAMHANE'S POST-HOC ANOVA TEST FOR CITIZENS (APPROVAL) SUBSCALE.

(I) Forest practitioner	(J) Forest practitioner	$\bar{x}$ Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
PuM	PM	-0.005	0.102	1.000	-0.305	0.296
	PPM	0.434	0.199	0.387	-0.166	1.034
	FO	0.010	0.081	1.000	-0.228	0.248
	FOM	-0.292	0.100	0.051	-0.584	0.001
	FMM	-0.138	0.143	0.998	-0.564	0.288
PM	PuM	0.005	0.102	1.000	-0.296	0.305
	PPM	0.439	0.199	0.367	-0.160	1.037
	FO	0.015	0.080	1.000	-0.220	0.250
	FOM	-0.287	0.099	0.055	-0.577	0.003
	FMM	-0.133	0.142	0.998	-0.557	0.291
PPM	PuM	-0.434	0.199	0.387	-1.034	0.166
	PM	-0.439	0.199	0.367	-1.037	0.160
	FO	-0.424	0.189	0.345	-0.996	0.148
	FOM	-0.726	0.197	0.006	-1.320	-0.131
	FMM	-0.572	0.222	0.159	-1.237	0.093
FO	PuM	-0.010	0.081	1.000	-0.248	0.228
	PM	-0.015	0.080	1.000	-0.250	0.220
	PPM	0.424	0.189	0.345	-0.148	0.996
	FOM	-0.302	0.076	0.001	-0.526	-0.077
	FMM	-0.148	0.128	0.987	-0.532	0.237
FOM	PuM	0.292	0.100	0.051	-0.001	0.584
	PM	0.287	0.099	0.055	-0.003	0.577
	PPM	0.726	0.197	0.006	0.131	1.320
	FO	0.302	0.076	0.001	0.077	0.526
	FMM	0.154	0.140	0.992	-0.265	0.573
FMM	PuM	0.138	0.143	0.998	-0.288	0.564
	PM	0.133	0.142	0.998	-0.291	0.557
	PPM	0.572	0.222	0.159	-0.093	1.237
	FO	0.148	0.128	0.987	-0.237	0.532
	FOM	-0.154	0.140	0.992	-0.573	0.265



TABLE 31. TAMHANE'S POST-HOC ANOVA TEST FOR FORESTRY NETWORKS (IMPORTANCE) SUBSCALE.

(I) Forest practitioner	(J) Forest practitioner	$\bar{x}$ Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
PuM	PM	0.250	0.075	0.014	0.029	0.470
	PPM	0.218	0.139	0.855	-0.202	0.638
	FO	0.540	0.059	0.001	0.366	0.713
	FOM	0.487	0.085	0.001	0.238	0.735
	FMM	0.757	0.137	0.001	0.347	1.167
PM	PuM	-0.250	0.075	0.014	-0.470	-0.029
	PPM	-0.031	0.142	1.000	-0.458	0.395
	FO	0.290	0.064	0.001	0.101	0.479
	FOM	0.237	0.088	0.108	-0.023	0.497
	FMM	0.507	0.139	0.006	0.090	0.924
PPM	PuM	-0.218	0.139	0.855	-0.638	0.202
	PM	0.031	0.142	1.000	-0.395	0.458
	FO	0.321	0.134	0.251	-0.085	0.727
	FOM	0.268	0.147	0.669	-0.173	0.709
	FMM	0.538	0.182	0.054	-0.004	1.081
FO	PuM	-0.540	0.059	0.001	-0.713	-0.366
	PM	-0.290	0.064	0.001	-0.479	-0.101
	PPM	-0.321	0.134	0.251	-0.727	0.085
	FOM	-0.053	0.075	1.000	-0.275	0.169
	FMM	0.217	0.131	0.800	-0.178	0.612
FOM	PuM	-0.487	0.085	0.001	-0.735	-0.238
	PM	-0.237	0.088	0.108	-0.497	0.023
	PPM	-0.268	0.147	0.669	-0.709	0.173
	FO	0.053	0.075	1.000	-0.169	0.275
	FMM	0.270	0.145	0.630	-0.161	0.701
FMM	PuM	-0.757	0.137	0.001	-1.167	-0.347
	PM	-0.507	0.139	0.006	-0.924	-0.090
	PPM	-0.538	0.182	0.054	-1.081	0.004
	FO	-0.217	0.131	0.800	-0.612	0.178
	FOM	-0.270	0.145	0.630	-0.701	0.161

TABLE 32. TAMHANE'S POST-HOC ANOVA TEST FOR CITIZENS (IMPORTANCE) SUBSCALE.

(I) Forest practitioner	(J) Forest practitioner	$\bar{x}$ Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
PuM	PM	0.094	0.085	0.991	-0.156	0.344
	PPM	0.245	0.141	0.737	-0.178	0.667
	FO	0.421	0.069	0.001	0.218	0.625
	FOM	0.224	0.093	0.222	-0.050	0.497
	FMM	0.344	0.139	0.202	-0.072	0.761
PM	PuM	-0.094	0.085	0.991	-0.344	0.156
	PPM	0.150	0.140	0.993	-0.269	0.570
	FO	0.327	0.067	0.001	0.129	0.525
	FOM	0.129	0.091	0.924	-0.140	0.398
	FMM	0.250	0.138	0.681	-0.164	0.664
PPM	PuM	-0.245	0.141	0.737	-0.667	0.178
	PM	-0.150	0.140	0.993	-0.570	0.269
	FO	0.177	0.131	0.950	-0.219	0.572
	FOM	-0.021	0.145	1.000	-0.454	0.412
	FMM	0.100	0.178	1.000	-0.431	0.630
FO	PuM	-0.421	0.069	0.001	-0.625	-0.218
	PM	-0.327	0.067	0.001	-0.525	-0.129
	PPM	-0.177	0.131	0.950	-0.572	0.219
	FOM	-0.198	0.077	0.147	-0.424	0.029
	FMM	-0.077	0.129	1.000	-0.466	0.312
FOM	PuM	-0.224	0.093	0.222	-0.497	0.050
	PM	-0.129	0.091	0.924	-0.398	0.140
	PPM	0.021	0.145	1.000	-0.412	0.454
	FO	0.198	0.077	0.147	-0.029	0.424
	FMM	0.121	0.143	1.000	-0.307	0.548
FMM	PuM	-0.344	0.139	0.202	-0.761	0.072
	PM	-0.250	0.138	0.681	-0.664	0.164
	PPM	-0.100	0.178	1.000	-0.630	0.431
	FO	0.077	0.129	1.000	-0.312	0.466
	FOM	-0.121	0.143	1.000	-0.548	0.307



TABLE 33. TAMHANE'S POST-HOC ANOVA TEST FOR CITIZENS (IMPORTANCE) SUBSCALE.

(I) Forest practitioner	(J) Forest practitioner	$\bar{x}$ Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
PuM	PM	0.094	0.085	0.991	-0.156	0.344
	PPM	0.245	0.141	0.737	-0.178	0.667
	FO	0.421	0.069	0.001	0.218	0.625
	FOM	0.224	0.093	0.222	-0.050	0.497
	FMM	0.344	0.139	0.202	-0.072	0.761
PM	PuM	-0.094	0.085	0.991	-0.344	0.156
	PPM	0.150	0.140	0.993	-0.269	0.570
	FO	0.327	0.067	0.001	0.129	0.525
	FOM	0.129	0.091	0.924	-0.140	0.398
	FMM	0.250	0.138	0.681	-0.164	0.664
PPM	PuM	-0.245	0.141	0.737	-0.667	0.178
	PM	-0.150	0.140	0.993	-0.570	0.269
	FO	0.177	0.131	0.950	-0.219	0.572
	FOM	-0.021	0.145	1.000	-0.454	0.412
	FMM	0.100	0.178	1.000	-0.431	0.630
FO	PuM	-0.421	0.069	0.001	-0.625	-0.218
	PM	-0.327	0.067	0.001	-0.525	-0.129
	PPM	-0.177	0.131	0.950	-0.572	0.219
	FOM	-0.198	0.077	0.147	-0.424	0.029
	FMM	-0.077	0.129	1.000	-0.466	0.312
FOM	PuM	-0.224	0.093	0.222	-0.497	0.050
	PM	-0.129	0.091	0.924	-0.398	0.140
	PPM	0.021	0.145	1.000	-0.412	0.454
	FO	0.198	0.077	0.147	-0.029	0.424
	FMM	0.121	0.143	1.000	-0.307	0.548
FMM	PuM	-0.344	0.139	0.202	-0.761	0.072
	PM	-0.250	0.138	0.681	-0.664	0.164
	PPM	-0.100	0.178	1.000	-0.630	0.431
	FO	0.077	0.129	1.000	-0.312	0.466
	FOM	-0.121	0.143	1.000	-0.548	0.307



TABLE 34. TAMHANE'S POST-HOC ANOVA TEST FOR CITIZENS (IMPORTANCE) SUBSCALE.

(I) Forest practitioner	(J) Forest practitioner	$\bar{x}$ Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
PuM	PM	0.189	0.102	0.628	-0.110	0.489
	PPM	0.281	0.172	0.815	-0.237	0.798
	FO	0.508	0.080	0.001	0.273	0.743
	FOM	0.359	0.117	0.034	0.014	0.704
	FMM	0.607	0.176	0.011	0.082	1.132
PM	PuM	-0.189	0.102	0.628	-0.489	0.110
	PPM	0.091	0.174	1.000	-0.431	0.613
	FO	0.319	0.083	0.002	0.073	0.565
	FOM	0.170	0.120	0.923	-0.183	0.522
	FMM	0.418	0.177	0.263	-0.112	0.947
PPM	PuM	-0.281	0.172	0.815	-0.798	0.237
	PM	-0.091	0.174	1.000	-0.613	0.431
	FO	0.228	0.162	0.932	-0.262	0.717
	FOM	0.079	0.183	1.000	-0.469	0.626
	FMM	0.327	0.225	0.911	-0.343	0.996
FO	PuM	-0.508	0.080	0.001	-0.743	-0.273
	PM	-0.319	0.083	0.002	-0.565	-0.073
	PPM	-0.228	0.162	0.932	-0.717	0.262
	FOM	-0.149	0.102	0.902	-0.448	0.151
	FMM	0.099	0.165	1.000	-0.399	0.597
FOM	PuM	-0.359	0.117	0.034	-0.704	-0.014
	PM	-0.170	0.120	0.923	-0.522	0.183
	PPM	-0.079	0.183	1.000	-0.626	0.469
	FO	0.149	0.102	0.902	-0.151	0.448
	FMM	0.248	0.186	0.954	-0.307	0.803
FMM	PuM	-0.607	0.176	0.011	-1.132	-0.082
	PM	-0.418	0.177	0.263	-0.947	0.112
	PPM	-0.327	0.225	0.911	-0.996	0.343
	FO	-0.099	0.165	1.000	-0.597	0.399
	FOM	-0.248	0.186	0.954	-0.803	0.307

TABLE 35. TAMHANE'S POST-HOC ANOVA TEST FOR OPERATIONAL RESOURCES (IMPORTANCE) SUBSCALE.

