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Report on Biases Affecting the Adoption of Sustainable Practices

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Abstract

The adoption of sustainable practices in agriculture and forestry is influenced by the preferences, attitudes, and decisions of producers, consumers, and other actors along the supply chain. Within this context, farmers, foresters, and consumers were identified as key target groups for implementing effective interventions, including “green nudges”. The main objective of this deliverable is to provide insights for identifying and addressing the biases that hinder the adoption of sustainable practices.

To this end, a series of questionnaires were designed for farmers, foresters, and consumers (previously delivered as D3.1). This report presents the key findings from a survey conducted over six months in 11 languages: English, Greek, Portuguese, Swedish, Finnish, Lithuanian, Spanish, Polish, Slovenian, Serbian, and French. Engaging farmers and foresters in extensive surveys proved particularly challenging, as reflected in the response rates; higher participation was achieved primarily through face-to-face approaches.

Despite these challenges, the consortium successfully collected a sufficient number of responses to provide robust data for examining the biases that limit the adoption of sustainable production and consumption practices among farmers, foresters, and consumers.

This task focuses on exploring the biases that prevent these groups from embracing sustainable practices and making environmentally conscious choices. The analysis presented in this report is based on the data collected from farmers and their advisors, foresters and their advisors, along with data form consumers in the participating countries, with the primary goal of identifying the biases that affect their adoption of sustainable practices.

Keywords: *Sustainable practices, Biases, Motives, Nudges, Farmers, Foresters, Advisors, Consumers*

Executive Summary

This deliverable report results from a multi-stakeholder survey designed to detect the existence of decision biases affecting choices by farmers, foresters, advisors and consumers. Such biases have to be considered both in the design of Green Nudges, but also, in any other measure of policy aiming at enhancing the adoption of green practices in agriculture and forestry.

Regarding farmers, a nuanced behavioural profile is identified, characterized by environmental awareness, pragmatic decision-making, and selective responsiveness to nudges. Awareness suggests that overconfidence in natural resilience is not a major barrier. However, confirmation bias is evident in the strong preference for evidence-based decisions. Farmers prioritize practical and scientific proof over social endorsement, although trust in familiar sources—such as advisors and peers—remains relevant. Ambiguity aversion is moderate; respondents prefer clarity and predictable outcomes, avoiding practices with uncertain benefits. Risk and loss aversion centres on financial concerns and yield reductions, yet many farmers are willing to adopt new practices when long-term gains are credible, even if short-term sacrifices are required. Status quo bias is present but not dominant: while satisfaction with current methods exists, farmers prioritize long-term soil and water health and show readiness to adopt sustainable practices when economic incentives align.

Some cognitive limitations seem to be a significant barrier, underscoring the importance of clear, simple communication. Step-by-step guides, visual aids, and demonstrations substantially increase adoption likelihood, while complexity and time demands deter change. Trust and reciprocity biases emphasize reliance on expert sources, research centres and advisors. and experiential proof; farmers prefer to recommend practices only after personal success. Social comparison biases indicate that community norms and peer behaviour influence confidence, but autonomy remains strong; farmers are willing to act independently despite limited peer adoption. Overall, these findings suggest that farmers are environmentally aware and cautiously progressive, balancing economic viability with sustainability goals. Farm advisors display a cautious yet evidence-driven approach to recommending sustainable practices. Confirmation bias is prominent when endorsing new methods. They actively verify benefits, drawbacks, and prior adopters, reflecting a deliberate evaluation process. Like in the case of farmers, ambiguity aversion and risk/loss aversion are evident, with advisors preferring predictable outcomes and avoiding recommendations if benefits are uncertain. Financial loss and yield reduction concerns persist, but advisors are willing to promote practices with delayed environmental or productivity benefits, indicating balanced risk-taking for long-term gains. Status quo bias is moderate. Interestingly, cognitive limitations are minimal, yet advisors strongly favour clear, structured information—step-by-step guides, visual aids, and demonstrations to facilitate adoption. Trust and reciprocity biases highlight reliance on credible sources, especially research institutions and experienced peers, while NGOs and industry actors receive lower trust ratings. Social comparison influences advisory behaviour moderately; advisors value peer input but maintain autonomy. Nudge effectiveness mirrors these preferences. Paired comparisons reveal that advisors perceive themselves as more responsive than peers to information-rich, practical, and consequence-focused nudges, reinforcing the need for evidence-based interventions.

Turning now to foresters, they exhibit pragmatic attitudes toward sustainable forestry, balancing environmental stewardship with operational feasibility. Optimism bias is limited; respondents acknowledge future risks and recognize the need for active management. Confirmation bias drives decision-making, with scientific and practical evidence valued more than social endorsement. Ambiguity and risk aversion are moderate, but long-term benefits outweigh short-term concerns. Status quo bias is conditional, as foresters are open to change when gains are credible. Cognitive barriers are minimal,

though clear, structured information enhances adoption. Trust centres on institutional expertise and proven peer experience, while social influence plays a supportive but secondary role.

Forestry advisors share similar patterns, emphasizing evidence-based recommendations and practical learning. Economic incentives—subsidies and grants—are rated as the strongest motivators, alongside emotional drivers such as responsibility toward future generations and biodiversity protection. Educational motives prioritize clear financial evidence and hands-on training. Nudges that reduce uncertainty and provide actionable guidance—decision-support tools, guides, and peer success stories—are most effective, while symbolic cues and punitive measures rank lowest. Advisors consistently rate themselves as more receptive to complex, evidence-based approaches than peers, suggesting that interventions should combine financial viability, moral responsibility, and experiential learning.

Consumers exhibit strong sustainability orientation mediated by predictable biases. Positive predispositions—health halo, localism, and ethical values—facilitate adoption when benefits are tangible and credible. However, loss aversion, status quo inertia, present bias, and ambiguity aversion constrain purchase behaviour underprice uncertainty or unclear labelling. Trust and verification emerge as decisive: credible certifications, transparent supply chains, and recognizable eco-labels significantly increase willingness to pay. Local origin acts as a powerful heuristic, linking sustainability to freshness and community benefit. Price acceptance is conditional; modest premiums are tolerated when linked to clear value, but tolerance declines for commoditized products. Nudges should emphasize performance proof, credible labelling, and category-specific benefits, while pricing strategies must balance affordability with value framing. Farmers and foresters demonstrate strong environmental awareness and a willingness to adopt sustainable practices when long-term benefits are credible, and implementation is supported by practical tools. While optimism bias is limited and respondents acknowledge future environmental risks, ambiguity aversion and risk/loss aversion remain influential, particularly where outcomes are uncertain or short-term costs loom large. Status quo bias and present bias exert moderate effects, reinforcing the need for interventions that make sustainable options easy, salient, and economically viable. Cognitive limitations highlight the importance of clear, step-by-step guidance, visual aids, and demonstrations to reduce complexity and enhance perceived behavioural control.

Across all groups, the most effective nudges are actionable and evidence-based: decision-support tools, clear implementation guides, and peer-validated success stories consistently outperform generic awareness campaigns or symbolic cues. Socially oriented strategies—such as highlighting collective achievements—reinforce adoption when combined with practical benefits, while traditional advertising (e.g., billboards) ranks lowest. These findings converge on a clear principle: interventions should prioritize simplicity, credibility, and tangible benefits, leveraging behavioural insights to align sustainability with economic viability and personal values. In sum, promoting sustainable practices requires an integrated approach that addresses behavioural biases, strengthens trust, and reduces complexity. Policies and market strategies should combine financial incentives with educational and experiential learning, deploy targeted nudges that make sustainable choices easy and rewarding, and communicate value through transparent, verifiable signals. By embedding behavioural science into design, the transition to sustainable agriculture, forestry, and consumption can move from aspiration to widespread practice.

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Introduction

Transition towards more sustainable agricultural and forestry systems is a key priority for enhancing environmental performance, climate resilience, and long-term socio-economic viability across the agri-food and forest-based sectors. Despite the availability of proven sustainable practices, their uptake remains uneven and often limited. A growing body of evidence suggests that this gap cannot be explained solely by technical or economic constraints, but is also strongly influenced by behavioural biases, preferences, and attitudes of actors along the agri-food and forest supply chains.

Within this context, Task 3.1 of the ForestAgriGreenNudge project focuses on identifying and calibrating the behavioural biases that hinder the adoption of sustainable production and consumption practices. Farmers, foresters, supply chain actors, and consumers are recognised as central agents in driving—or constraining—the transition towards sustainability, as their decisions are shaped by a combination of social norms, economic considerations, cultural factors, education levels, exposure to behavioural triggers, and environmental awareness.

To systematically explore these dimensions, a large-scale survey was designed and implemented across all participating countries. Three structured questionnaires were developed (detailed in deliverable D3.1), each specifically adapted to one target group—farmers, foresters, advisors, or consumers—and aimed at capturing the most relevant behavioural biases affecting sustainable decision-making. The questionnaires address a broad set of bias categories, including:

1. Optimism Bias
2. Confirmation Bias
3. Ambiguity Aversion
4. Risk or Loss Aversion
5. Present Bias / Status Quo Bias
6. Cognitive Limitations
7. Trust/Reciprocity
8. Social Comparison/Social Norms / Herding

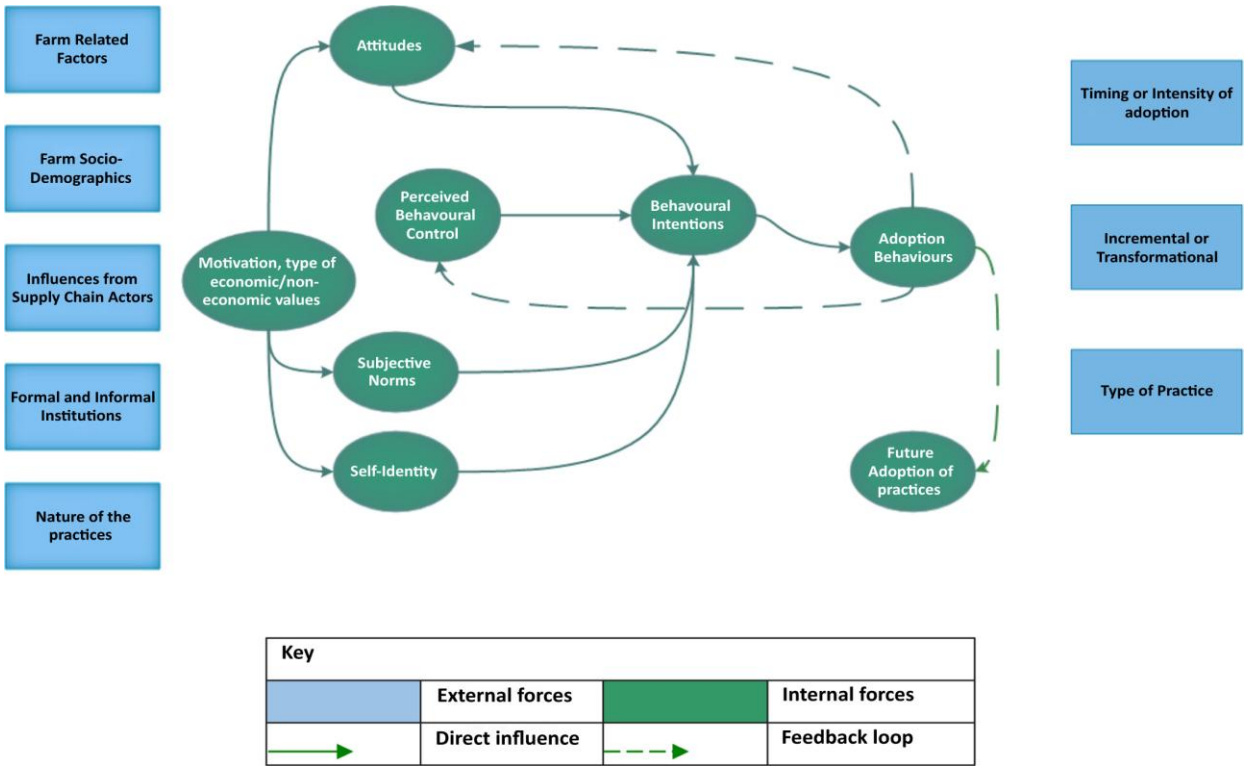
This report (Deliverable D3.2) presents the results of this empirical effort. The survey was conducted in all participating countries, aiming to provide a robust and comparable evidence base across countries and domains. The analysis reported in this deliverable offers insights into the prevalence and intensity of behavioural biases across stakeholder groups and geographical contexts, thereby supporting the design of effective, targeted green nudges and policy interventions in subsequent work packages.

Components of a Conceptual Framework

Across Europe, the imperative to transition toward more sustainable agricultural and forestry systems has intensified in response to climate change, biodiversity loss, soil degradation, and water quality concerns. Ecological approaches—spanning organic farming, agroecology, conservation agriculture, integrated pest management (IPM), precision agriculture, and low-input practices—offer viable pathways to reduce environmental externalities while sustaining farm livelihoods and rural economies. Yet despite technical feasibility and policy attention, adoption remains uneven across sectors, geographies, and farm types. This pattern signals that constraints to uptake are not only structural or economic; they are fundamentally behavioural, shaped by farmers' beliefs, social identities, perceived capabilities, and the institutional environments in which they operate (Hansson et al., 2019; Pretty, 2008).

A growing literature reframes adoption of sustainable practices as a multi-dimensional behavioural process, embedded within supply chains and institutions, and subject to temporal dynamics (timing), intensity, and the scale of change (incremental versus transformational). In this direction, there are also many European projects (see for example the LIFT Horizon 2020 project). This project has provided a behavioural conceptual framework and a systematic map of empirical studies, is a salient contribution to this agenda. Resulted from the same project the work of Barnes et al., (2022) has built on social-psychological theories - principally the Theory of Planned Behaviour (TPB) (Ajzen, 1991) and the Technology Acceptance Model (TAM) (Davis, 1989; Venkatesh & Davis, 2000) - and situating these within farm, supply-chain, and institutional contexts. Their conceptual model articulates how attitudes, norms, perceived control, usefulness, and ease-of-use interact with identity, motivation, and policy and market signals to shape adoption decisions (see the figure 1 below).