(I) Forest practitioner	(J) Forest practitioner	$\bar{x}$ Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
PuM	PM	0.189	0.102	0.628	-0.110	0.489
	PPM	0.281	0.172	0.815	-0.237	0.798
	FO	0.508	0.080	0.001	0.273	0.743
	FOM	0.359	0.117	0.034	0.014	0.704
	FMM	0.607	0.176	0.011	0.082	1.132
PM	PuM	-0.189	0.102	0.628	-0.489	0.110
	PPM	0.091	0.174	1.000	-0.431	0.613
	FO	0.319	0.083	0.002	0.073	0.565
	FOM	0.170	0.120	0.923	-0.183	0.522
	FMM	0.418	0.177	0.263	-0.112	0.947
PPM	PuM	-0.281	0.172	0.815	-0.798	0.237
	PM	-0.091	0.174	1.000	-0.613	0.431
	FO	0.228	0.162	0.932	-0.262	0.717
	FOM	0.079	0.183	1.000	-0.469	0.626
	FMM	0.327	0.225	0.911	-0.343	0.996
FO	PuM	-0.508	0.080	0.001	-0.743	-0.273
	PM	-0.319	0.083	0.002	-0.565	-0.073
	PPM	-0.228	0.162	0.932	-0.717	0.262
	FOM	-0.149	0.102	0.902	-0.448	0.151
	FMM	0.099	0.165	1.000	-0.399	0.597
FOM	PuM	-0.359	0.117	0.034	-0.704	-0.014
	PM	-0.170	0.120	0.923	-0.522	0.183
	PPM	-0.079	0.183	1.000	-0.626	0.469
	FO	0.149	0.102	0.902	-0.151	0.448
	FMM	0.248	0.186	0.954	-0.307	0.803
FMM	PuM	-0.607	0.176	0.011	-1.132	-0.082
	PM	-0.418	0.177	0.263	-0.947	0.112
	PPM	-0.327	0.225	0.911	-0.996	0.343
	FO	-0.099	0.165	1.000	-0.597	0.399
	FOM	-0.248	0.186	0.954	-0.803	0.307

TABLE 36. TAMHANE'S POST-HOC ANOVA TEST FOR SUPPORT MECHANISMS (IMPORTANCE) SUBSCALE.

(I) Forest practitioner	(J) Forest practitioner	$\bar{x}$ Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
PuM	PM	0.115	0.107	0.993	-0.198	0.428
	PPM	0.050	0.193	1.000	-0.533	0.633
	FO	.3835	0.082	0.001	0.143	0.624
	FOM	0.278	0.124	0.326	-0.088	0.644
	FMM	0.539	0.183	0.058	-0.009	1.087
PM	PuM	-0.115	0.107	0.993	-0.428	0.198
	PPM	-0.065	0.197	1.000	-0.657	0.528
	FO	0.268	0.090	0.044	0.004	0.534
	FOM	0.163	0.130	0.971	-0.219	0.546
	FMM	0.424	0.187	0.316	-0.134	0.983
PPM	PuM	-0.050	0.193	1.000	-0.633	0.533
	PM	0.065	0.197	1.000	-0.528	0.657
	FO	0.333	0.185	0.693	-0.227	0.893
	FOM	0.228	0.207	0.992	-0.393	0.848
	FMM	0.489	0.247	0.535	-0.247	1.225
FO	PuM	-0.383	0.082	0.001	-0.624	-0.143
	PM	-0.268	0.090	0.044	-0.534	-0.004
	PPM	-0.333	0.185	0.693	-0.893	0.227
	FOM	-0.105	0.111	0.998	-0.432	0.221
	FMM	0.156	0.174	0.999	-0.368	0.679
FOM	PuM	-0.278	0.124	0.326	-0.644	0.088
	PM	-0.163	0.130	0.971	-0.546	0.219
	PPM	-0.228	0.207	0.992	-0.848	0.393
	FO	0.105	0.111	0.998	-0.221	0.432
	FMM	0.261	0.198	0.957	-0.328	0.850
FMM	PuM	-0.539	0.183	0.058	-1.087	0.009
	PM	-0.424	0.187	0.316	-0.983	0.134
	PPM	-0.489	0.247	0.535	-1.225	0.247
	FO	-0.156	0.174	0.999	-0.679	0.368
	FOM	-0.261	0.198	0.957	-0.850	0.328



TABLE 37. LSD POST-HOC ANOVA TEST FOR SUPPORT MECHANISMS (AVAILABILITY) SUBSCALE.

(I) Forest practitioner	(J) Forest practitioner	$\bar{x}$ Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
PuM	PM	0.227	0.113	0.045	0.006	0.449
	PPM	-0.022	0.182	0.904	-0.379	0.335
	FO	0.467	0.086	0.001	0.298	0.635
	FOM	0.095	0.114	0.405	-0.129	0.319
	FMM	0.688	0.167	0.001	0.361	1.015
PM	PuM	-0.227	0.113	0.045	-0.449	-0.006
	PPM	-0.249	0.184	0.176	-0.611	0.112
	FO	0.239	0.090	0.008	0.062	0.416
	FOM	-0.132	0.118	0.261	-0.363	0.098
	FMM	0.461	0.169	0.006	0.129	0.792
PPM	PuM	0.022	0.182	0.904	-0.335	0.379
	PM	0.249	0.184	0.176	-0.112	0.611
	FO	0.489	0.169	0.004	0.157	0.820
	FOM	0.117	0.185	0.527	-0.246	0.480
	FMM	0.710	0.221	0.001	0.276	1.144
FO	PuM	-0.467	0.086	0.001	-0.635	-0.298
	PM	-0.239	0.090	0.008	-0.416	-0.062
	PPM	-0.489	0.169	0.004	-0.820	-0.157
	FOM	-0.371	0.092	0.001	-0.551	-0.192
	FMM	0.222	0.152	0.145	-0.077	0.520
FOM	PuM	-0.095	0.114	0.405	-0.319	0.129
	PM	0.132	0.118	0.261	-0.098	0.363
	PPM	-0.117	0.185	0.527	-0.480	0.246
	FO	0.371	0.092	0.001	0.192	0.551
	FMM	0.593	0.170	0.001	0.260	0.926
FMM	PuM	-0.688	0.167	0.001	-1.015	-0.361
	PM	-0.461	0.169	0.006	-0.792	-0.129
	PPM	-0.710	0.221	0.001	-1.144	-0.276
	FO	-0.222	0.152	0.145	-0.520	0.077
	FOM	-0.593	0.170	0.001	-0.926	-0.260



TABLE 38. LSD POST-HOC ANOVA TEST FOR OPERATIONAL RESOURCES (AVAILABILITY) SUBSCALE.

(I) Forest practitioner	(J) Forest practitioner	$\bar{x}$ Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
PuM	PM	-0.160	0.126	0.205	-0.407	0.087
	PPM	0.056	0.203	0.784	-0.343	0.454
	FO	0.246	0.096	0.010	0.058	0.434
	FOM	0.095	0.127	0.457	-0.155	0.345
	FMM	0.049	0.186	0.793	-0.316	0.414
PM	PuM	0.160	0.126	0.205	-0.087	0.407
	PPM	0.216	0.205	0.294	-0.187	0.618
	FO	0.406	0.100	0.001	0.209	0.603
	FOM	0.255	0.131	0.052	-0.002	0.512
	FMM	0.209	0.188	0.268	-0.161	0.578
PPM	PuM	-0.056	0.203	0.784	-0.454	0.343
	PM	-0.216	0.205	0.294	-0.618	0.187
	FO	0.191	0.188	0.311	-0.179	0.560
	FOM	0.039	0.206	0.849	-0.365	0.444
	FMM	-0.007	0.247	0.978	-0.491	0.477
FO	PuM	-0.246	0.096	0.010	-0.434	-0.058
	PM	-0.406	0.100	0.001	-0.603	-0.209
	PPM	-0.191	0.188	0.311	-0.560	0.179
	FOM	-0.151	0.102	0.138	-0.352	0.049
	FMM	-0.197	0.170	0.245	-0.530	0.135
FOM	PuM	-0.095	0.127	0.457	-0.345	0.155
	PM	-0.255	0.131	0.052	-0.512	0.002
	PPM	-0.039	0.206	0.849	-0.444	0.365
	FO	0.151	0.102	0.138	-0.049	0.352
	FMM	-0.046	0.189	0.808	-0.417	0.325
FMM	PuM	-0.049	0.186	0.793	-0.414	0.316
	PM	-0.209	0.188	0.268	-0.578	0.161
	PPM	0.007	0.247	0.978	-0.477	0.491
	FO	0.197	0.170	0.245	-0.135	0.530
	FOM	0.046	0.189	0.808	-0.325	0.417

Appendix E. Management regression models

TABLE 1. BINARY REGRESSION MODEL ESTIMATING PREDICTORS ON BINARY CATEGORICAL (ENTIRELY UNMANAGED FOREST WHERE YES=1, NO=0). THE REFERENCE LEVEL WAS NO (0). OBSERVATION IN MODEL = 2254.

Predictors	Estimates	Standard Error	z-value	Odds Ratio	Confidence interval	p-value
Intercept	-0.788928	-0.26609	-2.965	0.45	0.27 – 0.76	0.003
e1	0.000136	0.052246	0.003	1	0.90, 1.11	>0.9
e2	0.006421	0.055076	0.117	1.01	0.90, 1.12	>0.9
e3	-0.216454	0.049392	-4.382	0.81	0.73, 0.89	<0.001
n1	-0.244292	0.054487	-4.483	0.78	0.70, 0.87	<0.001
n2	-0.160272	0.051477	-3.113	0.85	0.77, 0.94	0.002
m1	-0.217733	0.065168	-3.341	0.8	0.71, 0.91	<0.001
m2	-0.096772	0.060788	-1.592	0.91	0.81, 1.02	0.11
p1	-0.039292	0.051248	-0.767	0.96	0.87, 1.06	0.4
p2	-0.214283	0.045301	-4.73	0.81	0.74, 0.88	<0.001
c1	0.131138	0.059906	2.189	1.14	1.01, 1.28	0.029
c2	0.048528	0.054906	0.884	1.05	0.94, 1.17	0.4
Forest Practitioners Class						
PuM	—	—	—	—	—	—
PM	0.023428	0.269033	0.087	1.02	0.60, 1.74	>0.9
PPM	0.388917	0.429565	0.905	1.48	0.61, 3.32	0.4
FO	0.506948	0.220772	2.296	1.66	1.09, 2.59	0.022
FOM	-0.285825	0.289279	-0.988	0.75	0.43, 1.33	0.3
FFM	0.213721	0.355888	0.601	1.24	0.61, 2.47	0.5
Forest Country						
Croatia	—	—	—	—	—	—
Czechia	-0.39681	0.229546	-1.729	0.67	0.43, 1.05	0.084
Finland	-0.729779	0.219497	-3.325	0.48	0.31, 0.74	<0.001
France	0.091792	0.266564	0.344	1.1	0.65, 1.84	0.7
Germany	-0.548003	0.277122	-1.977	0.58	0.33, 0.99	0.048
Italy	0.265539	0.32539	0.816	1.3	0.68, 2.45	0.4
Latvia	-0.852456	0.200266	-4.257	0.43	0.29, 0.63	<0.001
Netherlands	-2.285056	1.039436	-2.198	0.1	0.01, 0.51	0.028
Romania	-0.935429	0.207	-4.519	0.39	0.26, 0.59	<0.001
Spain	0.354906	0.30258	1.173	1.43	0.78, 2.57	0.2
Sweden	-0.079208	0.246699	-0.321	0.92	0.57, 1.49	0.7
Switzerland	-0.495996	0.269466	-1.841	0.61	0.36, 1.02	0.066
UK	-1.079384	0.424979	-2.54	0.34	0.14, 0.74	0.011
Forest Area Group						
1ha	—	—	—	—	—	—
2-5ha	-0.10632	0.152425	-0.698	0.9	0.67, 1.21	0.5
6-15ha	-0.275872	0.184261	-1.497	0.76	0.53, 1.09	0.13
16-25ha	-0.596102	0.255109	-2.337	0.55	0.33, 0.90	0.019
26-50ha	-0.771605	0.255169	-3.024	0.46	0.28, 0.75	0.002
51-100ha	-0.690517	0.282814	-2.442	0.5	0.28, 0.86	0.015
101-1000ha	-0.884959	0.250889	-3.527	0.41	0.25, 0.67	<0.001
1000+ha	-1.386951	0.390701	-3.55	0.25	0.11, 0.52	<0.001
Pseudo r ²	McFadden	McFadden Adj	Nagelkerke	Cox Snell		AIC
	0.152432	0.123477	0.2316	0.154		2179.61



TABLE 2. MULTINOMINAL REGRESSION MODEL ESTIMATING PREDICTORS ON HARVESTING REGIMES (RESPONSE OUTCOMES= HI CLEARCUT; LI CLEARCUT; HIGH CCF; LOW CCF) (N=1464).

Predictors	Coefficients	Odds Ratios	Confidence Intervals	p-value	Response
(Intercept)	0.579	1.78	0.61 – 5.17	0.287	LI Clearcut
e1	-0.026	0.97	0.80 – 1.19	0.804	LI Clearcut
e2	-0.135	0.87	0.72 – 1.07	0.184	LI Clearcut
e3	0.131	1.14	0.93 – 1.39	0.196	LI Clearcut
n1	-0.116	0.89	0.73 – 1.08	0.245	LI Clearcut
n2	-0.045	0.96	0.80 – 1.15	0.626	LI Clearcut
m1	-0.005	0.99	0.76 – 1.30	0.969	LI Clearcut
m2	0.172	1.19	0.95 – 1.49	0.132	LI Clearcut
p1	-0.141	0.87	0.74 – 1.02	0.095	LI Clearcut
p2	-0.023	0.98	0.85 – 1.13	0.758	LI Clearcut
c1	-0.155	0.86	0.68 – 1.09	0.199	LI Clearcut
c2	-0.094	0.91	0.73 – 1.13	0.39	LI Clearcut
Forest country: Croatia	---	---	---	---	---
Forest country: Czechia	-1.221	0.29	0.08 – 1.03	0.056	LI Clearcut
Forest country: Finland	-0.125	0.88	0.40 – 1.96	0.759	LI Clearcut
Forest country: France	-0.423	0.66	0.22 – 1.95	0.447	LI Clearcut
Forest country: Germany	-1.107	0.33	0.08 – 1.34	0.122	LI Clearcut
Forest country: Italy	-0.192	0.83	0.07 – 10.09	0.880	LI Clearcut
Forest country: Latvia	0.171	1.19	0.57 – 2.47	0.648	LI Clearcut
Forest country: Netherlands	-1.042	0.35	0.03 – 3.60	0.379	LI Clearcut
Forest country: Romania	0.023	1.02	0.45 – 2.34	0.956	LI Clearcut
Forest country: Spain	-0.685	0.5	0.12 – 2.21	0.363	LI Clearcut
Forest country: Sweden	0.146	1.16	0.50 – 2.68	0.733	LI Clearcut
Forest country: Switzerland	-1.264	0.28	0.07 – 1.14	0.076	LI Clearcut
Forest country: UK	0.607	1.83	0.67 – 5.02	0.237	LI Clearcut
Practitioner class: PUM	-	-	-	-	-
Practitioner class: PM	-0.316	0.73	0.37 – 1.45	0.368	LI Clearcut
Practitioner class: PPM	-1.530	0.22	0.07 – 0.72	0.012	LI Clearcut
Practitioner class: FO	-0.288	0.75	0.43 – 1.32	0.317	LI Clearcut
Practitioner class: FOM	-0.428	0.65	0.33 – 1.28	0.212	LI Clearcut
Practitioner class: FFM	-1.129	0.32	0.08 – 1.31	0.113	LI Clearcut
Forest area group: 1 ha	-	-	-	-	-
Forest area group: 2-5 ha	-0.728	0.48	0.19 – 1.21	0.12	LI Clearcut
Forest area group: 6-15 ha	-0.776	0.46	0.18 – 1.18	0.105	LI Clearcut
Forest area group: 16-25 ha	-0.958	0.38	0.14 – 1.06	0.063	LI Clearcut
Forest area group: 26-50 ha	-1.036	0.36	0.13 – 0.95	0.038	LI Clearcut
Forest area group: 51-100 ha	-0.582	0.56	0.21 – 1.52	0.253	LI Clearcut
Forest area group: 101-1000 ha	-0.688	0.5	0.19 – 1.32	0.163	LI Clearcut
Forest area group: 1000+ ha	-0.317	0.73	0.25 – 2.12	0.561	LI Clearcut
(Intercept)	2.153	8.61	3.66 – 20.25	<0.001	HIGH CCF
e1	0.174	1.19	1.01 – 1.41	0.044	HIGH CCF
e2	-0.060	0.94	0.80 – 1.11	0.474	HIGH CCF
e3	-0.196	0.82	0.71 – 0.96	0.012	HIGH CCF
n1	-0.081	0.92	0.78 – 1.09	0.351	HIGH CCF



n2	-0.015	0.99	0.85 – 1.15	0.845	HIGH CCF
m1	-0.250	0.78	0.63 – 0.97	0.024	HIGH CCF
m2	-0.184	0.83	0.70 – 0.99	0.043	HIGH CCF
p1	-0.109	0.9	0.78 – 1.03	0.114	HIGH CCF
p2	0.005	1	0.89 – 1.13	0.938	HIGH CCF
c1	-0.161	0.85	0.70 – 1.03	0.097	HIGH CCF
c2	-0.136	0.87	0.74 – 1.04	0.120	HIGH CCF
Forest country: Croatia	-	-	-	-	-
Forest country: Czechia	0.316	1.37	0.67 – 2.79	0.384	HIGH CCF
Forest country: Finland	-1.071	0.34	0.18 – 0.65	0.001	HIGH CCF
Forest country: France	-1.027	0.36	0.15 – 0.87	0.023	HIGH CCF
Forest country: Germany	0.023	1.02	0.46 – 2.30	0.955	HIGH CCF
Forest country: Italy	2.016	7.51	1.58 – 35.75	0.011	HIGH CCF
Forest country: Latvia	-1.054	0.35	0.19 – 0.63	<0.001	HIGH CCF
Forest country: Netherlands	0.820	2.27	0.64 – 8.06	0.204	HIGH CCF
Forest country: Romania	0.582	1.79	0.96 – 3.35	0.069	HIGH CCF
Forest country: Spain	0.080	1.08	0.41 – 2.86	0.871	HIGH CCF
Forest country: Sweden	-1.422	0.24	0.11 – 0.51	<0.001	HIGH CCF
Forest country Switzerland	-0.482	0.62	0.27 – 1.39	0.245	HIGH CCF
Forest country: UK	0.130	1.14	0.49 – 2.67	0.765	HIGH CCF
Practitioner class: PUM	-	-	-	-	-
Practitioner class: PM	0.562	1.75	1.00 – 3.07	0.049	HIGH CCF
Practitioner class: PPM	0.063	1.07	0.50 – 2.27	0.87	HIGH CCF
Practitioner class: FO	0.103	1.11	0.70 – 1.76	0.665	HIGH CCF
Practitioner class: FOM	-0.245	0.78	0.45 – 1.37	0.39	HIGH CCF
Practitioner class: FFM	0.774	2.17	0.93 – 5.07	0.074	HIGH CCF
Forest area group: 1 ha	-	-	-	-	-
Forest area group: 2-5ha	-0.667	0.51	0.25 – 1.04	0.065	HIGH CCF
Forest area group: 6-15 ha	-0.960	0.38	0.18 – 0.80	0.011	HIGH CCF
Forest area group: 16-25 ha	-1.417	0.24	0.11 – 0.54	0.001	HIGH CCF
Forest area group: 26-50 ha	-1.651	0.19	0.09 – 0.42	<0.001	HIGH CCF
Forest area group: 51-100 ha	-1.969	0.14	0.06 – 0.33	<0.001	HIGH CCF
Forest area group: 101-1000 ha	-1.579	0.21	0.09 – 0.45	<0.001	HIGH CCF
Forest area group: 1000+ ha	-1.426	0.24	0.10 – 0.58	0.001	HIGH CCF
(Intercept)	0.904	2.47	0.90 – 6.75	0.078	LOW CCF
e1	0.026	1.03	0.84 – 1.26	0.803	LOW CCF
e2	-0.139	0.87	0.71 – 1.07	0.178	LOW CCF
e3	-0.270	0.76	0.63 – 0.92	0.004	LOW CCF
n1	-0.010	0.99	0.80 – 1.22	0.924	LOW CCF
n2	-0.039	0.96	0.80 – 1.16	0.678	LOW CCF
m1	-0.136	0.87	0.67 – 1.14	0.323	LOW CCF
m2	0.086	1.09	0.87 – 1.37	0.454	LOW CCF
p1	-0.179	0.84	0.71 – 0.99	0.035	LOW CCF
p2	-0.063	0.94	0.81 – 1.08	0.388	LOW CCF
c1	-0.033	0.97	0.77 – 1.22	0.781	LOW CCF
c2	-0.151	0.86	0.70 – 1.06	0.155	LOW CCF
Forest country: Croatia	-	-	-	-	-
Forest country: Czechia	0.253	1.29	0.54 – 3.07	0.568	LOW CCF