Figure 1: A behavioural model for adoption of ecological practices



Source: EuroChoices, Vol: 21, Iss (3), pp: 5-12, 05 December 2022, DOI:(10.1111/1746-692X.12371)

This framework was used in the design of the current survey in order to identify behavioural constraints that impede the uptake of ecological practices by farmers and foresters, while also acknowledging how consumer preferences and the attitude–behaviour gap on the demand side feed back into producers' expectations and choices (Vermeir & Verbeke, 2008; Rousseau & Vranken, 2013).

In Theory of planned behaviour behavioural intention—the proximal driver of action—depends on three constructs: attitude toward the behaviour (evaluations of expected outcomes), subjective norm (perceived social pressure or support), and perceived behavioural control (self-efficacy and perceived constraints) (Ajzen, 1991). These constructs are critical for ecological practices whose agronomic and economic outcomes may be uncertain or context-specific. Farmers' attitudes are formed by beliefs about agronomic performance, cost and risk, environmental benefits, and market prospects; subjective norms reflect peer influence, advisors, buyers, and family expectations; and perceived control hinges on access to knowledge, skills, equipment, finance, and administrative capacity (Hansson et al., 2012; Läpple & Kelley, 2013).

Technology adoption Model (TAM) complements TPB by explicitly considering Perceived Usefulness (PU) - the belief that a practice will improve performance - and Perceived Ease of Use (PEoU) - the extent to which learning and applying the practice is perceived as effortful (Davis, 1989). Although TAM originates in information technology, its relevance to agricultural technologies and management changes is evident: adoption likelihood rises when farmers perceive practices as useful and manageable, and declines when practices are seen as complex, opaque, or hard to learn (Flett et al., 2004; Reichardt et al., 2009). Extensions of TAM, also incorporate social influence (subjective norms, image) and cognitive instrumental factors (job relevance, output quality), aligning closely with the supply-chain and institutional dimensions (Venkatesh & Bala, 2008).

In this direction the following behavioural constraints and constructs were examined.

Attitudinal uncertainty and risk perceptions. Farmers may hold ambivalent or negative attitudes toward ecological practices when expected agronomic performance is uncertain, benefits are not immediately observable (e.g., soil health gains), or when perceived risks—yield variability, pest pressure, or market access - loom large (Knowler & Bradshaw, 2007; McCann et al., 2015). Meta-analyses of best management practice adoption in the United States emphasize that information quality and access, financial capacity, and network connectivity strongly condition attitudes and uptake, suggesting that attitudinal barriers often reflect informational asymmetries rather than entrenched opposition (Baumgart-Getz et al., 2012).

Subjective norms and identity conflicts. Adoption can challenge the social symbolic identity of the "good farmer," historically associated with visually neat fields, high yields, and conventional practices (Burton, 2004). Ecological practices such as diversified rotations, cover crops, or reduced tillage may produce fields that look "messier," inviting peer scrutiny or self-doubt. Where local descriptive norms (what peers do) and group norms (what peers approve) favour conventional methods, farmers experience identity dissonance and social pressure to conform (Ahnström et al., 2008; Inman et al., 2018). Empirical work illustrates how peer networks and trusted advisors can either mitigate or reinforce these constraints, depending on the prevailing narratives and demonstration effects (Maertens & Barrett, 2012; Toma et al., 2016).

Perceived behavioural control and capability gaps. Low perceived control arises from knowledge and skills deficits, limited access to appropriate equipment, cash-flow constraints, and administrative burdens (e.g., certification, scheme compliance) (Tey & Brindal, 2012). These capability gaps are often more binding for transformational changes - system redesigns such as organic conversion - than for incremental modifications (Sutherland et al., 2012). Where learning is tacit and site-specific, farmers

may be reluctant to commit without hands-on training, peer-to-peer learning, and risk-sharing arrangements that collectively raise perceived control (Hamprecht et al., 2005).

Motivational trade-offs and value structures. Use and non-use values have been highlighted as motivational drivers: use values reflect direct economic benefits, while non-use values encompass ethical, environmental, and stewardship considerations (Hansson & Lagerkvist, 2015; 2016). Behavioural constraints surface when use values are discounted (e.g., uncertain price premiums, unrecognized ecosystem service benefits) and non-use values are crowded out by short-term financial pressures or policy instability. Clarifying result demonstrability and ensuring credible price signals and recognition can shift motivational equilibria in favour of adoption.

Complexity, observability, and learning dynamics. Many ecological practices are complex bundles with delayed or diffuse outcomes; their benefits are less observable than those of discrete inputs, complicating experiential learning and social diffusion (Moore et al., 2016). Adoption tends to proceed via trialling on limited acreage (extensity) and builds incrementally as farmers learn and adapt (Carlisle, 2016). Without mechanisms that accelerate feedback—on-farm trials, demonstration farms, decision support—complexity itself becomes a behavioural barrier (Hansson et al., 2019).

Supply-chain drivers. Vertical relationships with processors and retailers influence perceived norms, usefulness, and risk through contracts, standards, and collaboration (Kottila & Rönni, 2008). Where buyers co-invest in capability building or offer stable procurement with premiums, farmers perceive higher perceived usefulness and lower risk; conversely, fragmented or volatile markets erode trust and dampen intention (Fearne et al., 2001).

Institutional conditions. Agri-environment schemes (AES), certification programs, and advisory services can alleviate capability gaps, but administrative complexity, unstable funding, and short contract horizons undermine perceived control and intention (Knuth et al., 2018). The formalization of standards may increase adoption by providing clarity and market access yet can also inadvertently constrain transitions if compliance requirements are mismatched to farm capacities (Quiedeville et al., 2017; Konefal, 2015).

Consumer demand and the attitude–behaviour gap. Responsible consumers that reject an increasingly widespread culture where everything is “instant” and a “throw-away” (Jastrzębska, E., 2017) could play their part in moving to sustainable agriculture. In addition, producers’ expectations of demand are shaped by perceptions of consumers and their willingness to pay for sustainability attributes. While surveys show increasing consumer concern, market shares for certified products often lag stated preferences; this attitude–behaviour gap creates signal noise for producers, weakening the motivational case for adoption (Vermeir & Verbeke, 2008). Robust labelling, reduction of information asymmetry, and retail commitments can strengthen the demand signal perceived by farmers (Rousseau & Vranken, 2013).

Building on the TPB/TAM-based framing of farmers’ decision-making and the Barnes et al. (2022) approach, it is essential to examine a set of systematic cognitive and social biases that can distort perceptions of usefulness, effort, control, and norms, and thereby impede the uptake of sustainable practices. TPB specifies that intentions flow from attitudes, subjective norms, and perceived behavioural control, while TAM unpacks attitudes into perceived usefulness and perceived ease-of-use and incorporates social influence in later extensions. Behavioural economics and psychology show that, under uncertainty and complexity; precisely the conditions that characterise sustainable farming, judgement is not simply noisy but systematically biased. Mapping those biases to the TPB/TAM pathways clarifies why technically viable practices with apparent private and public benefits are nonetheless adopted unevenly across sectors and regions.

Firstly, optimism bias, which is the tendency to overestimate favourable outcomes and underestimate downsides, can inflate perceived usefulness and perceived behavioural control, leading to intentions that are not borne out in practice. Classic evidence documents unrealistic optimism in risk judgements and asymmetric belief updating toward good news (Weinstein, 1980). In agriculture this may appear as over-optimistic expectations for yields, weather resilience, or market access from a new practice, followed by disappointment when early outcomes are variable or delayed, which then feeds back into negative attitudes toward the practice class more broadly (McCann et al., 2015). Because ecological practices often have lagged and noisy agronomic signals (e.g., soil health), optimism bias can initially accelerate trialling but later reinforce dis-adoption when early over-promises are not realised, thereby undermining diffusion curves (Carlisle, 2016).

Second, confirmation bias, which is a selective attention to information that supports prior beliefs, hardens attitudes and filters new evidence about PU/PEoU. Seminal work shows asymmetric weighting of confirmatory versus disconfirming information and motivated reasoning (Nickerson, 1998). In farm settings, information networks are highly relational; producers may preferentially consult advisors or peers who share their philosophy and production system, creating echo chambers that impede learning from trials and demonstrations (Toma et al., 2016). Where local descriptive norms favour conventional practices, confirmation bias and network homophily jointly reduce exposure to counter-evidence, even when objective performance data exist (Inman et al., 2018).

Third, ambiguity aversion—a preference for known risks over unknown probabilities—directly depresses attitudes and perceived control for practices with uncertain or poorly observable outcomes (Ellsberg, 1961). Many ecological approaches are “bundles” whose payoffs depend on site-specific interactions and learning (e.g., cover crops, no tillage); as a result, probability distributions are ill-defined. Reviews consistently find that low observability and high complexity slow adoption even when expected values are competitive (Knowler & Bradshaw, 2007; McCann et al., 2015). Farmers facing ambiguous market signals for sustainability attributes (premiums that vary by buyer or year) rationally avoid change, reinforcing the attitude–behaviour gap at the production margin highlighted in the consumer literature (Rousseau & Vranken, 2013; Vermeir & Verbeke, 2008).

Fourth, risk aversion and loss aversion are central to farm decision-making and map onto attitudes and perceived control, especially for system-wide or “transformational” changes. Experimental and field studies show substantial risk aversion among producers and a disproportionate sensitivity to losses relative to gains (Binswanger, 1980). In practice, the downside risk of yield or quality shortfalls during conversion, coupled with sunk set-up costs, can deter adoption even when expected profits are positive (Marra et al., 2003). Laboratory-style measures also reveal that many farmers accept lower expected returns to avoid variance (Holt & Laury, 2002), a pattern that aligns with slower uptake of practices with volatile short-run payoffs and strengthens the case for risk-sharing instruments during transition (Sutherland et al., 2012).

Fifth, present bias and status-quo bias undermine intentions when immediate costs loom large relative to delayed benefits and when defaults or inertia favour existing routines. Hyperbolic discounting predicts dynamic inconsistency—strong preferences for “now” over “later”—while status-quo bias captures a separate tendency to stick with current options even when change is beneficial (Laibson, 1997). Evidence from agricultural input adoption shows that aligning product timing with cash-flow cycles or offering commitment devices can materially increase uptake, underscoring the role of present bias in real farm choices (Duflo et al., 2011). In the ecological domain, upfront learning, equipment adjustments, and administrative tasks amplify near-term costs, which depress attitudes and perceived control relative to long-term benefits like soil structure or biodiversity (Lamine, 2011).

Sixth, cognitive limitations—bounded attention, limited working memory, and reliance on heuristics—lower PEoU and perceived control when practices are complex or administrative demands are high. Foundational work on bounded rationality and fast-and-frugal heuristics shows that complexity degrades decision quality unless information is simplified and structured for the user (Gabaix, 2014). Empirical studies of environmental practice adoption point to complexity and low result demonstrability as key barriers, many times emphasises administrative and learning burdens as recurrent constraints (McCann et al., 2015; Hansson et al., 2019). Simplification, checklists, and decision-support tools can raise PEoU and perceived control, thereby improving intentions without altering underlying economics.

Seventh, trust and reciprocity shape how farmers process signals from buyers, certifiers, and advisors and therefore influence norms, usefulness expectations, and perceived control. Trust-based exchange and reciprocal behaviour are well-documented drivers of cooperation (Berg et al., 1995; Fehr & Fischbacher, 2004). In agri-food chains, collaboration and credible commitments—from stable procurement contracts to reliable premiums—improve adoption conditions by reducing market uncertainty and validating the social norm of stewardship (Kottila & Rönni, 2008). On the consumer interface, credible labelling and reduced information asymmetry increase producers' confidence that sustainability investments will be rewarded, tightening the producer–consumer loop that your survey intends to measure (Rousseau & Vranken, 2013; Vermeir & Verbeke, 2008).

Eighth, social comparison, social norms, and herding are powerful determinants of behaviour and directly enter the TPB through subjective norms. People infer value from what similar others do (descriptive norms) and what they approve (injunctive norms), and adoption can propagate via informational cascades (Cialdini & Goldstein, 2004). Agricultural studies repeatedly find that neighbours' adoption, peer networks, and trusted local leaders have large effects on ecological practice uptake, both by transmitting knowledge and by legitimising the identity of the "good farmer" who manages for long-term environmental quality (Maertens & Barrett, 2012; Inman et al., 2018; Ahnström et al., 2008). This channel is particularly salient for practices that change the visible appearance of fields, where reputational concerns and social proof are central (Carlisle, 2016).

Taken together, these biases align cleanly with the behavioural constraints already identified in previous frameworks and help explain why adoption is path-dependent and sensitive to timing, intensity, and the scale of change. Optimism and confirmation biases shape how evidence is interpreted; ambiguity, risk, and loss aversion penalise uncertain or volatile payoffs; present and status-quo biases amplify near-term frictions; cognitive limits make complexity and administration more salient; and trust and social comparison modulate how market and peer signals are internalised. Recognising these mechanisms suggests concrete levers for intervention that surveys can later test and that policy can deploy: improving result demonstrability to counter ambiguity aversion; offering transition insurance and guarantees to address risk and loss aversion; using defaults, phased commitments, and aligned timing to mitigate present bias and inertia; simplifying paperwork and providing decision aids to ease cognitive load; strengthening buyer commitments and label credibility to build trust; and mobilising peer-to-peer networks and demonstration farms to shift norms and social identity around ecological practices .

By explicitly measuring these biases alongside TPB/TAM constructs, this study will be well placed to diagnose the behavioural bottlenecks that most constrain uptake in different contexts and to recommend targeted, evidence-based design features for programmes and supply-chain initiatives that seek to accelerate sustainable transitions.

The key behavioural biases affecting adoption of sustainable practices:

1. **Optimism Bias,** Farmers overestimate positive outcomes (e.g., yield gains, market access) and underestimate risks, leading to unrealistic expectations and later dis-adoption when results disappoint.