Forest country: Finland	-0.593	0.55	0.25 – 1.22	0.144	LOW CCF
Forest country: France	-0.034	0.97	0.37 – 2.54	0.946	LOW CCF
Forest country: Germany	0.169	1.18	0.44 – 3.18	0.737	LOW CCF
Forest country: Italy	2.325	10.23	1.96 – 53.31	0.006	LOW CCF
Forest country: Latvia	-0.476	0.62	0.30 – 1.29	0.202	LOW CCF
Forest country: Netherlands	0.194	1.21	0.23 – 6.52	0.821	LOW CCF
Forest country: Romania	-0.183	0.83	0.36 – 1.93	0.670	LOW CCF
Forest country: Spain	0.552	1.74	0.55 – 5.48	0.346	LOW CCF
Forest country: Sweden	-0.852	0.43	0.17 – 1.09	0.076	LOW CCF
Forest country Switzerland	-0.373	0.69	0.25 – 1.91	0.472	LOW CCF
Forest country: UK	0.545	1.72	0.63 – 4.74	0.291	LOW CCF
Practitioner class: PUM	-	-	-	-	-
Practitioner class: PM	0.776	2.17	1.11 – 4.24	0.023	LOW CCF
Practitioner class: PPM	-0.064	0.94	0.33 – 2.66	0.905	LOW CCF
Practitioner class: FO	0.061	1.06	0.59 – 1.91	0.838	LOW CCF
Practitioner class: FOM	0.040	1.04	0.52 – 2.07	0.910	LOW CCF
Practitioner class: FFM	-0.774	0.46	0.11 – 1.91	0.285	LOW CCF
Forest area group: 1 ha	-	-	-	-	-
Forest area group: 2-5 ha	-0.814	0.44	0.20 – 0.99	0.047	LOW CCF
Forest area group: 6-15 ha	-1.209	0.3	0.13 – 0.70	0.005	LOW CCF
Forest area group: 16-25 ha	-1.226	0.29	0.12 – 0.74	0.009	LOW CCF
Forest area group: 26-50 ha	-1.580	0.21	0.08 – 0.51	0.001	LOW CCF
Forest area group: 51-100 ha	-1.598	0.2	0.08 – 0.54	0.001	LOW CCF
Forest area group: 101-1000 ha	-1.484	0.23	0.09 – 0.57	0.001	LOW CCF
Forest area group: 1000+ ha	-1.536	0.22	0.07 – 0.63	0.005	LOW CCF
R ² / R ² adjusted		0.120	0.120		
AIC		3502.128			
Residual Deviance		3286.128			

TABLE 3. MULTINOMINAL REGRESSION MODEL ESTIMATING PREDICTORS ON DEADWOOD MANAGEMENT SYSTEM.

Reference outcome category: Retain deadwood						
Predictors	Coefficients:	Std. Dev.	Odds Ratios	CI	p	Response
(Intercept)	-1.329	0.488	0.26	0.10 – 0.69	0.007	Proliferate
e1	-0.265	0.098	0.77	0.63 – 0.93	0.007	Proliferate
e2	0.272	0.105	1.31	1.07 – 1.61	0.01	Proliferate
e3	0.188	0.091	1.21	1.01 – 1.44	0.038	Proliferate
n1	-0.315	0.095	0.73	0.61 – 0.88	0.001	Proliferate
n2	-0.341	0.084	0.71	0.60 – 0.84	<0.001	Proliferate
m1	0.017	0.127	1.02	0.79 – 1.31	0.895	Proliferate
m2	0.258	0.108	1.29	1.05 – 1.60	0.017	Proliferate
p1	0.105	0.077	1.11	0.95 – 1.29	0.177	Proliferate
p2	-0.087	0.066	0.92	0.81 – 1.04	0.191	Proliferate
c1	0.165	0.116	1.18	0.94 – 1.48	0.154	Proliferate
c2	0.063	0.104	1.06	0.87 – 1.31	0.547	Proliferate
Forest area 1 ha (reference)						
Forest area 2-5ha	0.772	0.401	2.16	0.98 – 4.76	0.055	Proliferate
Forest area 6-15ha	0.754	0.423	2.12	0.93 – 4.87	0.075	Proliferate
Forest area 16-25ha	0.425	0.479	1.53	0.60 – 3.91	0.376	Proliferate
Forest area 26-50ha	0.827	0.454	2.29	0.94 – 5.58	0.069	Proliferate
Forest area 51-100ha	1.026	0.464	2.79	1.12 – 6.92	0.027	Proliferate
Forest area 101-1000ha	1.045	0.429	2.84	1.23 – 6.60	0.015	Proliferate
Forest area [1000+ha]	0.479	0.466	1.61	0.65 – 4.03	0.305	Proliferate
Forest Country [CA] reference						
Forest country [CZ]	0.354	0.446	1.43	0.59 – 3.42	0.427	Proliferate
Forest country [FI]	-0.906	0.432	0.4	0.17 – 0.94	0.036	Proliferate
Forest country [FR]	-0.376	0.458	0.69	0.28 – 1.69	0.412	Proliferate
Forest country [DE]	0.081	0.476	1.08	0.43 – 2.76	0.865	Proliferate
Forest country [IT]	-0.098	0.661	0.91	0.25 – 3.31	0.882	Proliferate
Forest country [LV]	-0.514	0.365	0.6	0.29 – 1.22	0.158	Proliferate
Forest country [NL]	-0.711	0.631	0.49	0.14 – 1.69	0.26	Proliferate
Forest country [RO]	-0.139	0.381	0.87	0.41 – 1.84	0.716	Proliferate
Forest country [ES]	0.178	0.534	1.2	0.42 – 3.41	0.739	Proliferate
Forest country [SE]	-0.886	0.454	0.41	0.17 – 1.00	0.051	Proliferate
Forest country [CH]	-0.825	0.498	0.44	0.16 – 1.16	0.098	Proliferate
Forest country [UK]	0.807	0.440	2.24	0.95 – 5.31	0.066	Proliferate
Practitioner [PuM] (reference)						
practitioners [PM]	-0.080	0.298	0.92	0.51 – 1.66	0.787	Proliferate
practitioners [PPM]	-0.089	0.388	0.91	0.43 – 1.96	0.819	Proliferate
practitioners [FO]	-0.374	0.250	0.69	0.42 – 1.12	0.135	Proliferate
practitioners [FOM]	0.053	0.312	1.05	0.57 – 1.94	0.866	Proliferate
practitioners [FFM]	-0.939	0.608	0.39	0.12 – 1.29	0.123	Proliferate
(Intercept)	1.338	0.294	3.81	2.14 – 6.78	<0.001	Remove
e1	-0.084	0.064	0.92	0.81 – 1.04	0.188	Remove
e2	0.037	0.062	1.04	0.92 – 1.17	0.555	Remove
e3	0.056	0.058	1.06	0.94 – 1.18	0.336	Remove
n1	-0.041	0.068	0.96	0.84 – 1.10	0.545	Remove



n2	-0.021	0.062	0.98	0.87 – 1.10	0.729	Remove
m1	-0.037	0.080	0.96	0.82 – 1.13	0.642	Remove
m2	0.018	0.069	1.02	0.89 – 1.16	0.79	Remove
p1	-0.029	0.055	0.97	0.87 – 1.08	0.593	Remove
p2	0.021	0.048	1.02	0.93 – 1.12	0.666	Remove
c1	-0.003	0.069	1	0.87 – 1.14	0.968	Remove
c2	0.025	0.064	1.03	0.90 – 1.16	0.691	Remove
Forest area 1 ha (reference)						
Forest area 2-5ha	-0.044	0.204	0.96	0.64 – 1.43	0.83	Remove
Forest area 6-15ha	-0.296	0.226	0.74	0.48 – 1.16	0.19	Remove
Forest area 16-25ha	-0.391	0.268	0.68	0.40 – 1.14	0.145	Remove
Forest area 26-50ha	-0.480	0.260	0.62	0.37 – 1.03	0.065	Remove
Forest area 51-100ha	-0.731	0.289	0.48	0.27 – 0.85	0.012	Remove
Forest area 101-1000ha	-0.672	0.264	0.51	0.30 – 0.86	0.011	Remove
Forest area [1000+ha]	-1.580	0.315	0.21	0.11 – 0.38	<0.001	Remove
Forest country [CA] reference						
Forest country [CZ]	0.160	0.294	1.17	0.66 – 2.09	0.587	Remove
Forest country [FI]	-1.278	0.252	0.28	0.17 – 0.46	<0.001	Remove
Forest country [FR]	-1.974	0.375	0.14	0.07 – 0.29	<0.001	Remove
Forest country [DE]	-0.443	0.326	0.64	0.34 – 1.22	0.175	Remove
Forest country [IT]	0.190	0.460	1.21	0.49 – 2.98	0.68	Remove
Forest country [LV]	-1.049	0.237	0.35	0.22 – 0.56	<0.001	Remove
Forest country [NL]	-1.768	0.515	0.17	0.06 – 0.47	0.001	Remove
Forest country [RO]	-0.142	0.251	0.87	0.53 – 1.42	0.571	Remove
Forest country [ES]	-0.512	0.408	0.6	0.27 – 1.33	0.209	Remove
Forest country [SE]	-1.559	0.303	0.21	0.12 – 0.38	<0.001	Remove
Forest country [CH]	-1.814	0.323	0.16	0.09 – 0.31	<0.001	Remove
Forest country [UK]	-1.187	0.377	0.31	0.15 – 0.64	0.002	Remove
Practitioner [PuM] (reference)						
practitioners [PM]	0.530	0.236	1.7	1.07 – 2.70	0.025	Remove
practitioners [PPM]	-1.199	0.445	0.3	0.13 – 0.72	0.007	Remove
practitioners [FO]	0.208	0.198	1.23	0.84 – 1.82	0.293	Remove
practitioners [FOM]	0.314	0.244	1.37	0.85 – 2.21	0.198	Remove
practitioners [FFM]	0.086	0.333	1.09	0.57 – 2.09	0.796	Remove
Observations (n)	1661					
Residual Deviance	2865.763					
McFadden	0.128					
McFadden Adj.	0.084					
Cox Snell	0.223					
Nagelkerke	0.259					
AIC	3010					

Appendix F. Acceptability regression models

TABLE 39. BINARY REGRESSION MODEL ESTIMATING PREDICTORS ON THE ACCEPTABILITY OF SELECTIVE CUTTING AS A FOREST MANAGEMENT PRACTICE WHERE 0= UNACCEPTABLE AND 1=ACCEPTABLE. REFERENCE LEVEL = 1.

Predictors	Odds Ratios	CI	p	Estimate	Std. Error	z-value
(Intercept)	0.22	0.16 – 0.32	<0.001	-1.50	0.19	-8.07
public	1.26	1.19 – 1.34	<0.001	0.23	0.03	7.47
citizens	0.99	0.87 – 1.12	0.842	-0.01	0.06	-0.20
companies	1.2	1.06 – 1.37	0.005	0.19	0.07	2.81
FV1	1.18	1.14 – 1.23	<0.001	0.17	0.02	8.62
FV2	0.98	0.95 – 1.01	0.164	-0.02	0.02	-1.39
FV3	1.19	1.15 – 1.22	<0.001	0.17	0.02	11.30
nep scale	1.14	1.08 – 1.20	<0.001	0.13	0.03	4.95
Knowledge [1]	RC	RC	RC	RC	RC	RC
Know Selective [2]	1.51	1.38 – 1.67	<0.001	0.41	0.05	8.47
Know Selective [3]	2.63	2.36 – 2.93	<0.001	0.97	0.06	17.55
Know Selective [4]	2.61	2.03 – 3.40	<0.001	0.96	0.13	7.33
COUNTRY [CR]	RC	RC	RC	RC	RC	RC
COUNTRY [CZ]	0.7	0.58 – 0.86	0.001	-0.35	0.10	-3.44
COUNTRY [FI]	1.93	1.51 – 2.49	<0.001	0.66	0.13	5.17
COUNTRY [FR]	0.9	0.73 – 1.10	0.303	-0.11	0.10	-1.03
COUNTRY [DE]	1.07	0.87 – 1.32	0.52	0.07	0.11	0.64
COUNTRY [IT]	0.4	0.33 – 0.49	<0.001	-0.91	0.10	-9.31
COUNTRY [LV]	0.94	0.76 – 1.15	0.537	-0.07	0.11	-0.62
COUNTRY [NL]	0.95	0.77 – 1.16	0.6	-0.05	0.10	-0.52
COUNTRY [RO]	0.99	0.81 – 1.22	0.958	-0.01	0.10	-0.05
COUNTRY [ES]	0.87	0.72 – 1.06	0.162	-0.14	0.10	-1.40
COUNTRY [SE]	1.74	1.39 – 2.18	<0.001	0.55	0.11	4.87
COUNTRY [CH]	0.76	0.62 – 0.94	0.01	-0.27	0.11	-2.58
COUNTRY [UK]	0.99	0.80 – 1.21	0.903	-0.01	0.10	-0.12
Forest frequency [Never]	RC	RC	RC	RC	RC	RC
ForestFrequency [Yearly]	1.3	1.14 – 1.49	<0.001	0.27	0.07	3.84
ForestFrequencyMonthly	1.34	1.16 – 1.55	<0.001	0.30	0.07	4.06
ForestFrequency [Weekly]	1.28	1.09 – 1.50	0.002	0.25	0.08	3.07
ForestFrequency2-3 per week	1.23	1.01 – 1.48	0.036	0.20	0.10	2.09
ForestFrequency [4+ per week]	1.22	1.00 – 1.49	0.051	0.20	0.10	1.95
Age group [18-29]	RC	RC	RC	RC	RC	RC
ageGroup30-39	1.24	1.10 – 1.39	<0.001	0.21	0.06	3.60
ageGroup40-49	1.67	1.48 – 1.89	<0.001	0.51	0.06	8.40
ageGroup50-64	1.95	1.74 – 2.18	<0.001	0.67	0.06	11.48
ageGroup [65+]	2.26	2.00 – 2.55	<0.001	0.82	0.06	13.07
Observations	R ² Tjur	McFadden	McFaddenAdj	CoxSnell	Nagelkerke	AUC
23347	0.103	0.11	0.11	0.09	0.16	0.73



TABLE 40. BINARY REGRESSION MODEL ESTIMATING PREDICTORS ON THE ACCEPTABILITY OF ASH FERTILIZATION AS A FOREST MANAGEMENT PRACTICE WHERE 0= UNACCEPTABLE AND 1=ACCEPTABLE. REFERENCE LEVEL = 1.

Predictors	Odds Ratios	CI	p	Estimate	Std. Error	Z-value
(Intercept)	0.22	0.16 – 0.32	<0.001	-1.50	0.19	-8.07
public	1.26	1.19 – 1.34	<0.001	0.23	0.03	7.47
citizens	0.99	0.87 – 1.12	0.842	-0.01	0.06	-0.20
companies	1.2	1.06 – 1.37	0.005	0.19	0.07	2.81
FV1	1.18	1.14 – 1.23	<0.001	0.17	0.02	8.62
FV2	0.98	0.95 – 1.01	0.164	-0.02	0.02	-1.39
FV3	1.19	1.15 – 1.22	<0.001	0.17	0.02	11.30
nep scale	1.14	1.08 – 1.20	<0.001	0.13	0.03	4.95
Knowledge [1]	RC	RC	RC	RC	RC	RC
Know Selective [2]	1.51	1.38 – 1.67	<0.001	0.41	0.05	8.47
Know Selective [3]	2.63	2.36 – 2.93	<0.001	0.97	0.06	17.55
Know Selective [4]	2.61	2.03 – 3.40	<0.001	0.96	0.13	7.33
COUNTRY [CR]	RC	RC	RC	RC	RC	RC
COUNTRY [CZ]	0.7	0.58 – 0.86	0.001	-0.35	0.10	-3.44
COUNTRY [FI]	1.93	1.51 – 2.49	<0.001	0.66	0.13	5.17
COUNTRY [FR]	0.9	0.73 – 1.10	0.303	-0.11	0.10	-1.03
COUNTRY [DE]	1.07	0.87 – 1.32	0.52	0.07	0.11	0.64
COUNTRY [IT]	0.4	0.33 – 0.49	<0.001	-0.91	0.10	-9.31
COUNTRY [LV]	0.94	0.76 – 1.15	0.537	-0.07	0.11	-0.62
COUNTRY [NL]	0.95	0.77 – 1.16	0.6	-0.05	0.10	-0.52
COUNTRY [RO]	0.99	0.81 – 1.22	0.958	-0.01	0.10	-0.05
COUNTRY [ES]	0.87	0.72 – 1.06	0.162	-0.14	0.10	-1.40
COUNTRY [SE]	1.74	1.39 – 2.18	<0.001	0.55	0.11	4.87
COUNTRY [CH]	0.76	0.62 – 0.94	0.01	-0.27	0.11	-2.58
COUNTRY [UK]	0.99	0.80 – 1.21	0.903	-0.01	0.10	-0.12
Forest frequency [Never]	RC	RC	RC	RC	RC	RC
ForestFrequency [Yearly]	1.3	1.14 – 1.49	<0.001	0.27	0.07	3.84
ForestFrequencyMonthly	1.34	1.16 – 1.55	<0.001	0.30	0.07	4.06
ForestFrequency [Weekly]	1.28	1.09 – 1.50	0.002	0.25	0.08	3.07
ForestFrequency2-3 per week	1.23	1.01 – 1.48	0.036	0.20	0.10	2.09
ForestFrequency [4+ per	1.22	1.00 – 1.49	0.051	0.20	0.10	1.95
Age group [18-29]	RC	RC	RC	RC	RC	RC
ageGroup30-39	1.24	1.10 – 1.39	<0.001	0.21	0.06	3.60
ageGroup40-49	1.67	1.48 – 1.89	<0.001	0.51	0.06	8.40
ageGroup50-64	1.95	1.74 – 2.18	<0.001	0.67	0.06	11.48
ageGroup [65+]	2.26	2.00 – 2.55	<0.001	0.82	0.06	13.07
Observations	R2 Tjur	McFadden	McFaddenAdj	CoxSnell	Nagelkerke	AIC
23347	0.10	0.11	0.11	0.09	0.16	18047.34



TABLE 41. BINARY REGRESSION MODEL ESTIMATING PREDICTORS ON THE ACCEPTABILITY OF REGENERATION AS A FOREST MANAGEMENT PRACTICE WHERE 0= UNACCEPTABLE AND 1=ACCEPTABLE. REFERENCE LEVEL = 1. RC= REFERENCE LEVEL FOR CATEGORICAL PREDICTOR VARIABLE.

Predictors	Odds Ratios	CI	p	Estimate	Std. Error	z-value
(Intercept)	0.28	0.17 – 0.46	<0.001	-1.29	0.26	-4.91
public	1.39	1.26 – 1.52	<0.001	0.33	0.05	6.89
citizens	1.11	0.92 – 1.33	0.292	0.10	0.10	1.05
companies	0.94	0.77 – 1.15	0.546	-0.06	0.10	-0.60
FV1	1.48	1.41 – 1.56	<0.001	0.39	0.03	15.16
FV2	0.99	0.95 – 1.04	0.668	-0.01	0.02	-0.43
FV3	1.04	0.99 – 1.08	0.128	0.04	0.02	1.52
nep scale	1.48	1.38 – 1.58	<0.001	0.39	0.03	11.44
Knowledge Selective [1]	RC	RC	RC	RC	RC	RC
Know Selective [2]	1.36	1.18 – 1.58	<0.001	0.31	0.07	4.18
Know Selective [3]	2.74	2.31 – 3.24	<0.001	1.01	0.09	11.74
Know Selective [4]	1.28	0.95 – 1.75	0.115	0.25	0.16	1.58
COUNTRY [CR]	RC	RC	RC	RC	RC	RC
COUNTRY [CZ]	0.64	0.46 – 0.89	0.01	-0.44	0.17	-2.59
COUNTRY [FI]	0.95	0.65 – 1.37	0.774	-0.05	0.19	-0.29
COUNTRY [FR]	0.62	0.44 – 0.86	0.005	-0.48	0.17	-2.83
COUNTRY [DE]	0.37	0.26 – 0.51	<0.001	-1.00	0.17	-6.02
COUNTRY [IT]	0.55	0.39 – 0.76	<0.001	-0.60	0.17	-3.55
COUNTRY [LV]	0.91	0.64 – 1.29	0.611	-0.09	0.18	-0.51
COUNTRY [NL]	0.79	0.56 – 1.09	0.159	-0.24	0.17	-1.41
COUNTRY [RO]	0.86	0.61 – 1.23	0.418	-0.15	0.18	-0.81
COUNTRY [ES]	0.58	0.42 – 0.81	0.001	-0.54	0.17	-3.22
COUNTRY [SE]	0.64	0.46 – 0.90	0.01	-0.44	0.17	-2.59
COUNTRY [CH]	0.42	0.30 – 0.58	<0.001	-0.88	0.17	-5.11
COUNTRY [UK]	0.93	0.65 – 1.31	0.682	-0.07	0.18	-0.41
Forest frequency [Never]	RC	RC	RC	RC	RC	RC
ForestFrequency [Yearly]	1.31	1.08 – 1.58	0.005	0.27	0.10	2.80
ForestFrequency [Monthly]	1.58	1.29 – 1.93	<0.001	0.46	0.10	4.45
ForestFrequency [Weekly]	1.53	1.22 – 1.92	<0.001	0.43	0.12	3.65
ForestFrequency [2-3x week]	1.41	1.08 – 1.86	0.013	0.34	0.14	2.48
ForestFrequency [4+ week]	1.88	1.38 – 2.59	<0.001	0.63	0.16	3.93
Age group [18-29]	RC	RC	RC	RC	RC	RC
ageGroup [30-39]	1.18	1.00 – 1.39	0.05	0.16	0.08	1.96
ageGroup [40-49]	1.43	1.21 – 1.70	<0.001	0.36	0.09	4.12
ageGroup [50-64]	1.94	1.63 – 2.30	<0.001	0.66	0.09	7.55
ageGroup [65+]	2.24	1.86 – 2.70	<0.001	0.81	0.09	8.50
Observations	R2 Tjur	McFadden	McFaddenAdj	CoxSnell	Nagelkerke	AIC
23347	0.119	0.16	0.15	0.07	0.19	9401.46



TABLE 42. BINARY REGRESSION MODEL ESTIMATING PREDICTORS ON THE ACCEPTABILITY OF AFFORESTATION AS A FOREST MANAGEMENT PRACTICE WHERE 0= UNACCEPTABLE AND 1=ACCEPTABLE. REFERENCE LEVEL = 1. RC= REFERENCE LEVEL FOR CATEGORICAL PREDICTOR VARIABLE.