2. **Confirmation Bias**, Producers seek information that confirms existing beliefs and ignore contradictory evidence, reinforcing current practices and slowing learning from trials or demonstrations.

3. **Ambiguity Aversion**, Farmers avoid practices with uncertain or poorly observable outcomes (e.g., complex ecological bundles), even when expected benefits are high, due to discomfort with unknown probabilities.

4. **Risk Aversion / Loss Aversion**, Strong preference for avoiding downside risk and losses discourages adoption of practices with volatile short-term payoffs or high conversion costs, despite long-term benefits.

5. **Present Bias / Status-Quo Bias**, Immediate costs (training, equipment, admin) loom larger than delayed benefits (soil health, biodiversity), and inertia or default options favour conventional methods.

6. **Cognitive Limitations**, Complexity and administrative burdens overwhelm limited attention and processing capacity, reducing perceived ease-of-use and control, and increasing reliance on heuristics.

7. **Trust and Reciprocity**, Low trust in buyers, certifiers, or institutions undermines confidence in promised premiums or support, while strong trust relationships can facilitate adoption through collaboration.

8. **Social Comparison / Social Norms / Herding**, Peer influence and perceived norms strongly shape adoption decisions; farmers imitate what similar others do and approve, making networks and demonstration effects critical.

Methodology

The survey aims to identify how psychological factors, cognitive biases, and social norms interact with structural farm characteristics to shape farmers' decisions regarding sustainable approaches such as organic farming, integrated systems, and low-input practices. This approach moves beyond purely economic or technical determinants by embedding behavioural science into agricultural policy design.

In order to measure how farmers evaluate the previously identified biases a series of questionnaires were created In EU Survey Platform. EU Survey is the official online survey platform of the European Commission, widely used in EU-funded projects for the design and administration of questionnaires. It provides a secure and GDPR-compliant environment for collecting data across multiple countries and stakeholder groups, supporting a wide range of question types and multilingual deployment. EU Survey enables standardized data collection and easy export of responses for further analysis, ensuring methodological consistency, data protection, and institutional reliability in large-scale surveys.

Six questionnaires were created for the following target groups to explore behavioural barriers and motivational drivers influencing the adoption of sustainable agricultural practices.

A) Farmers
B) Farmers' Advisors
C) Food Consumers
D) Foresters
E) Foresters' Advisors
F) Forestry Products' Consumers

The primary aim of these questionnaires is to identify cognitive biases, social norms, and decision-making patterns that prevent farmers from transitioning to sustainable approaches such as organic farming, integrated systems, and low-input practices.

The questionnaire for farmers, foresters and their advisors are structured into six sections, combining quantitative scales and qualitative inputs:

Demographics and Farm Characteristics, Collects socio-economic data, farm size, production systems, and identity-related statements. These variables contextualize behavioural constructs and allow segmentation by structural factors.

Behavioural Constructs and Biases. A core component measures eight cognitive and social biases that literature identifies as barriers to sustainable adoption:

Motivational Drivers, Respondents rank economic/legal incentives (e.g., subsidies, carbon credits), intrinsic motives (e.g., pride, responsibility), and cognitive motives (e.g., need for evidence, training). This section captures both instrumental and affective attitudes toward sustainability.

Nudging Strategies, Farmers evaluate potential behavioural interventions such as social media campaigns, decision-support tools, visual cues, and public recognition. These nudges are grounded in choice architecture principles and aim to overcome identified biases by simplifying decisions, leveraging social proof, and enhancing salience.

Open-Ended Questions, Participants propose ideas for enabling transitions to sustainable practices, providing qualitative insights into perceived barriers and solutions.

The survey was conducted over six months and ended during the first days of December 2025.

Figure 2: The structure of the Farmers' questionnaire

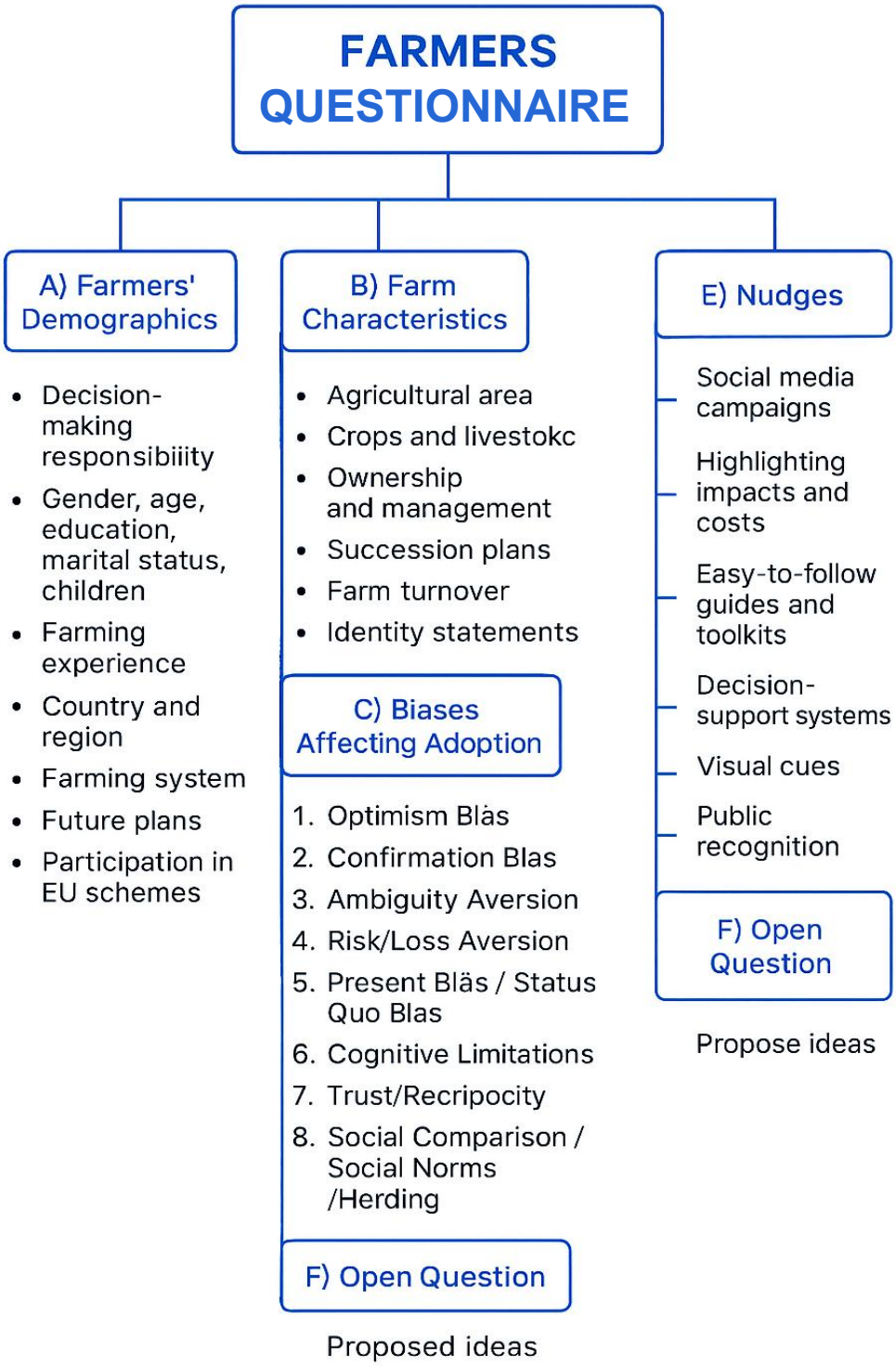


Table 1: Links to questionnaires in different languages

LANGUAGE	List of questionnaires					
	Farmers	Farmers' Advisors	Food Consumers	Foresters	Foresters' Advisors	Forestry Products Consumers
English	https://ec.europa.eu/eusurvey/runner/ForestAgriGreenNUDGE_Farmers	https://ec.europa.eu/eusurvey/runner/FarmersAdvisors	https://ec.europa.eu/eusurvey/runner/Food_Consumers	https://ec.europa.eu/eusurvey/runner/Foresters_questionnaire	https://ec.europa.eu/eusurvey/runner/Foresters_Advisors	https://ec.europa.eu/eusurvey/runner/Forestry_Products_Consumers
Greek	https://ec.europa.eu/eusurvey/runner/ForestAgriGreenNUDGE_Farmers?surveylanguage=EL	https://ec.europa.eu/eusurvey/runner/FarmersAdvisors?surveylanguage=EL	https://ec.europa.eu/eusurvey/runner/Food_Consumers?surveylanguage=EL	https://ec.europa.eu/eusurvey/runner/Foresters_questionnaire?surveylanguage=EL	https://ec.europa.eu/eusurvey/runner/Foresters_Advisors?surveylanguage=EL	https://ec.europa.eu/eusurvey/runner/Forestry_Products_Consumers?surveylanguage=EL
Portuguese	https://ec.europa.eu/eusurvey/runner/ForestAgriGreenNUDGE_Farmers?surveylanguage=PT	https://ec.europa.eu/eusurvey/runner/FarmersAdvisors?surveylanguage=PT	https://ec.europa.eu/eusurvey/runner/Food_Consumers?surveylanguage=PT	https://ec.europa.eu/eusurvey/runner/Foresters_questionnaire?surveylanguage=PT	https://ec.europa.eu/eusurvey/runner/Foresters_Advisors?surveylanguage=PT	https://ec.europa.eu/eusurvey/runner/Forestry_Products_Consumers?surveylanguage=PT
Swedish	https://ec.europa.eu/eusurvey/runner/ForestAgriGreenNUDGE_Farmers?surveylanguage=SV	https://ec.europa.eu/eusurvey/runner/FarmersAdvisors?surveylanguage=SV	https://ec.europa.eu/eusurvey/runner/Food_Consumers?surveylanguage=SV	https://ec.europa.eu/eusurvey/runner/Foresters_questionnaire?surveylanguage=SV	https://ec.europa.eu/eusurvey/runner/Foresters_Advisors?surveylanguage=SV	https://ec.europa.eu/eusurvey/runner/Forestry_Products_Consumers?surveylanguage=SV
Finnish	https://ec.europa.eu/eusurvey/runner/ForestAgriGreenNUDGE_Farmers?surveylanguage=FI	https://ec.europa.eu/eusurvey/runner/FarmersAdvisors?surveylanguage=FI	https://ec.europa.eu/eusurvey/runner/Food_Consumers?surveylanguage=FI	https://ec.europa.eu/eusurvey/runner/Foresters_questionnaire?surveylanguage=FI	https://ec.europa.eu/eusurvey/runner/Foresters_Advisors?surveylanguage=FI	https://ec.europa.eu/eusurvey/runner/Forestry_Products_Consumers?surveylanguage=FI
Lithuanian	https://ec.europa.eu/eusurvey/runner/ForestAgriGreenNUDGE_Farmers?surveylanguage=LT	https://ec.europa.eu/eusurvey/runner/FarmersAdvisors?surveylanguage=LT	https://ec.europa.eu/eusurvey/runner/Food_Consumers?surveylanguage=LT	https://ec.europa.eu/eusurvey/runner/Foresters_questionnaire?surveylanguage=LT	https://ec.europa.eu/eusurvey/runner/Foresters_Advisors?surveylanguage=LT	https://ec.europa.eu/eusurvey/runner/Forestry_Products_Consumers?surveylanguage=LT
Spanish	https://ec.europa.eu/eusurvey/runner/ForestAgriGreenNUDGE_Farmers?surveylanguage=ES	https://ec.europa.eu/eusurvey/runner/FarmersAdvisors?surveylanguage=ES	https://ec.europa.eu/eusurvey/runner/Food_Consumers?surveylanguage=ES			
Polish	https://ec.europa.eu/eusurvey/runner/ForestAgriGreenNUDGE_Farmers?surveylanguage=PL	https://ec.europa.eu/eusurvey/runner/FarmersAdvisors?surveylanguage=PL	https://ec.europa.eu/eusurvey/runner/Food_Consumers?surveylanguage=PL			
Slovenian	https://ec.europa.eu/eusurvey/runner/ForestAgriGreenNUDGE_Farmers?surveylanguage=SL	https://ec.europa.eu/eusurvey/runner/FarmersAdvisors?surveylanguage=SL	https://ec.europa.eu/eusurvey/runner/Food_Consumers?surveylanguage=SL			
Serbian	https://ec.europa.eu/eusurvey/runner/ForestAgriGreenNUDGE_Farmers?surveylanguage=SR	https://ec.europa.eu/eusurvey/runner/FarmersAdvisors?surveylanguage=SR	https://ec.europa.eu/eusurvey/runner/Food_Consumers?surveylanguage=SR			
French	https://ec.europa.eu/eusurvey/runner/ForestAgriGreenNUDGE_Farmers?surveylanguage=FR	https://ec.europa.eu/eusurvey/runner/FarmersAdvisors?surveylanguage=FR	https://ec.europa.eu/eusurvey/runner/Food_Consumers?surveylanguage=FR	https://ec.europa.eu/eusurvey/runner/Foresters_questionnaire?surveylanguage=FR	https://ec.europa.eu/eusurvey/runner/Foresters_Advisors?surveylanguage=FR	https://ec.europa.eu/eusurvey/runner/Forestry_Products_Consumers?surveylanguage=FR

Exploring Farmers' Biases

This survey included 159 farmers from Greece, Portugal, Serbia, and other countries, predominantly male, family-oriented, and relatively well-educated. Decision-making is highly centralized, with most respondents personally managing farming practices. Conventional systems dominate, though integrated and organic practices are present, and some farmers show openness to future transitions toward more sustainable farming systems. Guidance is primarily sought from agricultural advisors, family, and peers, with limited reliance on government or environmental agencies. Participation in European schemes is generally low, and farm succession is mostly planned within the family. Overall, the sample reflects an autonomous, cautious but receptive population, providing a robust basis for analysing biases and drivers influencing sustainable practice adoption.