Predictors	Odds Ratios	CI	p	Estimate	Std. Error	Z-value
(Intercept)	0.45	0.30 – 0.68	<0.001	-0.80	0.21	-3.77
public	1.33	1.25 – 1.43	<0.001	0.29	0.03	8.31
citizens	0.86	0.75 – 0.99	0.032	-0.15	0.07	-2.14
companies	1.17	1.01 – 1.35	0.041	0.15	0.08	2.05
FV1	1.27	1.22 – 1.32	<0.001	0.24	0.02	11.44
FV2	1.03	1.00 – 1.07	0.048	0.03	0.02	1.97
FV3	0.98	0.95 – 1.02	0.311	-0.02	0.02	-1.01
nep scale	1.38	1.31 – 1.46	<0.001	0.32	0.03	11.97
Knowledge Selective [1]	RC	RC	RC	RC	RC	RC
Know Selective [2]	1.45	1.31 – 1.61	<0.001	0.37	0.05	7.14
Know Selective [3]	2.41	2.14 – 2.72	<0.001	0.88	0.06	14.31
Know Selective [4]	1.21	0.95 – 1.58	0.136	0.19	0.13	1.49
COUNTRY [CR]	RC	RC	RC	RC	RC	RC
COUNTRY [CZ]	0.46	0.35 – 0.60	<0.001	-0.78	0.14	-5.68
COUNTRY [FI]	0.8	0.60 – 1.08	0.147	-0.22	0.15	-1.45
COUNTRY [FR]	0.51	0.39 – 0.67	<0.001	-0.67	0.14	-4.89
COUNTRY [DE]	0.63	0.47 – 0.84	0.002	-0.46	0.15	-3.12
COUNTRY [IT]	0.49	0.37 – 0.65	<0.001	-0.70	0.14	-5.04
COUNTRY [LV]	0.46	0.35 – 0.60	<0.001	-0.77	0.14	-5.57
COUNTRY [NL]	0.9	0.67 – 1.20	0.482	-0.10	0.15	-0.70
COUNTRY [RO]	1.05	0.77 – 1.41	0.773	0.04	0.15	0.29
COUNTRY [ES]	0.4	0.31 – 0.52	<0.001	-0.92	0.13	-6.89
COUNTRY [SE]	0.34	0.26 – 0.44	<0.001	-1.08	0.13	-8.12
COUNTRY [CH]	0.38	0.28 – 0.49	<0.001	-0.98	0.14	-7.05
COUNTRY [UK]	0.52	0.39 – 0.68	<0.001	-0.65	0.14	-4.67
Forest frequency [Never]	RC	RC	RC	RC	RC	RC
ForestFrequency [Yearly]	1.29	1.11 – 1.50	0.001	0.26	0.08	3.38
ForestFrequency [Monthly]	1.29	1.10 – 1.50	0.002	0.25	0.08	3.15
ForestFrequency [Weekly]	1.28	1.07 – 1.52	0.006	0.24	0.09	2.74
ForestFrequency [2-3x week]	1.35	1.10 – 1.67	0.005	0.30	0.11	2.82
ForestFrequency [4+ week]	1.23	0.99 – 1.52	0.06	0.21	0.11	1.88
Age group [18-29]	RC	RC	RC	RC	RC	RC
ageGroup [30-39]	1.28	1.11 – 1.48	0.001	0.25	0.07	3.42
ageGroup [40-49]	1.32	1.14 – 1.52	<0.001	0.28	0.07	3.80
ageGroup [50-64]	1.28	1.12 – 1.46	<0.001	0.25	0.07	3.70
ageGroup [65+]	0.97	0.85 – 1.11	0.662	-0.03	0.07	-0.44
Observations	R2 Tjur	McFadden	McFaddenAdj	CoxSnell	Nagelkerke	AUC
23347	0.078	9.28E-02	8.90E-02	6.41E-02	1.26E+00	0.72

TABLE 43. BINARY REGRESSION MODEL ESTIMATING PREDICTORS ON THE ACCEPTABILITY OF FERTILIZATION AS A FOREST MANAGEMENT PRACTICE WHERE 0= UNACCEPTABLE AND 1=ACCEPTABLE. REFERENCE LEVEL = 1. RC= REFERENCE LEVEL FOR CATEGORICAL PREDICTOR VARIABLE.

Predictors	Odds Ratios	CI	p	Estimate	Std. Error	Z-value
(Intercept)	0.42	0.31 – 0.57	<0.001	-0.87	0.16	-5.58
public	1.05	1.00 – 1.10	0.05	0.05	0.02	1.96
citizens	0.81	0.73 – 0.89	<0.001	-0.21	0.05	-4.18
companies	1.69	1.52 – 1.87	<0.001	0.52	0.05	9.80
FV1	0.94	0.91 – 0.97	<0.001	-0.07	0.02	-4.01
FV2	1.02	0.99 – 1.04	0.168	0.02	0.01	1.38
FV3	1.16	1.13 – 1.19	<0.001	0.15	0.01	12.08
nep scale	1.11	1.06 – 1.15	<0.001	0.10	0.02	4.79
Knowledge Selective [1]	RC	RC	RC	RC	RC	RC
Know Selective [2]	1.64	1.53 – 1.77	<0.001	0.50	0.04	13.41
Know Selective [3]	2.66	2.45 – 2.88	<0.001	0.98	0.04	23.31
Know Selective [4]	3.23	2.60 – 4.05	<0.001	1.17	0.11	10.38
COUNTRY [CR]	RC	RC	RC	RC	RC	RC
COUNTRY [CZ]	0.55	0.46 – 0.65	<0.001	-0.60	0.09	-6.90
COUNTRY [FI]	0.36	0.30 – 0.43	<0.001	-1.02	0.09	-11.62
COUNTRY [FR]	0.42	0.36 – 0.49	<0.001	-0.86	0.08	-10.56
COUNTRY [DE]	0.4	0.34 – 0.47	<0.001	-0.92	0.08	-11.16
COUNTRY [IT]	0.58	0.49 – 0.68	<0.001	-0.55	0.09	-6.37
COUNTRY [LV]	0.57	0.48 – 0.67	<0.001	-0.57	0.09	-6.51
COUNTRY [NL]	0.54	0.46 – 0.64	<0.001	-0.61	0.09	-7.08
COUNTRY [RO]	1.34	1.11 – 1.61	0.002	0.29	0.09	3.10
COUNTRY [ES]	1.19	1.00 – 1.42	0.055	0.17	0.09	1.92
COUNTRY [SE]	0.41	0.35 – 0.48	<0.001	-0.89	0.08	-10.66
COUNTRY [CH]	0.28	0.23 – 0.33	<0.001	-1.28	0.08	-15.43
COUNTRY [UK]	0.43	0.36 – 0.51	<0.001	-0.84	0.08	-9.96
Forest frequency [Never]	RC	RC	RC	RC	RC	RC
ForestFrequency [Yearly]	1	0.89 – 1.13	0.991	0.00	0.06	-0.01
ForestFrequency [Monthly]	0.94	0.83 – 1.07	0.349	-0.06	0.06	-0.94
ForestFrequency [Weekly]	0.93	0.81 – 1.06	0.255	-0.08	0.07	-1.14
ForestFrequency [2-3x week]	0.93	0.80 – 1.09	0.366	-0.07	0.08	-0.90
ForestFrequency [4+ week]	0.83	0.71 – 0.97	0.017	-0.19	0.08	-2.38
Age group [18-29]	RC	RC	RC	RC	RC	RC
ageGroup [30-39]	1.07	0.97 – 1.19	0.191	0.07	0.05	1.31
ageGroup [40-49]	1.04	0.94 – 1.16	0.456	0.04	0.05	0.75
ageGroup [50-64]	1.04	0.94 – 1.15	0.423	0.04	0.05	0.80
ageGroup [65+]	1.06	0.96 – 1.17	0.274	0.05	0.05	1.09
Observations	R2 Tjur	McFadden	McFaddenAdj	CoxSnell	Nagelkerke	AUC
23347	0.101	8.48E-02	8.25E-02	9.80E-02	1.39E-01	0.70



TABLE 44. BINARY REGRESSION MODEL ESTIMATING PREDICTORS ON THE ACCEPTABILITY OF SALVAGE LOGGING AS A FOREST MANAGEMENT PRACTICE WHERE 0= UNACCEPTABLE AND 1=ACCEPTABLE. REFERENCE LEVEL = 1. RC= REFERENCE LEVEL FOR CATEGORICAL PREDICTOR VARIABLE.

Predictors	Odds Ratios	CI	p	Estimate	Std. Error	Z-value
(Intercept)	0.48	0.32 – 0.72	<0.001	-0.74	0.21	-3.55
public	1.32	1.23 – 1.42	<0.001	0.28	0.04	7.74
citizens	0.94	0.82 – 1.09	0.402	-0.06	0.07	-0.84
companies	1.18	1.01 – 1.37	0.033	0.16	0.08	2.13
FV1	1.38	1.33 – 1.44	<0.001	0.32	0.02	15.35
FV2	1.03	1.00 – 1.07	0.086	0.03	0.02	1.72
FV3	1.1	1.06 – 1.14	<0.001	0.09	0.02	5.23
nep scale	1.21	1.15 – 1.28	<0.001	0.19	0.03	6.85
Knowledge Selective [1]						
Know Selective [2]	1.07	0.96 – 1.20	0.191	0.07	0.05	1.31
Know Selective [3]	1.85	1.64 – 2.10	<0.001	0.62	0.06	9.67
Know Selective [4]	1.11	0.85 – 1.47	0.438	0.11	0.14	0.78
COUNTRY [CR]						
COUNTRY [CZ]	0.46	0.36 – 0.58	<0.001	-0.78	0.12	-6.50
COUNTRY [FI]	0.82	0.63 – 1.07	0.15	-0.20	0.14	-1.44
COUNTRY [FR]	0.94	0.73 – 1.22	0.654	-0.06	0.13	-0.45
COUNTRY [DE]	0.62	0.48 – 0.79	<0.001	-0.48	0.13	-3.78
COUNTRY [IT]	0.46	0.36 – 0.58	<0.001	-0.78	0.12	-6.41
COUNTRY [LV]	0.86	0.66 – 1.11	0.241	-0.15	0.13	-1.17
COUNTRY [NL]	0.68	0.53 – 0.87	0.002	-0.39	0.13	-3.10
COUNTRY [RO]	0.49	0.39 – 0.62	<0.001	-0.72	0.12	-5.97
COUNTRY [ES]	0.88	0.69 – 1.13	0.311	-0.13	0.13	-1.01
COUNTRY [SE]	0.78	0.60 – 1.00	0.048	-0.25	0.13	-1.98
COUNTRY [CH]	0.67	0.52 – 0.87	0.003	-0.39	0.13	-2.98
COUNTRY [UK]	0.97	0.75 – 1.25	0.81	-0.03	0.13	-0.24
Forest frequency [Never]						
ForestFrequency [Yearly]	1.37	1.17 – 1.61	<0.001	0.32	0.08	3.97
ForestFrequency [Monthly]	1.45	1.22 – 1.70	<0.001	0.37	0.08	4.38
ForestFrequency [Weekly]	1.26	1.05 – 1.51	0.012	0.23	0.09	2.51
ForestFrequency [2-3x week]	1.21	0.98 – 1.50	0.081	0.19	0.11	1.74
ForestFrequency [4+ week]	1.34	1.06 – 1.69	0.013	0.29	0.12	2.48
Age group [18-29]						
ageGroup [30-39]	1.23	1.08 – 1.41	0.002	0.21	0.07	3.14
ageGroup [40-49]	1.45	1.27 – 1.66	<0.001	0.37	0.07	5.36
ageGroup [50-64]	1.87	1.64 – 2.14	<0.001	0.63	0.07	9.26
ageGroup [65+]	2.07	1.80 – 2.38	<0.001	0.73	0.07	10.18
Observations	23347	McFadden	McFaddenAdj	CoxSnell	Nagelkerke	AUC
23347	0.089	0.10	0.10	0.07	0.14	0.73



TABLE 45. BINARY REGRESSION MODEL ESTIMATING PREDICTORS ON THE ACCEPTABILITY OF DEADWOOD RETENTION AS A FOREST MANAGEMENT PRACTICE WHERE 0= UNACCEPTABLE AND 1=ACCEPTABLE. REFERENCE LEVEL = 1. RC= REFERENCE LEVEL FOR CATEGORICAL PREDICTOR VARIABLE.

Predictors	Odds Ratios	CI	p	Estimate	Std. Error	Z-value
(Intercept)	0.14	0.10 – 0.20	<0.001	-1.95	0.16	-11.99
public	1.28	1.21 – 1.35	<0.001	0.25	0.03	8.91
citizens	1.07	0.96 – 1.20	0.228	0.07	0.06	1.20
companies	0.93	0.82 – 1.04	0.212	-0.08	0.06	-1.25
FV1	1.20	1.16 – 1.24	<0.001	0.18	0.02	10.37
FV2	1.01	0.98 – 1.03	0.67	0.01	0.01	0.43
FV3	0.99	0.96 – 1.01	0.308	-0.01	0.01	-1.02
nep scale	1.31	1.25 – 1.37	<0.001	0.27	0.02	11.70
Knowledge Selective [1]						
Know Selective [2]	1.6	1.48 – 1.74	<0.001	0.47	0.04	11.61
Know Selective [3]	2.98	2.71 – 3.27	<0.001	1.09	0.05	22.74
Know Selective [4]	2.67	2.12 – 3.40	<0.001	0.98	0.12	8.16
COUNTRY [CR]						
COUNTRY [CZ]	1.22	1.02 – 1.44	0.025	0.20	0.09	2.24
COUNTRY [FI]	2.35	1.94 – 2.86	<0.001	0.85	0.10	8.65
COUNTRY [FR]	1.34	1.14 – 1.58	0.001	0.29	0.08	3.46
COUNTRY [DE]	1.6	1.34 – 1.91	<0.001	0.47	0.09	5.16
COUNTRY [IT]	0.9	0.77 – 1.06	0.212	-0.10	0.08	-1.25
COUNTRY [LV]	1.36	1.14 – 1.61	0.001	0.30	0.09	3.47
COUNTRY [NL]	2.17	1.81 – 2.61	<0.001	0.78	0.09	8.35
COUNTRY [RO]	0.94	0.80 – 1.10	0.458	-0.06	0.08	-0.74
COUNTRY [ES]	1.18	1.01 – 1.39	0.039	0.17	0.08	2.06
COUNTRY [SE]	2.19	1.83 – 2.61	<0.001	0.78	0.09	8.66
COUNTRY [CH]	1.49	1.25 – 1.79	<0.001	0.40	0.09	4.43
COUNTRY [UK]	2.37	1.98 – 2.85	<0.001	0.86	0.09	9.28
Forest frequency [Never]						
ForestFrequency [Yearly]	1.1	0.97 – 1.24	0.151	0.09	0.06	1.44
ForestFrequency [Monthly]	1.11	0.98 – 1.27	0.111	0.11	0.07	1.59
ForestFrequency [Weekly]	1.2	1.04 – 1.39	0.013	0.18	0.07	2.48
ForestFrequency [2-3x week]	1.07	0.90 – 1.27	0.436	0.07	0.09	0.78
ForestFrequency [4+ week]	1.01	0.85 – 1.21	0.895	0.01	0.09	0.13
Age group [18-29]						
ageGroup [30-39]	1.19	1.07 – 1.34	0.002	0.18	0.06	3.09
ageGroup [40-49]	1.26	1.13 – 1.41	<0.001	0.23	0.06	4.08
ageGroup [50-64]	1.22	1.10 – 1.36	<0.001	0.20	0.05	3.78
ageGroup [65+]	0.94	0.85 – 1.05	0.287	-0.06	0.05	-1.07
Observations	R2 Tjur	McFadden	McFaddenAdj	CoxSnell	Nagelkerke	AUC
23347	0.086	0.08	0.08	0.08	0.13	0.70



TABLE 46. BINARY REGRESSION MODEL ESTIMATING PREDICTORS ON THE ACCEPTABILITY OF REFORESTATION AS A FOREST MANAGEMENT PRACTICE WHERE 0= UNACCEPTABLE AND 1=ACCEPTABLE. REFERENCE LEVEL = 1. RC= REFERENCE LEVEL FOR CATEGORICAL PREDICTOR VARIABLE.

Predictors	Odds Ratios	CI	p	Estimate	Std. Error	Z-value
(Intercept)	0.19	0.11 – 0.32	<0.001	-1.68	0.27	-6.20
public	1.39	1.26 – 1.53	<0.001	0.33	0.05	6.77
citizens	0.95	0.79 – 1.16	0.629	-0.05	0.10	-0.48
companies	1.04	0.84 – 1.27	0.724	0.04	0.10	0.35
FV1	1.48	1.41 – 1.56	<0.001	0.39	0.03	14.64
FV2	1.01	0.97 – 1.06	0.587	0.01	0.02	0.54
FV3	0.98	0.93 – 1.03	0.427	-0.02	0.02	-0.80
nep scale	1.58	1.48 – 1.69	<0.001	0.46	0.04	13.07
Knowledge Selective [1]						
Know Selective [2]	2.03	1.73 – 2.38	<0.001	0.71	0.08	8.70
Know Selective [3]	4.01	3.37 – 4.78	<0.001	1.39	0.09	15.60
Know Selective [4]	2.75	2.02 – 3.80	<0.001	1.01	0.16	6.32
COUNTRY [CR]						
COUNTRY [CZ]	0.91	0.64 – 1.27	0.574	-0.10	0.17	-0.56
COUNTRY [FI]	1.6	1.09 – 2.34	0.016	0.47	0.19	2.41
COUNTRY [FR]	0.69	0.49 – 0.97	0.033	-0.37	0.17	-2.13
COUNTRY [DE]	0.58	0.41 – 0.82	0.002	-0.54	0.18	-3.07
COUNTRY [IT]	0.46	0.33 – 0.65	<0.001	-0.77	0.17	-4.49
COUNTRY [LV]	0.81	0.58 – 1.13	0.227	-0.21	0.17	-1.21
COUNTRY [NL]	1.29	0.90 – 1.83	0.164	0.25	0.18	1.39
COUNTRY [RO]	1.21	0.83 – 1.75	0.324	0.19	0.19	0.99
COUNTRY [ES]	0.53	0.38 – 0.72	<0.001	-0.64	0.17	-3.87
COUNTRY [SE]	0.9	0.64 – 1.25	0.518	-0.11	0.17	-0.65
COUNTRY [CH]	0.68	0.47 – 0.97	0.036	-0.38	0.18	-2.10
COUNTRY [UK]	1.02	0.71 – 1.44	0.922	0.02	0.18	0.10
Forest frequency [Never]						
ForestFrequency [Yearly]	1.1	0.90 – 1.34	0.342	0.10	0.10	0.95
ForestFrequency [Monthly]	1.27	1.03 – 1.57	0.026	0.24	0.11	2.23
ForestFrequency [Weekly]	1.15	0.91 – 1.46	0.237	0.14	0.12	1.18
ForestFrequency [2-3x week]	1.16	0.87 – 1.55	0.305	0.15	0.15	1.03
ForestFrequency [4+ week]	1.24	0.91 – 1.70	0.17	0.22	0.16	1.37
Age group [18-29]						
ageGroup [30-39]	1.13	0.95 – 1.34	0.183	0.12	0.09	1.33
ageGroup [40-49]	1.3	1.09 – 1.56	0.004	0.26	0.09	2.87
ageGroup [50-64]	1.65	1.38 – 1.97	<0.001	0.50	0.09	5.55
ageGroup [65+]	1.83	1.52 – 2.22	<0.001	0.61	0.10	6.26
Observations	R2 Tjur	McFadden	McFaddenAdj	CoxSnell	Nagelkerke	AUC
23347	0.123	0.17	0.16	0.07	0.20	0.79



TABLE 47. BINARY REGRESSION MODEL ESTIMATING PREDICTORS ON THE ACCEPTABILITY OF SANITATION LOGGING AS A FOREST MANAGEMENT PRACTICE WHERE 0= UNACCEPTABLE AND 1=ACCEPTABLE. REFERENCE LEVEL = 1. RC= REFERENCE LEVEL FOR CATEGORICAL PREDICTOR VARIABLE.

Predictors	Odds Ratios	CI	p	Estimate	Std. Error	Z-value
(Intercept)	0.24	0.16 – 0.36	<0.001	-1.43	0.21	-6.78
public	1.37	1.27 – 1.47	<0.001	0.31	0.04	8.37
citizens	1.02	0.88 – 1.19	0.771	0.02	0.08	0.29
companies	1.02	0.87 – 1.19	0.842	0.02	0.08	0.20
FV1	1.31	1.26 – 1.37	<0.001	0.27	0.02	12.45
FV2	1.01	0.97 – 1.05	0.607	0.01	0.02	0.51
FV3	1.13	1.09 – 1.17	<0.001	0.12	0.02	6.55
nep scale	1.39	1.31 – 1.47	<0.001	0.33	0.03	11.36
Knowledge Selective [1]						
Know Selective [2]	1.32	1.18 – 1.47	<0.001	0.27	0.06	4.94
Know Selective [3]	2.34	2.06 – 2.67	<0.001	0.85	0.07	12.94
Know Selective [4]	1.76	1.31 – 2.41	<0.001	0.57	0.15	3.68
COUNTRY [CR]						
COUNTRY [CZ]	0.71	0.56 – 0.90	0.006	-0.34	0.12	-2.76
COUNTRY [FI]	1.21	0.91 – 1.61	0.183	0.19	0.14	1.33
COUNTRY [FR]	0.74	0.58 – 0.94	0.016	-0.30	0.12	-2.42
COUNTRY [DE]	0.64	0.51 – 0.82	<0.001	-0.44	0.12	-3.56
COUNTRY [IT]	0.52	0.41 – 0.65	<0.001	-0.66	0.12	-5.47
COUNTRY [LV]	1	0.77 – 1.29	0.984	0.00	0.13	-0.02
COUNTRY [NL]	0.9	0.70 – 1.15	0.398	-0.11	0.13	-0.85
COUNTRY [RO]	1.12	0.86 – 1.45	0.408	0.11	0.13	0.83
COUNTRY [ES]	0.96	0.75 – 1.23	0.763	-0.04	0.13	-0.30
COUNTRY [SE]	1.07	0.83 – 1.37	0.62	0.06	0.13	0.50
COUNTRY [CH]	0.62	0.49 – 0.80	<0.001	-0.47	0.13	-3.74
COUNTRY [UK]	1.15	0.89 – 1.49	0.269	0.14	0.13	1.11
Forest frequency [Never]						
ForestFrequency [Yearly]	1.13	0.96 – 1.33	0.135	0.12	0.08	1.50
ForestFrequency [Monthly]	1.33	1.12 – 1.58	0.001	0.29	0.09	3.28
ForestFrequency [Weekly]	1.16	0.96 – 1.40	0.115	0.15	0.10	1.58
ForestFrequency [2-3x week]	1.04	0.84 – 1.30	0.704	0.04	0.11	0.38
ForestFrequency [4+ week]	1.23	0.97 – 1.57	0.093	0.21	0.12	1.68
Age group [18-29]						
ageGroup [30-39]	1.29	1.13 – 1.48	<0.001	0.26	0.07	3.66
ageGroup [40-49]	1.43	1.24 – 1.65	<0.001	0.36	0.07	5.01
ageGroup [50-64]	1.72	1.50 – 1.96	<0.001	0.54	0.07	7.88
ageGroup [65+]	2.08	1.80 – 2.40	<0.001	0.73	0.07	9.84
Observations	R2 Tjur	McFadden	McFaddenAdj	CoxSnell	Nagelkerke	AUC
23347	0.09	0.11	0.10	0.07	0.14	0.73