The analysis of decision-making biases highlights several key patterns. Farmers demonstrate limited optimism bias, recognizing environmental risks such as drought and soil degradation, and show evidence-driven decision-making with moderate ambiguity aversion. Risk and loss aversion focus on financial concerns, yet farmers are willing to adopt new practices when long-term benefits are clear. Status quo bias is present but outweighed by concern for soil and water health. Cognitive, trust, and social comparison biases indicate that clear, simple guidance, trusted expert sources, and peer behaviour strongly influence adoption. Economic motives are the strongest drivers for both personal and peer adoption, with subsidies, grants, reduced input costs, and efficiency gains rated highest. Emotional motives, including stewardship, legacy, and pride, are highly influential and resonate more personally than socially. Educational motives are effective when combining practical, hands-on learning with clear economic evidence, emphasizing peer-to-peer exchange and demonstrable long-term benefits.

Finally, farmers perceive nudges providing practical decision-support tools and clear implementation guidance as the most effective for promoting sustainable behaviour. Socially oriented strategies, such as showcasing successful peers, also play a strong role, while traditional advertising is least impactful. Collectively, the findings suggest that interventions should integrate economic incentives, emotional engagement, and evidence-based educational strategies, leveraging trusted channels and actionable guidance to foster sustainable farming adoption.

All the relevant tables are presented in the appendix 1A in the first appendix section about farmers.

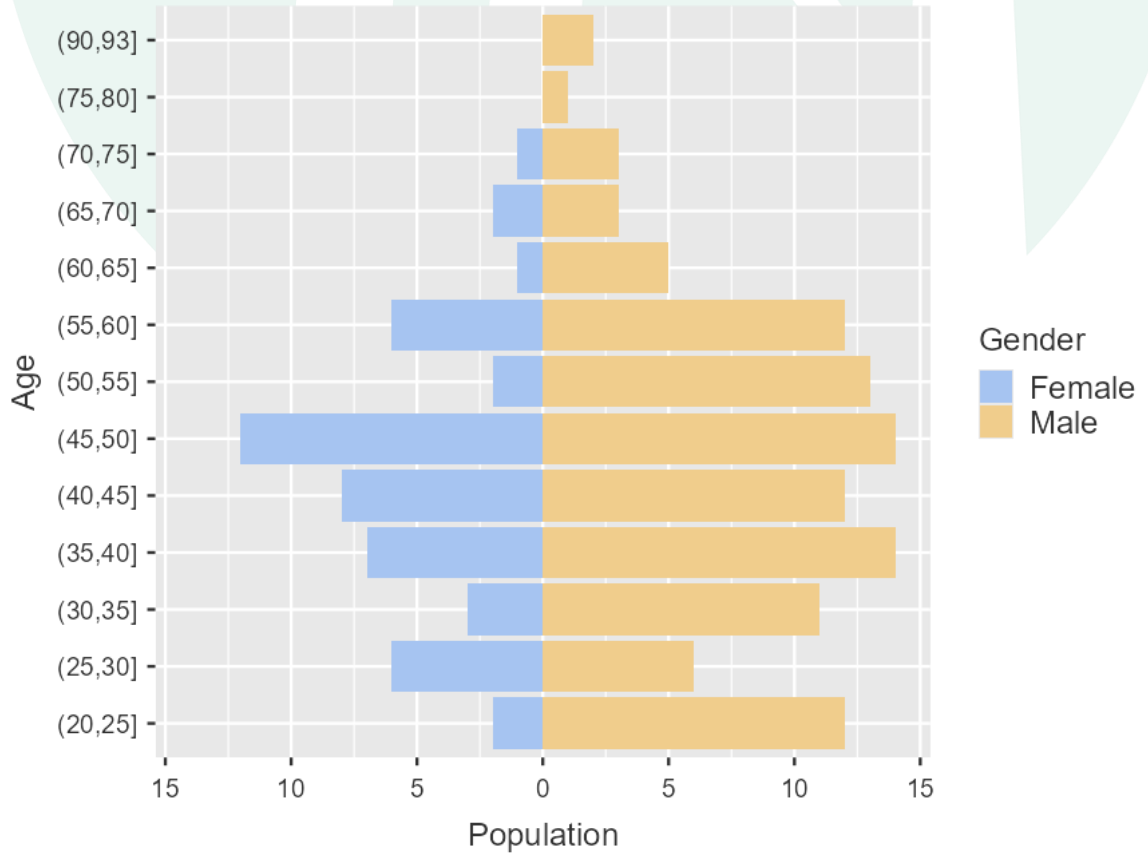
Farmers' sample

The survey included 159 farmers, with 68.6% male and 31.4% female. Educational attainment is diverse, with 31.6% holding a bachelor's degree, 24.1% a master's or higher, and 22.8% upper secondary education. Marital status shows that 68.2% are married, 27.4% single, and 4.5% divorced. Family size is moderate, averaging just over two children per respondent; the majority (51.1%) have two children, while 25.5% report three or more. Respondents are primarily active in Greece (34%), followed by Portugal (19.5%) and Serbia (16.4%), with smaller shares in Lithuania, Poland, Slovenia, Spain, Sweden, and one entry for Romania. Decision-making authorities are highly centralized: 94.9% of respondents themselves make farming practice decisions, with minimal involvement from family members or managers.

Current farming systems are dominated by conventional practices, with 59% reporting all activities as conventional and 25.6% partially conventional. Organic farming is less prevalent: 43% report no organic

activities, 28% partial, and 29% all activities organic. Integrated farming shows a more balanced distribution, with 29.5% fully integrated, 37.1% partially, and 33.3% not at all.

Figure 3: Age pyramid for farmers participating in the survey.



Plans for change in the next five years reveal openness: 30.8% are discussing system changes, 19.9% consider it possible, and 14.7% are certain they will change. Intentions to adopt more sustainable or organic farming are mixed; nearly half indicate no intention, while about one in six are definite, and others are considering or discussing the possibility. Regarding livestock, 55.7% do not plan to introduce any, while 36.1% intend to do so, suggesting divergent strategies for diversification.

Respondents rely most on agricultural advisors (mean = 3.61), family and friends (3.56), and other farmers (3.49). Business partners rank next (3.38), while government agencies (2.38) and environmental advisors (2.59) score lowest. Statistical analysis confirms significant differences in reliance on these sources ($p < 0.001$).

Participation in European schemes is generally limited. A large majority report no participation in organic agri-environment schemes, other AES, PDO schemes, or European organic certification. Young farmers establishment scheme shows comparatively higher engagement, although still more than 60% report no participation. Organic AES: 74.7% never participated; 11.7% recently.

Most respondents acquired their farms through inheritance (66.2%), followed by purchase (17.6%) and mixed arrangements (12.7%). Succession plans favour family continuity: 52.1% intend to transfer farms to children, 16.2% to extended family, while 18.3% remain undecided and 8.5% plan for sale or no successor.

The sample depicts a predominantly male, family-oriented farming population with relatively high education levels, strong individual decision-making autonomy, limited participation in formal European schemes, and cautious - but not negligible - openness to future changes towards more sustainable farming systems.

Farmers' attitudes, and perceptions

Farmers' attitudes reveal a nuanced balance between openness to change, perceived control, and environmental concern. Responses were measured on a five-point scale, where higher values indicate stronger agreement. The Friedman test confirmed statistically significant differences among these attitudes ($\chi^2 = 216.895$, df = 10, $p < 0.001$), indicating that farmers do not hold uniform views across these dimensions.

Table 2 Descriptives of Farmers' attitudes

Attitudes	N	Min	Max	Mean	Std. Dev.
I never try anything that might not work	156	1	5	2.52	1.297
I'm using the same production methods over years	156	1	5	2.76	1.359
I reckon 'good luck' doesn't exist: 'luck' is good management and 'bad luck' poor management.	156	1	5	3.47	1.155
Although good management requires some training, experience and reading, the ability to manage is mainly determined by genes.	156	1	5	2.56	1.311
When the farm has shown poor yield, this is due to circumstances totally out of my control.	154	1	5	2.88	1.273
In local communities it's easy for a hard-working and dedicated individual to have an impact in getting changes for the better.	155	1	5	3.35	1.160
I seldom change my management and production systems unless I'm sure the change will be positive.	154	1	5	3.27	1.222
When things go wrong this is often due to events beyond my control (e.g. bad weather).	155	1	5	3.11	1.149
It bothers me when I think that other farmers are helping protect the environment more than me	155	1	5	2.72	1.292
It is important that I understand sustainable practices	155	1	5	3.96	1.044
t bothers me when I miss an opportunity to help protecting the environment	156	1	5	3.56	1.219

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 152 Test Statistic 216.895 Degree of Freedom 10, Asymptotic Sig. (2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*

On average, respondents do not strongly identify with extreme risk aversion, as indicated by relatively low agreement with the statement "I never try anything that might not work" (mean = 2.52). Similarly, only moderate agreement is observed with maintaining the same production methods over time (mean = 2.76), suggesting that while habits persist, rigid adherence to traditional practices is not dominant.

Perceptions of management responsibility are rather strong. Farmers tend to agree that outcomes are primarily shaped by management rather than luck (mean = 3.47), and they show moderate confidence

in the ability of dedicated individuals to effect positive change within local communities (mean = 3.35). At the same time, there is a mixed sense of control over adverse outcomes: while farmers moderately agree that external factors such as weather influence failures (mean = 3.11), they are less inclined to fully attribute poor yields to circumstances beyond their control (mean = 2.88).

Caution in decision-making is evident, as respondents generally prefer to change management systems only when positive outcomes are reasonably assured (mean = 3.27). However, there is limited support for deterministic views of management ability, with low to moderate agreement that effective management is mainly genetically determined (mean = 2.56), implying recognition of the role of learning and experience.

Environmental awareness and concern are comparatively high. Farmers place strong importance on understanding sustainable practices (mean = 3.96) and report feeling bothered when they miss opportunities to protect the environment (mean = 3.56). Thus, sustainability emerges as a clear priority. In contrast, social comparison plays a weaker role, as respondents show relatively low concern about other farmers contributing more to environmental protection than themselves (mean = 2.72).

Overall, the pattern of responses suggests that farmers combine a pragmatic and cautious approach to change with a clear acknowledgment of managerial responsibility and a notable level of environmental awareness. The Friedman test confirms statistically significant differences across attitude statements, indicating that these dimensions are not perceived uniformly but instead reflect distinct and differentiated aspects of farmers' attitudes.

Farmers' perceptions reflect a generally positive professional identity combined with a strong awareness of environmental responsibility and ecosystem functioning. Respondents report a moderate to strong identification with their role as farmers, with being a farmer seen as an important part of personal identity (mean = 3.17) and a comparable sense of belonging to the farming community (mean = 3.26). Beyond identity, there is clear recognition of the ecological dimension of farming: farmers tend to agree that farm ecology is central to what farming is about (mean = 3.65) and that their farms function as agricultural ecosystems interacting with surrounding landscapes (mean = 3.68).

Environmental self-perception is consistently high. Farmers generally see themselves as prioritising the environment (mean = 3.58) and acknowledge that both their actions and farming practices have tangible environmental impacts (means = 3.41 and 3.42, respectively). This awareness translates into a strong sense of personal responsibility, with relatively high agreement that protecting the environment is a personal duty (mean = 3.71) and that environmental protection remains important even when it may slow economic growth (mean = 3.45). Respondents also widely recognise the link between environmental preservation and community well-being (mean = 3.54).

Perceptions related to sustainable farm management practices are particularly strong. Farmers show high agreement on the importance of continuously assessing environmental and social impacts (mean = 3.56), managing biodiversity to enable its protection and enhancement (mean = 3.67), and overseeing energy consumption in farming activities (mean = 3.63). Even stronger agreement is observed for soil- and resource-focused practices, including enabling organic carbon formation in soils and biomass (mean = 3.82), applying soil management plans (mean = 3.78), implementing water management plans (mean = 3.72), and ensuring appropriate use of plant protection products (mean = 3.71).

Table 3: Descriptives of Farmers' perceptions

Perceptions	N	Min	Max	Mean	Std. Dev.
Being a farmer is an important reflection of who I am	157	1	5	3.17	0.999
I have a strong sense of belonging to the farming community	155	1	5	3.26	0.992
I perceive that the ecology of the farm is what farming is about	155	1	5	3.65	1.030
I see myself as a farmer who prioritises the environment	155	1	5	3.58	0.889
My actions have an impact on the environment	154	1	5	3.41	1.147
My farming practices have an impact on the environment	154	1	5	3.42	1.040
It is my personal responsibility to help protect the environment.	155	1	5	3.71	0.967
It is important to me to protect the environment even if it slows down economic growth of my farming activities.	155	1	5	3.45	0.995
The well-being of the community depends on the preservation of the environment	155	1	5	3.54	0.941
It is important to continuously assess the environmental and social impact of my farm	155	1	5	3.56	0.981
I perceive that my farm is an agricultural ecosystem that interacts with neighbouring landscapes.	155	1	5	3.68	0.897
I perceive that biodiversity should be managed to enable its protection and enhancement	155	1	5	3.67	0.941
I perceive that I should manage energy consumption of my farming activities	154	1	5	3.63	0.956
I perceive that I should enable the formation of organic carbon in soils and in biomass	152	1	5	3.82	0.950
I perceive that I should apply a soil management plan to improve and optimize soil health	155	1	5	3.78	0.885
I perceive that I should apply a water management plan to improve and optimize water use and quality	153	1	5	3.72	0.928
I perceive that plant protection products and other treatments should be applied appropriately and as recommended.	156	1	5	3.71	1.005

Note*: Answers range from Much less than the farmers that know to Much more than the farmers that I know*

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 146 Test Statistic 126.174 Degree of Freedom 16, Asymptotic Sig. (2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*

Overall, the results suggest that farmers perceive themselves as environmentally conscious professionals who understand farming as an ecological activity with broader landscape and community implications. While the strength of agreement varies across specific perceptions, the Friedman test

indicates statistically significant differences among items, confirming that farmers differentiate clearly between aspects of identity, responsibility, and specific environmental management practices.

In summary, Farmers exhibit strong pro-environmental values and a pragmatic approach to management. Attitudes reflect moderate risk aversion: respondents seldom change production systems unless confident of positive outcomes, yet they do not rigidly adhere to traditional methods, suggesting selective openness to innovation. Beliefs about control are balanced farmers emphasize managerial competence while acknowledging external factors such as weather and market conditions. Sustainability knowledge is considered essential, and many express concern about missing opportunities to protect the environment, indicating internal motivation rather than social pressure.

Perceptions reinforce this orientation. Farmers identify strongly with their role and community, while prioritizing ecological principles in farming. They recognize personal responsibility for environmental protection and endorse practices that safeguard biodiversity, soil health, water use, and energy efficiency. High agreement on statements about applying soil and water management plans, managing carbon formation, and appropriate use of plant protection products reflects a commitment to sustainable resource management. Overall, these findings portray farmers as environmentally conscious actors who integrate sustainability into their identity and operational decisions, while maintaining cautious flexibility toward change.

Farmers' biases

The next part of the analysis examined how farmers evaluate different biases that affect their decision-making process, particularly those related to sustainable practices and the adoption of more environmentally friendly approaches in their activities.

Optimism Bias

Responses indicate limited optimism bias regarding environmental risks and resource sufficiency. Farmers strongly anticipate that environmental changes - such as drought and soil degradation - will affect both their own farm (Mean = 4.15, SD = 0.85) and farms in their area (Mean = 4.13, SD = 0.98) over the next decade, showing high perceived vulnerability and relatively strong consensus (lower SDs). By contrast, confidence in natural recovery without intervention is low-to-moderate (Mean = 2.79), and perceptions of long-term resource sufficiency are mixed, with soil resources rated modestly adequate (Mean = 3.09, SD = 1.16) and water resources rated less adequate (Mean = 2.77, SD = 1.23) - suggesting greater concern for water than soil over a long horizon. Overall, these patterns portray a farmer population that recognizes near-term environmental risks and does not rely on passive natural recovery, while expressing caution about whether existing on-farm resources - especially water - can sustain current practices. A related-samples Friedman test confirms statistically significant differences among these bias-related perceptions ($\chi^2 = 299.538$, $df = 6$, $p < 0.001$), indicating respondents differentiate clearly between future risk, natural recovery, and resource sufficiency.

Confirmation Bias

Responses show that farmers place high importance on evidence when considering sustainable practices, with a slight preference for practical/in-field evidence (Mean = 3.98, SD = 0.93) over scientific evidence (Mean = 3.88, SD = 0.96). Information seeking is active and balanced: when hearing about sustainable practices, farmers report researching both benefits (Mean = 3.80, SD = 0.93) and drawbacks (Mean = 3.81, SD = 0.91) at similar levels, and they also look into who has applied them (Mean = 3.73, SD = 0.94), indicating attention to real-world adopters and context. Social trust matters - new techniques are more likely to be trusted when recommended by known, trusted people (Mean =

3.47, SD = 1.03) - but this sits below the importance attributed to direct evidence, suggesting that proof and performance weigh more than endorsement alone. Overall, the pattern reflects evidence-led yet socially informed decision-making, with moderate dispersion (SDs ≈0.9–1.0) indicating some heterogeneity of views. A related-samples Friedman test confirms statistically significant differences across these bias-related items ($\chi^2 = 42.188$, df = 5, $p < 0.001$), showing that farmers differentiate between sources and styles of confirmation (practical vs. scientific vs. social proof, and type of information sought).

Ambiguity Aversion

Farmers display moderate ambiguity aversion in their decision-making. They report a clear preference to avoid adopting new practices unless outcomes are well understood (Mean = 3.62, SD = 1.02), indicating a premium on clarity and predictable results before committing to change. Consistently, they prefer inputs with predictable but lower yield improvements over options with higher but uncertain returns (Mean = 3.28, SD = 1.15), and they avoid trying new or sustainable practices when benefits are not guaranteed (Mean = 3.24, SD = 1.10). These patterns suggest a cautious stance toward uncertainty and a tendency to favour proven approaches, while the standard deviations (≈1.0–1.15) point to heterogeneity across respondents - some are notably more conservative than others. A related-samples Friedman test confirms statistically significant differences among these items ($\chi^2 = 19.077$, df = 2, $p < 0.01$), indicating that farmers distinguish between understanding outcomes, predictable input performance, and guaranteed benefits when evaluating ambiguous choices.

Risk or Loss Aversion

Farmers' responses indicate a pragmatic stance toward risk and loss: while there is some tendency to stick with familiar methods (Mean = 2.88), there is strong willingness to try new practices to protect the environment (Mean = 3.74) and to accept lower yields in the first year when higher yields are expected subsequently (Mean = 3.74), suggesting openness to change when longer-term payoffs are credible. Concerns about loss are primarily financial - both formulations of "financial loss is my primary concern" score high (Means = 3.73 and 3.68) - with lower yields also a salient worry (Mean = 3.54) and lack of knowledge a moderate barrier (Mean = 3.30). Willingness to accept persistently lower yields for environmental protection is more tempered (Mean = 3.16), highlighting a trade-off sensitivity when benefits are not compensatory over time. The dispersion across items (SD ≈ 0.85–1.16) indicates heterogeneity of risk tolerance within the sample. A related-samples Friedman test confirms statistically significant differences among these loss- and risk-related evaluations ($\chi^2 = 102.692$, df = 7, $p < 0.001$), showing that farmers distinguish clearly between short-term sacrifices with long-term gains, financial versus yield risks, and knowledge constraints when considering sustainable practice adoption.

Status Quo Biases

Farmers' responses suggest measured satisfaction with current practices alongside a clear long-term orientation and cost sensitivity. Overall satisfaction with present farming methods is moderate (Mean = 3.45, SD = 1.09), and satisfaction with family-tradition practices is lower but still moderate (Mean = 3.05, SD = 1.21). Importantly, aversion to experimentation appears limited: the tendency to avoid trying new practices scores relatively low (Mean = 2.43, SD = 1.01). Economic considerations are salient. Cost savings exert the strongest immediate influence (Mean = 3.73, SD = 0.91), followed by immediate profits (Mean = 3.34, SD = 1.02). Consistent with this, farmers show willingness to adopt sustainable practices when long-term payoffs are credible, whether via income increases in five years despite higher upfront costs (Mean = 3.72, SD = 0.93) or cost reductions over five years with higher initial expenses (Mean = 3.60, SD = 0.97). Conversely, a preference for immediate results - even at the expense of long-term benefits - is low (Mean = 2.72, SD = 1.09), as is the tendency to prioritize short-term profits over the future health of the farm (Mean = 2.56, SD = 1.08). Willingness to adopt a sustainable practice without a future income increase is modest (Mean = 2.95, SD = 1.10), indicating that economic incentives are

often pivotal for adoption decisions. The strongest consensus appears around considering the long-term impact on soil and water resources, which records the highest mean (3.88, SD = 0.90), underscoring a forward-looking stewardship mindset. A related-samples Friedman test confirms statistically significant differences across these status-quo-related items ($\chi^2 = 342.744$, df = 11, $p < 0.001$), indicating that respondents clearly differentiate between satisfaction, immediate economic drivers, and long-term environmental considerations when evaluating whether to change or maintain their current practices.

Cognitive Limitations

Farmers' responses indicate that clarity and simplicity in information delivery are pivotal for adopting sustainable practices. Most find it easy to understand information about such practices (Mean = 3.61), yet a non-trivial share would avoid adoption if the information is too complicated (Mean = 3.31) or requires too much time to implement (Mean = 3.11), highlighting cognitive load and time constraints as practical barriers. Conversely, structured guidance strongly facilitates adoption: step-by-step guides (Mean = 3.99, SD = 0.85), live or field demonstrations (Mean = 4.04, SD = 0.84), visual aids (Mean = 3.93, SD = 0.84), and clearly explained, easy-to-follow steps (Mean = 3.85) each receive high endorsement, suggesting that hands-on, visual, and process-oriented communication formats substantially reduce decision frictions. Perceived technical knowledge barriers are relatively low-to-moderate (Mean = 2.72) and feeling overwhelmed by information sits in the mid-range (Mean = 2.95), pointing to heterogeneity in cognitive limitations across the sample rather than pervasive constraints. Overall, the pattern underscores that practical demonstrations and concise, step-wise materials are the most effective levers to support adoption, while simplifying complex content and minimizing time burdens should be priorities for advisory services. A related-samples Friedman test confirms statistically significant differences among these items ($\chi^2 = 270.681$, df = 8, $p < 0.001$), indicating that farmers clearly differentiate between comprehension, effort, and the enabling role of specific instructional formats.

Trust and Reciprocity Biases

Farmers' evaluations of trust and reciprocity indicate a clear hierarchy of credible advice sources and a strong norm of experiential proof before endorsing practices to others. Trust is highest for research/academic centres (Mean = 3.82, SD = 0.86) and farm advisors (Mean = 3.67, SD = 0.86), followed by public agricultural extension services at a moderate level (Mean = 3.23, SD = 1.02) and NGOs slightly lower (Mean = 3.08, SD = 1.00). Social media, farm influencers, and mainstream media attract the lowest trust (Mean = 2.73, SD = 1.07), underscoring a preference for expert-backed and professionally mediated guidance over informal or mass-media channels. Reciprocity dynamics are pronounced: farmers report being more likely to trust advice from someone who has personally benefited (Mean = 3.72, SD = 0.88) and are willing to adopt practices recommended by a neighbour with proven success (Mean = 3.52, SD = 0.95). Importantly, they prefer to recommend a sustainable practice only after successfully implementing it themselves (Mean = 3.98, SD = 0.77), highlighting a strong ethic of "proof before recommendation." Overall variability is moderate (SDs ≈ 0.77–1.07), suggesting some heterogeneity across respondents, but the pattern is consistent: expert and evidence-based channels drive trust, while personal demonstration and realized benefits drive both adoption and peer-to-peer diffusion. A related-samples Friedman test confirms statistically significant differences among these trust/reciprocity items ($\chi^2 = 254.144$, df = 7, $p < 0.001$), indicating that farmers clearly differentiate between institutional sources, social/media channels, and reciprocity conditions when forming adoption decision

Social Comparison Biases

Farmers' responses show that social cues matter but do not dominate their adoption decisions. They frequently discuss farming practices with other farmers (Mean = 3.72, SD = 1.00) and feel more

confident adopting a sustainable practice when others in the community do so (Mean = 3.49, SD = 0.96). Many would adopt if a practice became common locally (Mean = 3.35, SD = 0.99) and often consider neighbours' practices in their own decisions (Mean = 3.07, SD = 1.10), though a simple preference for common practices is only moderate (Mean = 3.07, SD = 1.07). At the same time, independence is strong: respondents report being willing to try a sustainable practice even if no one else does (Mean = 3.79, SD = 0.89), while hesitancy until others try first is relatively low-to-moderate (Mean = 2.90, SD = 1.10). Peer pressure appears limited; alignment with neighbours' practices (Mean = 2.76, SD = 0.97) and feeling pressured to adopt when most peers encourage it (Mean = 2.75, SD = 1.03) both scores comparatively low. Taken together, these patterns depict farmers as socially connected and receptive to social proof; yet maintaining autonomy in decisions. Dispersion is moderate across items (SDs ≈ 0.89 –1.10), indicating heterogeneity in social influence sensitivity. A related-samples Friedman test confirms statistically significant differences among social-comparison items ($\chi^2 = 202.346$, $df = 8$, $p < 0.001$), showing that respondents distinguish between community discussion, confidence from others' adoption, conformity, and susceptibility to peer pressure.

Summary of Decision-Making Biases

The analysis of cognitive and behavioural biases reveals important patterns shaping farmers' adoption of sustainable practices. Optimism bias is limited: farmers anticipate significant environmental risks such as drought and soil degradation in the next decade and express concern about resource sufficiency, particularly water. Confirmation bias shows that decisions are strongly evidence-driven, with practical and scientific proof prioritized over social endorsement, though trust in familiar sources remains relevant. Ambiguity aversion is moderate; farmers prefer clarity and predictable outcomes, avoiding practices with uncertain benefits. Risk and loss aversion centres on financial concerns and yield reductions, yet many are willing to adopt new practices when long-term gains are credible, even if short-term sacrifices are required. Status quo bias is present but not dominant: while satisfaction with current methods exists, farmers prioritize long-term soil and water health and show readiness to adopt sustainable practices when economic incentives align. Cognitive limitations highlight the importance of clear, simple communication - step-by-step guides, visual aids, and demonstrations significantly increase adoption likelihood, while complexity and time demands deter change. Trust and reciprocity biases emphasize reliance on expert sources (research centres, advisors) and experiential proof; farmers prefer to recommend practices only after personal success. Social comparison biases indicate that community norms and peer behaviour influence confidence, but autonomy remains strong; farmers are willing to act independently despite limited peer adoption. Overall, these findings suggest that farmers are environmentally aware and cautiously progressive, balancing economic viability with sustainability goals. Effective interventions should reduce complexity, provide practical demonstrations, leverage trusted expert channels, and frame sustainable practices as both environmentally and economically beneficial.

Farmers' motives evaluation

The next part of the analysis examined how farmers evaluate different motives that could influence their decision-making processes, particularly those related to sustainable practices and the adoption of more environmentally friendly farming systems. Three main categories of motives were considered - namely economic, emotional, and educational - followed by an assessment of a series of nudge interventions. The evaluation was two folded once for their selves and a second time for what they believe that could motivate other farmers in their area.

Economic Benefits – Motives

Farmers rate direct, tangible economic incentives as the most compelling motives for adopting sustainable practices. The strongest drivers are increased subsidies for sustainable practices (Mean = 4.41) and subsidies or grants for sustainable investments (Mean = 4.38), followed by reduced input

costs (Mean = 4.19) and subsidy discipline ensuring proper use (Mean = 4.16). Efficiency and resilience motives also score highly, with water and energy efficiency (Mean = 4.13), export opportunities to niche markets (Mean = 3.90), long-term climate resilience (Mean = 3.93), and reduced insurance costs (Mean = 3.85) all indicating substantial appeal. Mid-tier incentives include market premiums for certified sustainable/organic products (Mean = 3.60), legal enforcement (Mean = 3.51), carbon credits or environmental payments (Mean = 3.46), and industry investment/market mechanisms (Mean = 3.41), with comparatively higher dispersion (SD ≈ 1.3–1.4) suggesting mixed views across respondents. The least motivating option is taxes on conventional products (Mean = 2.69, SD = 1.54), reflecting limited support for punitive measures relative to positive, supportive incentives.