TABLE 48. BINARY REGRESSION MODEL ESTIMATING PREDICTORS ON THE ACCEPTABILITY OF CLEARFELLING AS A FOREST MANAGEMENT PRACTICE WHERE 0= UNACCEPTABLE AND 1=ACCEPTABLE. REFERENCE LEVEL = 1. RC= REFERENCE LEVEL FOR CATEGORICAL PREDICTOR VARIABLE.

Predictors	Odds Ratios	CI	p	Estimate	Std. Error	Z-value
(Intercept)	0.3	0.23 – 0.40	<0.001	-1.21	0.14	-8.39
public	1.09	1.04 – 1.15	<0.001	0.09	0.02	3.81
citizens	0.89	0.81 – 0.98	0.016	-0.12	0.05	-2.41
companies	1.66	1.50 – 1.83	<0.001	0.50	0.05	9.84
FV1	0.8	0.78 – 0.82	<0.001	-0.22	0.02	-14.31
FV2	1.05	1.03 – 1.07	<0.001	0.05	0.01	4.05
FV3	1.3	1.27 – 1.33	<0.001	0.26	0.01	21.54
nep scale	0.94	0.90 – 0.98	0.002	-0.06	0.02	-3.12
Knowledge Selective [1]						
Know Selective [2]	1.25	1.16 – 1.35	<0.001	0.23	0.04	5.91
Know Selective [3]	1.41	1.30 – 1.52	<0.001	0.34	0.04	8.44
Know Selective [4]	1.54	1.28 – 1.85	<0.001	0.43	0.09	4.66
COUNTRY [CR]						
COUNTRY [CZ]	0.43	0.37 – 0.50	<0.001	-0.83	0.08	-10.93
COUNTRY [FI]	0.38	0.32 – 0.44	<0.001	-0.98	0.08	-12.56
COUNTRY [FR]	0.74	0.64 – 0.85	<0.001	-0.30	0.07	-4.10
COUNTRY [DE]	0.27	0.23 – 0.31	<0.001	-1.31	0.08	-16.79
COUNTRY [IT]	0.3	0.26 – 0.35	<0.001	-1.20	0.08	-15.45
COUNTRY [LV]	0.88	0.75 – 1.02	0.091	-0.13	0.08	-1.69
COUNTRY [NL]	0.49	0.42 – 0.57	<0.001	-0.72	0.08	-9.31
COUNTRY [RO]	0.68	0.59 – 0.80	<0.001	-0.38	0.08	-4.96
COUNTRY [ES]	1.19	1.02 – 1.37	0.022	0.17	0.07	2.29
COUNTRY [SE]	0.5	0.43 – 0.58	<0.001	-0.69	0.07	-9.32
COUNTRY [CH]	0.36	0.31 – 0.42	<0.001	-1.03	0.08	-13.40
COUNTRY [UK]	0.72	0.62 – 0.83	<0.001	-0.33	0.08	-4.40
Forest frequency [Never]						
ForestFrequency [Yearly]	1.07	0.96 – 1.20	0.24	0.07	0.06	1.18
ForestFrequency [Monthly]	0.97	0.87 – 1.09	0.653	-0.03	0.06	-0.45
ForestFrequency [Weekly]	0.95	0.84 – 1.08	0.444	-0.05	0.06	-0.77
ForestFrequency [2-3x week]	0.88	0.76 – 1.02	0.1	-0.12	0.07	-1.65
ForestFrequency [4+ week]	0.93	0.80 – 1.08	0.343	-0.07	0.08	-0.95
Age group [18-29]						
ageGroup [30-39]	1.02	0.92 – 1.12	0.7	0.02	0.05	0.39
ageGroup [40-49]	1.06	0.96 – 1.17	0.253	0.06	0.05	1.14
ageGroup [50-64]	0.96	0.88 – 1.05	0.424	-0.04	0.05	-0.80
ageGroup [65+]	0.82	0.75 – 0.90	<0.001	-0.20	0.05	-4.29
Observations	23347	McFadden	McFaddenAdj	CoxSnell	Nagelkerke	AUC
23347	0.14	0.11	0.11	0.14	0.19	0.72



Appendix G. Measurement scales

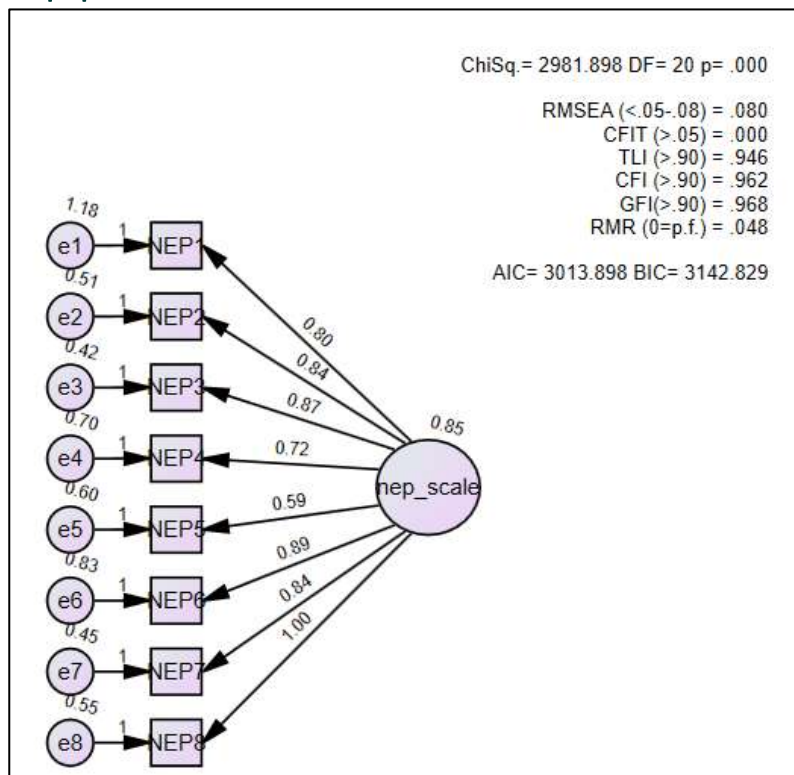


FIGURE 36. CONFIRMATORY FACTOR ANALYSIS OF NEP SCALE. UNSTANDARDIZED REGRESSION WEIGHTS ARE SHOWN IN THE ARROWS LEADING FROM THE LATENT FACTOR TO MEASUREMENT ITEMS.

TABLE 2. ROTATED FACTOR MATRIX FROM PRINCIPAL AXIS FACTORING WITH VARIMAX ROTATION.

	Factor 1 Regulatory	Factor 2 Cultural	Factor 3 Provisioning	Communalities Extraction
Wildlife habitats	0.656	0.198	0.093	0.478
Biodiversity	0.721	0.247	0.077	0.587
Education	0.293	0.673	0.188	0.573
Domestic employment and income	0.096	0.351	0.638	0.539
Timber production	0.189	0.094	0.628	0.438
Culture	0.246	0.626	0.231	0.506
Storing and regulating carbon	0.621	0.116	0.208	0.443
Regulating the environment	0.743	0.177	0.156	0.607
Natural hazard reduction	0.674	0.256	0.175	0.55
% of Variance	28.146	13.186	11.139	-
Total variance explained				52.471
KMO sampling adequacy				0.869
Bartlett's Test of Sphericity				<.001



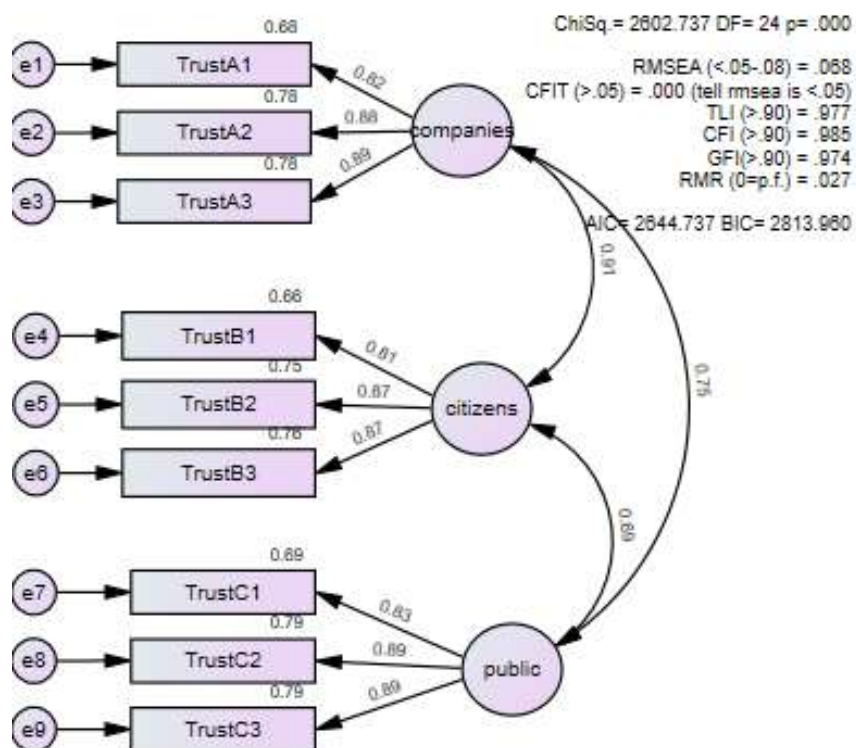


FIGURE 37. CONFIRMATORY FACTOR ANALYSIS OF TRUST SUBSCALE. STANDARDIZED REGRESSION WEIGHTS ARE SHOWN IN THE ARROWS LEADING FROM THE LATENT FACTOR TO MEASUREMENT ITEMS.

Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or REA. Neither the European Union nor the granting authority can be held responsible for them.