Farmers at the same time believe that economic incentives are the strongest motivators for their peers to adopt sustainable practices, with increased subsidies (Mean = 4.51) and grants for sustainable investments (Mean = 4.32) rated highest. Other highly influential factors include reduced input costs (Mean = 4.12) and efficiency improvements in water and energy use (Mean = 4.04). Export opportunities (Mean = 3.93), insurance cost reductions (Mean = 3.82), and long-term climate resilience (Mean = 3.70) are also considered important, though slightly less compelling. Moderate drivers include market premiums for certified products (Mean = 3.62) and legal enforcement (Mean = 3.56), while carbon credits and industry investment mechanisms rank lower (Means ≈ 3.41). The least motivating factor is taxes on conventional products (Mean = 2.62), indicating that positive incentives are perceived as far more effective than punitive measures.

Overall, the pattern suggests that positive economic incentives - especially subsidies, grants, and cost reductions - are viewed as the most effective levers for promoting sustainable farming, while penalties and abstract market mechanisms hold limited appeal. Friedman tests confirm statistically significant differences among motives for both respondents ($\chi^2 = 300.600$, $p < 0.001$) and their perceptions of peers ($\chi^2 = 295.446$, $p < 0.001$), highlighting clear prioritization of direct financial benefits over regulatory or indirect approaches.

Paired t-tests show no statistically significant differences between how respondents rate most economic motives for themselves versus how they believe other farmers in their area are motivated (all $p \geq 0.155$), indicating broadly similar prioritization across subsidies, grants, reduced input costs, efficiency gains, market premiums, legal enforcement, carbon credits, industry mechanisms, taxes on conventional products, export opportunities, and insurance cost reductions. The only significant gap appears for long-term benefits through climate resilience (Mean difference = +0.228, $t = 2.604$, $df = 144$, $p = 0.010$), where respondents rate this motive higher for themselves than for their peers - suggesting they see their own decisions as slightly more influenced by long-horizon resilience than those of other farmers. Directionally (but not significantly), respondents rate themselves a touch lower than peers on increased subsidies (−0.082) and legal enforcement (−0.048), and higher on items such as water/energy efficiency (+0.110), grants (+0.096), reduced input costs (+0.095), and taxes on conventional products (+0.090). Two items show mean differences of 0.000 (export opportunities; industry investment), consistent with no perceived gap. Overall, the magnitude of differences is small (≈0.1–0.2 on a 1–5 scale), reinforcing that respondents view themselves and their local peers as motivated in very similar ways, with a modest self-attributed tilt toward climate resilience.

In summary, farmers perceive financial incentives and cost-related benefits as the strongest motivators for adopting sustainable practices - both for themselves and for peers in their area. For respondents personally, increased subsidies (Mean = 4.41) and grants for sustainable investments (Mean = 4.38) rank highest, followed closely by reduced input costs (Mean = 4.19) and efficiency gains in water and energy use (Mean = 4.13). Similar priorities appear in their views of other farmers, where subsidies (Mean = 4.51) and investment grants (Mean = 4.32) dominate, with reduced input costs (Mean = 4.12) and efficiency improvements (Mean = 4.04) also highly rated.

Economic motives emerge as highly effective levers for encouraging sustainable farming adoption, with respondents and their perceptions of peers both prioritizing positive financial incentives over punitive measures. The strongest motivators include increased subsidies, grants for sustainable investments, and reduced input costs, all scoring above 4 on a 5-point scale. Efficiency improvements (water and energy) and export opportunities also rank high, while market premiums, insurance cost reductions, and long-term climate resilience provide additional appeal. Conversely, taxes on conventional products and indirect mechanisms such as carbon credits or industry investment schemes are rated significantly lower, indicating that farmers respond more favourably to supportive, tangible benefits than to regulatory or market-based penalties. Paired comparisons show minimal differences between respondents and their perceptions of peers, reinforcing that these economic drivers are broadly influential across the farming community. Overall, the findings suggest that direct financial support and cost-saving measures are the most effective strategies for promoting sustainable practices, especially when combined with clear economic benefits over time.

Emotional Motives

The emotional motives most likely to drive respondents toward sustainable practices are pride and stewardship. The strongest endorsements centre on preserving family land (Mean = 4.32) and leaving a healthy, productive farm for future generations (Mean = 4.30), closely followed by cultivating in ways that protect the environment (Mean = 4.24) and contributing to food safety (Mean = 4.22). Respondents also express high pride in protecting wildlife and pollinators (Mean = 4.20) and supporting food security (Mean = 4.17), alongside strong satisfaction from “farming the right way” (Mean = 4.15) and a pronounced sense of responsibility to protect the environment (Mean = 4.10). Community-oriented and self-development motives are salient - helping the local community (Mean = 4.02) and improving personal sustainability skills (Mean = 3.99) - with pride in contributing to climate resilience (Mean = 3.97) also rated positively, though slightly lower. In contrast, alignment with spiritual/religious beliefs shows the lowest mean (3.22) and the highest dispersion (SD = 1.55), indicating substantial variation across respondents. Overall, emotional drivers are strongly pro-environment and intergenerational, emphasizing legacy, ethical practice, and public goods; a Friedman test confirms significant differences among items ($\chi^2 = 175.323$, df = 11, $p < 0.001$), showing clear prioritization of stewardship and pride over more individualized or belief-based motives.

Respondents perceive that peers in their area are primarily motivated by stewardship and community-oriented pride, with the strongest endorsements for preserving family land (Mean = 4.01) and contributing to food security (Mean = 3.86), leaving a healthy, productive farm for future generations (Mean = 3.84), and food safety (Mean = 3.82). Values linked to ethical practice and local impact are also salient: “farming the right way” (Mean = 3.75), helping the local community (Mean = 3.73), and cultivating in ways that preserve the environment (Mean = 3.71), alongside protecting wildlife and pollinators (Mean = 3.71). Motives tied to climate resilience (Mean = 3.63) and a general sense of responsibility to protect the environment (Mean = 3.60) are rated positively, while improving personal sustainability skills is somewhat less influential (Mean = 3.55). Alignment with spiritual or religious beliefs registers the lowest average (Mean = 3.03), with relatively high variability, indicating heterogeneous views across peers. Overall, the pattern suggests that legacy, public-good contributions, and ethical stewardship are seen as the most compelling emotional drivers for other farmers, and a Friedman test confirms statistically significant differences across motives ($\chi^2 = 134.148$, df = 11, $p < 0.001$), highlighting clear prioritization among these sentiments.\

Paired comparisons between respondents’ own emotional motives and their perceptions of other farmers show a consistent, statistically significant self–other gap, with respondents rating emotional drivers higher for themselves across all items. The largest differences (on a 1–5 scale) appear for pride in cultivating land that preserves the environment (Mean $\Delta = 0.541$, $t = 5.678$, $p < 0.001$), responsibility to protect the environment ($\Delta = 0.517$, $t = 5.730$, $p < 0.001$), pride in protecting wildlife and pollinators

(Δ = 0.514, t = 5.444, p < 0.001), leaving a healthy, productive farm for future generations (Δ = 0.466, t = 5.804, p < 0.001), satisfaction from “farming the right way” (Δ = 0.432, t = 5.510, p < 0.001), and improved personal sustainability skills (Δ = 0.449, t = 5.513, p < 0.001). Differences are also significant - though slightly smaller - for helping the local community (Δ = 0.315, p < 0.001), contributing to food safety (Δ = 0.421, p < 0.001), food security (Δ = 0.324, p < 0.001), and climate resilience (Δ = 0.349, p < 0.001). The smallest gap is for alignment with spiritual/religious beliefs (Δ = 0.197, t = 2.171, p = 0.032), yet it remains statistically significant. Taken together, these results indicate that respondents see themselves as more strongly driven by stewardship, legacy, and ethical pride than they believe their peers are, with modest-to-moderate mean differences (~0.2–0.54) and robust significance across the sample.

Emotional motives appear to be highly effective drivers for sustainable farming adoption, with respondents rating them strongly across dimensions of legacy, pride, and stewardship. The most influential factors include preserving family land, leaving a productive farm for future generations, and protecting the environment and biodiversity, all scoring above 4 on a 5-point scale. Motives tied to ethical farming, food safety, and community contribution also rank high, while spiritual or religious alignment shows the lowest influence and greatest variability. Paired comparisons reveal that farmers consistently perceive themselves as more strongly motivated by these emotional factors than their peers, with statistically significant differences across all items. This suggests that while emotional drivers resonate broadly, they are seen as personal and identity-linked, reinforcing the importance of messaging that emphasizes heritage, responsibility, and pride in sustainable stewardship. Overall, emotional motives complement economic incentives by appealing to values and long-term aspirations, making them a powerful lever for promoting environmentally friendly practices.

Educational Motives

Educational motives appear to be highly effective in promoting sustainable farming adoption, with respondents strongly favouring clear, evidence-based communication and practical learning opportunities. The most influential factors are providing clear evidence of long-term financial benefits (Mean = 4.37) and cost savings (Mean = 4.40), underscoring the importance of demonstrating tangible economic outcomes. Hands-on approaches such as field days for training in sustainable methods (Mean = 4.17) and farmer-to-farmer knowledge exchange through cooperation (Mean = 4.25) also rank very high, highlighting the value of experiential learning and peer collaboration. Moderate drivers include educational programs for sustainability certifications, farm management, and time management, while marketing and school-based programs score slightly lower, suggesting they are supportive but less decisive. Overall, these findings indicate that education strategies combining financial evidence with practical, peer-driven learning formats are the most effective tools for influencing adoption, while generic or indirect educational efforts have comparatively less impact. A Friedman test confirms significant differences among motives (χ^2 = 174.976, p < 0.001), reinforcing the need to prioritize economic clarity and hands-on engagement in outreach programs.

Respondents perceive that their peers are most influenced by clear, evidence-based education demonstrating long-term economic outcomes. The strongest motivators are proof of cost savings (Mean = 4.32) and proof of financial benefits (Mean = 4.24), underscoring the importance of quantifiable, outcome-focused messaging. Practical, hands-on learning also ranks highly: field days for sustainable methods (Mean = 4.13) and new technology (Mean = 4.09), alongside farmer-to-farmer cooperation (Mean = 4.09) and mentoring (Mean = 3.97), highlight the value of peer-led and experiential training. General management education is moderately influential - farm management (Mean = 3.72) and time management (Mean = 3.57) - while marketing (Mean = 3.52), certification-oriented programs (Mean = 3.52), school-based programs (Mean = 3.50), and reorganization management (Mean = 3.43) are seen as supportive but less decisive. Variability across items (SD ≈ 0.92–1.36) suggests heterogeneous preferences among farmers. A related-samples Friedman test confirms significant differences among

motives ($\chi^2 = 201.871$, df = 11, $p < 0.001$), indicating clear prioritization of economic proof and practical, peer-enabled learning over more generic or indirect educational approaches.

Paired t-tests indicate that respondents generally rate educational motives as slightly more motivating for themselves than for other farmers, with several statistically significant self–other gaps. Significant positive differences (Me > Others) appear for farmer-to-farmer mentoring (Δ=0.143, t=2.206, p=0.029), farmer-to-farmer cooperation (Δ=0.184, t=3.008, p=0.003), programs leading to sustainability certifications (Δ=0.192, t=2.964, p=0.004), farm management training (Δ=0.136, t=2.297, p=0.023), time-management training (Δ=0.252, t=3.770, p<0.001), and school-based programs on sustainable farming (Δ=0.224, t=3.686, p<0.001). Differences for field days (both technology and sustainable methods), marketing, and reorganization management are not significant (p>0.10), suggesting respondents see these as similarly motivating for themselves and their peers. Evidence-focused items - clear long-term financial benefits (Δ=0.136, p=0.059) and cost savings (Δ=0.116, p=0.091) - are directionally higher for “me” but only marginal (not significant at 0.05).

The largest and most reliable gaps centre on structured, skills-oriented and formal learning supports (time management, school-based programs, certifications, and peer cooperation/mentoring), which respondents view as especially motivating for themselves compared with peers. By contrast, field-based demonstrations and economic-evidence messaging are perceived as equally persuasive for both self and others. Importantly, the magnitude of all gaps is small (≈0.10–0.25 on a 1–5 scale), implying broadly similar priorities overall, with a modest self-tilt toward organized, skill-building educational pathways.

Educational motives are shown to be highly effective drivers for sustainable farming adoption, particularly when they combine clear economic evidence with practical, hands-on learning opportunities. Farmers strongly value proof of long-term financial benefits and cost savings, alongside field-based training and peer-to-peer knowledge exchange, which rank among the top motivators. While general management and certification programs also play a role, their influence is moderate compared to evidence-driven and experiential approaches. Paired comparisons indicate that respondents see these educational supports as slightly more motivating for themselves than for peers, especially structured programs like time management, school-based initiatives, and certification pathways, though differences are small. Overall, the findings suggest that education strategies emphasizing financial clarity, practical demonstrations, and collaborative learning are the most effective tools for promoting sustainable practices, while generic or indirect educational efforts have comparatively less impact.

Nudges Evaluation

Nudges appear moderately to highly effective when they provide practical decision help and clear “how-to” support. The strongest levers are decision-support systems that quantify costs/benefits (Mean = 3.99) and easy-to-follow guides/toolkits (Mean = 3.93), closely followed by highlighting collective achievements of farmer groups/cooperatives (Mean = 3.90) and showcasing individual success stories with higher profits/yields (Mean = 3.83). Social media works best as a delivery channel for tangible, actionable content (Means ≈ 3.64–3.65), while messages that highlight environmental impacts or costs (Means ≈ 3.59–3.62) have solid but slightly lower influence; warnings about not adopting (Mean = 3.52) and color-coding eco-friendly inputs (Mean = 3.48) function as supportive cues rather than primary drivers. Outdoor billboards are least effective (Mean = 3.12). Variability is notable (SDs ≈ 1.1–1.48), indicating heterogeneous preferences, and a Friedman test confirms significant differences across nudges ($\chi^2 = 138.608$, df = 10, $p < 0.001$). Overall, the evidence favours actionable, benefits-focused, and peer-validated nudges over generic media messaging or purely negative framing, suggesting outreach should prioritize decision tools, simple implementation guides, and relatable success/collective stories delivered through channels farmers already use.

When evaluating what would work for other farmers in their area, respondents showed a similar pattern, with statistically significant differences among nudges (Friedman test: $\chi^2 = 132.09$, $p < 0.001$). Decision-support systems (Mean = 3.98) and highlighting collective achievements of farmer groups (Mean = 3.94) were rated most effective, followed closely by showcasing successful farmers (Mean = 3.91) and easy-to-follow guides or toolkits (Mean = 3.86). Media-based nudges, such as providing tangible benefits through social media (Mean = 3.77) and highlighting environmental impacts (Mean = 3.68), were perceived as more effective for others than for themselves. Billboards again received the lowest rating (Mean = 3.17). These results suggest that farmers believe their peers respond particularly well to social and collaborative nudges, combined with practical tools, while traditional advertising remains the least influential.

The paired-samples analysis comparing respondents' own ratings of nudges with their perceptions of what would work for other farmers shows near parity across most nudges, with no statistically significant differences in ten out of eleven pairs (all $p \geq 0.149$). The only significant difference appears for highlighting environmental costs (detrimental effects to the environment), where respondents rated this nudge slightly higher for themselves than for other farmers (Mean difference = +0.155, $t(147) = 2.276$, $p = 0.024$). Although statistically significant at the 0.05 level, the effect size is small, and this difference would be sensitive to multiple-comparison corrections, so it should be interpreted cautiously. Directionally (but not significantly), respondents tended to think that media and social-proof nudges - such as tangible benefits via social media, environmental impact messaging, success stories, and collective achievements - might work a bit better for other farmers (negative mean differences from −0.020 to −0.081). In contrast, practical tools - including easy-to-follow guides, decision-support systems, color-coding, and consequence framing - were rated marginally higher for themselves (positive mean differences from +0.020 to +0.088), though none of these gaps reached statistical significance. Overall, the findings suggest that intervention designs can be largely aligned for both target groups, with a small indication that cost-focused environmental messaging resonates more personally with respondents than they believe it does with peers.

In summary, farmers perceive nudges that provide practical decision-support tools and clear implementation guidance as the most effective for promoting sustainable behaviour. Socially oriented strategies, such as showcasing successful peers and highlighting collective achievements, also rank highly, reinforcing the role of social proof. Media-based approaches, including social media messaging and environmental impact awareness, are moderately effective, while traditional advertising like billboards is considered least impactful. Overall, the findings suggest that interventions should prioritize actionable tools combined with social influence, rather than relying solely on promotional or awareness campaigns.

Exploring Farmers' Advisors' Biases

Farm advisors play a crucial role in the adoption and dissemination of sustainable farming practices, acting as intermediaries between scientific research, policy measures, and farmers' decision-making. Understanding the factors that influence advisors' recommendations is essential for designing effective policies and interventions that promote environmentally and economically sustainable agriculture. While much research has focused on farmers' perceptions and behaviours, the attitudes, motivations, and biases of advisors themselves have received comparatively less attention.

This survey aimed to explore multiple dimensions of farm advisors' decision-making processes across Europe, including their demographics, professional activities, attitudes toward sustainability, perceptions of their role, and the various motivational and cognitive factors that influence their advisory practices. In particular, the survey examined four main categories of motivational drivers: economic, emotional, educational, and nudges, as well as a series of cognitive and behavioural biases—such as confirmation bias, optimism bias, risk aversion, status quo bias, and social comparison—that may affect how advisors interpret information and make recommendations.

By collecting both self-assessments and perceptions of peers within the advisors' regions, the survey provides a comprehensive view of how advisors perceive their own behaviours and how they believe others operate. This dual perspective allows for the identification of potential gaps between personal and collective norms, as well as opportunities to strengthen advisory services through targeted training, communication strategies, and policy instruments. Overall, the survey contributes valuable insights into the human and cognitive dimensions of agricultural advisory services, offering guidance for interventions aimed at enhancing the adoption of sustainable farming practices across Europe.

Farmers' Advisors' sample

The survey of European farmers' advisors comprised by 132 respondents, with a gender distribution of 53.6% male (n = 71) and 44.7% female (n = 59). The cohort was highly educated: 64.4% reported a Master's, postgraduate, or doctoral degree (n = 85), and 30.3% held a bachelor's degree (n = 40); only 5.3% reported upper secondary or college entrance qualifications (n = 7), indicating a strong tertiary educational profile. Most respondents were married (57.6%; n = 76), one-third were single (33.3%; n = 44), and 7.6% were divorced (n = 10), with small residuals suggesting item non-response for marital status.

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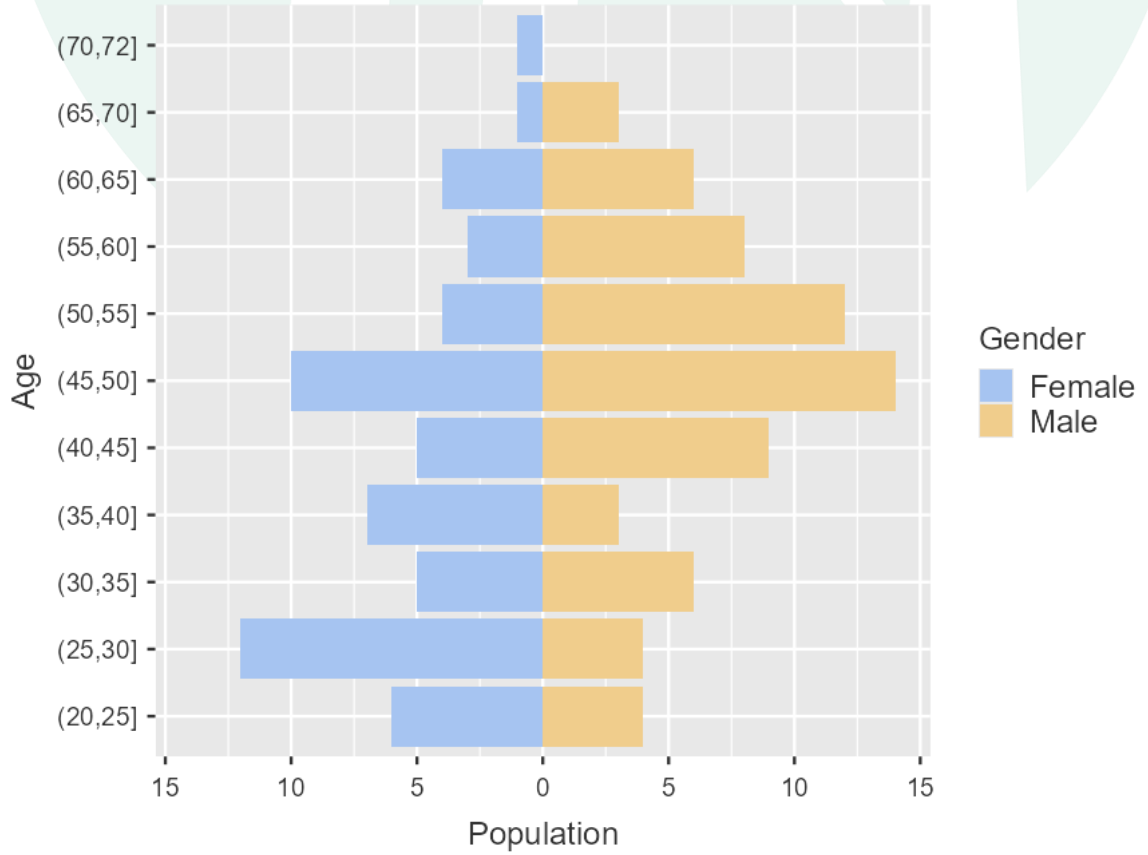
Advisors were distributed across eleven countries, most prominently Greece (28.0%; n = 37) and Portugal (22.7%; n = 30), with additional representation from Lithuania (14.4%; n = 19), Poland (8.3%; n = 11), Serbia and Spain (each 7.6%; n = 10), the UK (6.8%; n = 9), and smaller numbers from Slovenia (2.3%; n = 3), Austria, Bulgaria, and Sweden (each 0.8%; n = 1). In terms of declared advisory domains, the largest shares were Farm Management, Business & Funding (31.1%; n = 41), Agronomy & Crop Production (22.0%; n = 29), and Soil, Nutrition & Crop Protection (15.2%; n = 20), followed by

Sustainability & Environmental Advisory (9.1%; n = 12), Research/Innovation/Training (4.5%; n = 6), Agricultural Extension and Livestock (each 1.5%; n = 2); 15.2% did not specify their activity (n = 20).

Figure 4: Age pyramid for farmers' advisors participating in the survey.



Descriptive ratings (1 - 5 Likert scale) of specific advisory activities showed heterogeneous engagement across topics and items (N per item ≈ 118–124). The highest mean was observed for new technologies such as precision agriculture (Mean = 3.28, SD = 1.05), followed by other Agri-environment schemes (Mean = 2.97, SD = 1.18), managing subsidies (direct payments; Mean = 2.90, SD = 1.38), and young farmers' establishments (Mean = 2.89, SD = 1.26). Marketing (Mean = 2.69, SD = 1.31), organic Agri-environment schemes (AES; Mean = 2.76, SD = 1.27), and well-being activities (Mean = 2.55, SD = 1.22) occupied the middle range, while activities linked to European organic certification (Mean = 2.10, SD = 1.24) and European Protected Designation of Origin (PDO; Mean = 1.93, SD = 1.05) were rated lowest, indicating comparatively limited involvement or emphasis. A related-samples Friedman test confirmed statistically significant differences among activity ratings ($\chi^2 = 115.245$, df = 8, $p < 0.001$), supporting the conclusion that advisors differentially prioritize and practice these areas.

Frequency distributions provide additional granularity. For managing subsidies, engagement is broad but polarized: 25.0% reported "often" and 13.7% "always" (total 38.7%), while 24.2% reported "never" and 14.5% "rarely." Organic AES participation was more evenly spread, with the modal category "sometimes" (27.6%), and 29.3% reporting "often/always," contrasted with 43.1% "never/rarely." Other AES showed a balanced profile: "sometimes" was most common (33.6%), with 32.0% "often/always" and 34.4% "never/rarely." Activities tied to product quality certifications were notably low: for PDO,

68.8% reported “never/rarely” and only 7.3% “often/always”; for European organic certification, 67.2% “never/rarely” and 14.3% “often/always,” suggesting that certification advisory is a niche focus within the sample. Young farmers’ establishments displayed moderate engagement, with 27.6% “sometimes” and 34.2% “often/always,” and marketing products showed a uniform spread across categories, with 30.6% “often/always” and 47.1% “never/rarely.” New technologies stood out for higher active engagement—32.8% “often” and 10.7% “always,” alongside a substantial “sometimes” group (37.7%) and relatively few reporting “never” (7.4%). Finally, well-being activities were lower - priority for most, with 50.9% “never/rarely,” 25.4% “sometimes,” and only 23.7% “often/always.”

Taken together, the sample comprises predominantly highly educated advisors drawn largely from Southern and Eastern Europe, active across a diverse set of advisory domains. Their self-reported activity patterns indicate a clear emphasis on technology-oriented advisory and Agri-environment schemes beyond organic certification, moderate engagement with subsidy management, young farmers, and marketing, and limited involvement with PDO and organic certification procedures. The significant differences across items underscore structured heterogeneity in advisory practice, likely reflecting institutional mandates, market demands, and national policy environments across the participating countries. Variability in item-specific Ns and category spreads further suggests differential exposure and role specialization among advisors, warranting caution in generalization and pointing to opportunities for targeted capacity-building—particularly in certification-related advisory and well-being programming—where engagement appears comparatively low.

Farmers’ Advisors’ attitudes, and perceptions

The following table presents advisors’ attitudes as reported in the survey, revealing clear differences across perceptions, as confirmed by the Friedman test ($p < 0.001$). Overall, the results suggest a strong sense of responsibility and caution in advisory practices, alongside a clear commitment to understanding and supporting sustainability.

Advisors reported a high level of risk aversion in their recommendations, with a relatively high mean score for the statement “I never recommend anything that might not work” ($M = 3.80$), indicating a strong preference for reliable and proven solutions. At the same time, they did not appear strongly locked into tradition, as the tendency to recommend the same methods over years was relatively low ($M = 2.31$), suggesting openness to change when appropriate. This cautious openness is further reflected by the moderate agreement with the statement that they seldom change management and working approaches unless they are sure the change will be positive ($M = 3.15$).

Regarding beliefs about control and responsibility, advisors tend to attribute outcomes more to management than to innate factors. Agreement with the idea that management ability is mainly determined by genes was low ($M = 2.31$), while there was moderate agreement that “luck” reflects good or poor management ($M = 3.42$). At the same time, external factors were acknowledged, as shown by moderate agreement that poor results or failures are sometimes due to circumstances beyond one’s control, such as weather ($M = 2.65–3.02$).

Social agencies and collective impact were viewed positively. Advisors generally agreed that dedicated individuals can make a difference in local communities ($M = 3.43$), indicating a belief in the potential for individual action to drive change. Environmental attitudes were particularly strong: understanding sustainable practices received the highest mean score in the table ($M = 4.24$), highlighting sustainability knowledge as a central professional value. Advisors also reported discomfort when missing opportunities to help protect the environment ($M = 3.68$), reflecting a pronounced pro-environmental orientation. In contrast, social comparison pressure appeared limited, as concern about other advisors contributing more to environmental protection was relatively low ($M = 2.37$).

Table 4: Descriptives of Farmers' advisors' attitudes

Attitudes	N	Min	Max	Mean	Std. Dev.
I never recommend anything that might not work	130	1	5	3.80	1.308
I'm recommending the same methods over years	124	1	5	2.31	1.053
I reckon 'good luck' doesn't exist: 'luck' is good management and 'bad luck' poor management.	130	1	5	3.42	1.206
Although good management requires some training, experience and reading, the ability to manage is mainly determined by genes.	131	1	5	2.31	1.150
When my firm has shown poor results, this is due to circumstances totally out of my control.	131	1	5	2.65	1.143
In local communities it's easy for a hard-working and dedicated individual to have an impact in getting changes for the better.	130	1	5	3.43	1.011
I seldom change my management and working approaches unless I'm sure the change will be positive.	130	1	5	3.15	1.100
When things go wrong this is often due to events beyond my control (e.g. bad weather).	130	1	5	3.02	1.134
It bothers me when I think that other advisors are helping to protect environment more than me	131	1	5	2.37	1.197
It is important that I understand sustainable practices	128	1	5	4.24	.937
It bothers me when I miss an opportunity to help protecting the environment	130	1	5	3.68	1.094

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 118 Test Statistic 345.631 Degree of Freedom 11, Asymptotic Sig. (2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*

Overall variability (SDs ≈ 1.0–1.3) indicates heterogeneous views across advisors. A related-samples Friedman test confirmed statistically significant differences among attitudes ($\chi^2 = 345.631$, df = 11, $p < 0.001$; Total N = 118), demonstrating that advisors differentiate sharply between knowledge-oriented sustainability norms (most endorsed), professional caution and internal responsibility (moderately endorsed), and beliefs implying determinism, rigidity, or social comparison (least endorsed).

The following table examines the perceptions of farmers advisors compared to other advisors that respondent know in the boarder are where they operate. The table "Descriptives of Farmers' advisors' Perceptions" summarizes comparative self-ratings on a 1–5 scale (1 = "much less than the advisors I know," 5 = "much more than the advisors I know"). Across items (N per item = 125–129), all means were above the neutral midpoint, indicating respondents generally viewed themselves as more engaged than their peers on the listed dimensions. The highest scores concerned practice-oriented environmental management: ensuring that plant protection products and treatments are applied appropriately and as recommended (Mean = 3.84, SD = 0.87, N = 125) and applying a soil management plan to improve and optimize soil health (Mean = 3.82, SD = 0.81, N = 129). Closely following were perceiving farms as agricultural ecosystems interacting with neighbouring landscapes (Mean = 3.79, SD = 0.85, N = 129), and the views that biodiversity and energy consumption should be actively managed (both Means = 3.77, SD ≈ 0.82–0.85, N = 128–129). Additional management-related items were also elevated: enabling organic carbon formation in soils and biomass (Mean = 3.71, SD = 0.88,

N = 129), applying a water management plan (Mean = 3.69, SD = 0.81, N = 128), and continuously assessing environmental and social impacts (Mean = 3.67, SD = 0.83, N = 128).

Table 5: Descriptives of Farmers' advisors' Perceptions

Perceptions	N	Min	Max	Mean	Std. Dev.
Helping /advising farmers is an important reflection of who I am	129	2	5	3.59	0.767
I have a strong sense of belonging to the broader farming community	129	1	5	3.36	0.959
I perceive that the ecology of the farm is what farming is about	129	1	5	3.38	0.877
I see myself as a professional who prioritises the environment	128	1	5	3.49	0.803
My farming advice has an impact on the environment	129	1	5	3.46	0.857
It is my personal responsibility to help protect the environment.	128	1	5	3.61	0.825
It is important to me that farmers should protect the environment even if it slows down economic growth of their farming activities.	127	1	5	3.28	0.844
The well-being of the community depends on the preservation of the environment	129	1	5	3.59	0.880
It is important to continuously assess the environmental and social impact of farming activities	128	1	5	3.67	0.833
I perceive that farms are agricultural ecosystems that interact with neighbouring landscapes.	129	2	5	3.79	0.845
I perceive that biodiversity should be managed to enable its protection and enhancement	128	2	5	3.77	0.846
I perceive that farmers should manage energy consumption of their farming activities	129	2	5	3.77	0.815
I perceive that farmers should enable the formation of organic carbon in soils and in biomass	129	1	5	3.71	0.877
I perceive that farmers should apply a soil management plan to improve and optimize soil health	129	2	5	3.82	0.805
I perceive that farmers should apply a water management plan to improve and optimize water use and quality	128	2	5	3.69	0.811
I perceive that plant protection products and other treatments should be applied appropriately and as recommended.	125	2	5	3.84	0.865

Note*: Answers range from Much less than the advisors that know to Much more than the advisors that I know*

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 119 Test Statistic 126.952 Degree of Freedom 15, Asymptotic Sig. (2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*

Identity and responsibility perceptions sat modestly above the midpoint: personal responsibility to help protect the environment (Mean = 3.61, SD = 0.83, N = 128), helping/advising farmers as important to one's identity (Mean = 3.59, SD = 0.77, N = 129), and the community's well-being depending on environmental preservation (Mean = 3.59, SD = 0.88, N = 129). Professional self-positioning items were similarly positive: seeing oneself as a professional who prioritises the environment (Mean = 3.49, SD = 0.80, N = 128) and perceiving one's advice as having environmental impact (Mean = 3.46, SD = 0.86, N = 129). Items nearest the midpoint included viewing farm ecology as central to farming (Mean = 3.38, SD = 0.88, N = 129), a sense of belonging to the broader farming community (Mean = 3.36, SD = 0.96, N = 129), and the statement that farmers should protect the environment even if it slows economic growth (the lowest mean in the set; Mean = 3.28, SD = 0.84, N = 127). Variability was moderate across items (SDs typically ~0.77–0.96). A related-samples Friedman test indicated statistically significant differences among perceptions (Total N = 119; $\chi^2 = 126.952$, df = 15, $p < 0.001$), confirming that items were not rated uniformly.

The results of the table indicate that advisors generally perceive themselves, relative to other advisors they know, as strongly engaged with environmental responsibility and sustainability-oriented professional roles. Mean values across all perception items were above the scale midpoint, ranging from 3.28 to 3.84, suggesting consistently positive self-assessments.

Finally, the Related-Samples Friedman's test revealed statistically significant differences among the perception items ($\chi^2 = 126.952$, df = 15, $p < 0.001$), confirming that not all perceptions were evaluated equally strongly by respondents.

The two tables—Farmers' Attitudes and Farmers' Perceptions (self vs. other advisors)—jointly depict a cohort that is both knowledge-driven and environmentally oriented, while showing measured caution in practice and a sense of comparative leadership on operational stewardship. On attitudes (absolute 1–5 scale), respondents most strongly endorsed the importance of understanding sustainable practices (Mean = 4.24), paired with a cautious recommending stance ("I never recommend anything that might not work," Mean = 3.80). Beliefs reflect a predominantly internal locus of control (e.g., "luck is good management," Mean = 3.42; "individuals can drive local change," Mean = 3.43), tempered by recognition of external constraints (events beyond control, Mean = 3.02; poor results due to circumstances, Mean = 2.65). Advisors reject rigidity (recommending the same methods over years, mean = 2.31) and genetic determinism (ability mainly determined by genes, Mean = 2.31). Pro-environmental motivation is evident (bothered when missing opportunities to protect the environment, Mean = 3.68

Overall, the comparison shows that advisors' attitudes reflect personal caution and responsibility, while their perceptions emphasise professional identity, peer-relative competence, and endorsement of formal sustainability practices. Both tables demonstrate statistically significant differences among items, reinforcing that advisors differentiate clearly between various dimensions of sustainability, risk, and professional responsibility rather than expressing uniform agreement across all statements.

Farmers' Advisors' biases

Farmers advisors' decision-making is influenced by a range of cognitive, behavioural, and social biases, Advisors rely heavily on both scientific and practical evidence (confirmation bias), remain cautious under uncertainty (ambiguity and risk/loss aversion), and prefer clear guidance and demonstrations (cognitive limitations) when recommending sustainable practices. Trust in credible sources, such as research centres and experienced colleagues, strongly shapes their recommendations (trust/reciprocity), while peer behaviours and community norms have a moderate influence (social

comparison). Overall, advisors balance careful evaluation, long-term environmental considerations, and credible guidance in promoting sustainable farming practices. In more detail the survey results are:

Optimism Bias

The survey results on optimism bias among farm advisors (N = 131–132; 1–5 scale) indicate low optimism about resource sufficiency and high expectation of near-term environmental impacts. Advisors expressed the least agreement that water resources are sufficient to sustain current farming practices for a long period (Mean = 2.21, SD = 1.14) and similarly low agreement for soil resource sufficiency (Mean = 2.48, SD = 1.16). Confidence that the environment can recover naturally without human intervention was also modest (Mean = 2.74, SD = 1.14), suggesting recognition that active management is necessary. By contrast, advisors strongly endorsed that environmental changes such as drought or soil degradation are likely to affect farms in the next 10 years (Mean = 4.24, SD = 0.97) and their own business (Mean = 4.01, SD = 1.07), highlighting a clear expectation of tangible impacts within a decade. Overall dispersion is moderate across items (SD ≈ 0.97–1.16). A related-samples Friedman test confirmed statistically significant differences among the items ($\chi^2 = 219.659$, df = 4, $p < 0.001$), indicating that advisors differentiate sharply between resource sufficiency/natural recovery (lower agreement) and anticipated environmental risks (higher agreement).

Confirmation Bias

The survey evidence on confirmation-related motives among farm advisors (N ≈ 131–132; 1–5 scale) indicates a strong preference for evidence-based vetting of sustainable practices, with a clear emphasis on practical, in-field proof (Mean = 4.36, SD = 0.66) over, though still alongside, scientific evidence (Mean = 4.18, SD = 0.81). Advisors report active information seeking when encountering sustainable practices, researching both benefits (Mean = 3.99, SD = 0.85) and drawbacks (Mean = 3.98, SD = 0.84) at similar levels, suggesting a balanced appraisal rather than one-sided confirmation. They also investigate who has applied the practices (Mean = 3.86, SD = 0.92), indicating the importance of provenance and real-world exemplars. Reliance on trusted recommenders is present but comparatively lower (Mean = 3.70, SD = 0.85), implying that social proof complements rather than substitutes for direct evidence. Variability is modest, with the tightest consensus around practical evidence (lowest SD), reinforcing the salience of field demonstrations and decision-focused data. A related-samples Friedman test confirmed statistically significant differences among items ($\chi^2 = 77.865$, df = 5, $p < 0.001$), showing that advisors prioritize in-field validation first, scientific support second, and social endorsement and case provenance as additional, meaningful checks when assessing sustainable practices.

Ambiguity Aversion

The survey evidence on ambiguity aversion among farm advisors (N = 127–130; 1–5 scale) indicates a clear tendency toward caution when outcomes are uncertain. Advisors most strongly endorsed avoiding suggestions of new practices unless they fully understand the outcomes (Mean = 3.88, SD = 0.89), followed by avoiding new/sustainable practices when benefits are not guaranteed (Mean = 3.65, SD = 0.97). Preferences also leaned toward predictable inputs with modest yield improvements over options with higher but uncertain returns (Mean = 3.52, SD = 0.90). Dispersion is moderate across items, suggesting some heterogeneity but a broadly shared risk-averse posture toward uncertainty. A related-samples Friedman test confirmed statistically significant differences across the three statements ($\chi^2 = 13.403$, df = 2, $p < 0.01$), indicating that advisors prioritize full understanding of outcomes most strongly, with guaranteed benefits and predictable returns also valued but to a slightly lesser degree. Overall, the pattern reflects moderate-to-high ambiguity aversion, favouring well-evidenced and predictable interventions over innovative options with uncertain payoffs.

Risk or Loss Aversion

The survey results on risk or loss aversion among farm advisors (N = 125–131; 1–5 scale) show a balanced profile of innovation willingness tempered by concerns about financial and yield risks. Advisors reported strong willingness to suggest new practices to protect the environment (Mean = 3.98, SD = 0.79) and to adopt practices with short-term yield reductions followed by later gains (Mean = 3.97, SD = 0.85), indicating openness to change when longer-term benefits are clear. At the same time, farmers' financial loss (Mean = 3.82, SD = 0.97) and lower yields (Mean = 3.66, SD = 0.95) were salient primary concerns, with lack of knowledge also noted (Mean = 3.46, SD = 1.12). Willingness drops when environmental protection is explicitly tied to sustained or unspecified yield reductions (Mean = 3.21, SD = 0.96), suggesting advisors prefer environmentally beneficial changes that avoid enduring productivity penalties or are offset by future gains. Notably, the preference to stick with familiar methods even if new ones could be better was below the midpoint (Mean = 2.73, SD = 0.92), pointing to limited status-quo bias. Overall dispersion is moderate across items, and a related-samples Friedman test confirmed statistically significant differences in these ratings ($\chi^2 = 178.745$, df = 6, $p < 0.001$), indicating advisors distinguish clearly between acceptable risk profiles (short-term losses with long-term gains, environmental protection) and less acceptable ones (potential financial loss or persistent yield reductions).

Status Quo Biases

The survey results on status quo biases among farm advisors (N = 124–131; 1–5 scale) indicate a predominantly long-term, cost-aware orientation with limited short-termism or rigidity. Advisors strongly endorsed always considering the long-term impact on soil and water resources (Mean = 3.92, SD = 0.86) and reported that farmers' cost savings influence their decisions (Mean = 3.88, SD = 0.70). They also showed high willingness to recommend sustainable practices with delayed economic returns, whether framed as income increases in five years with higher upfront costs (Mean = 3.80, SD = 0.76) or cost reductions over five years with higher initial expenses (Mean = 3.69, SD = 0.85). Satisfaction with current advising practices was above the midpoint (Mean = 3.71, SD = 0.82), while immediate profits had only a moderate influence (Mean = 3.26, SD = 0.93). In contrast, status-quo rigidity and short-termism were low: advisors do not avoid suggesting new practices (Mean = 2.15, SD = 0.71), do not prioritize short-term profits over future farm health (Mean = 2.33, SD = 0.96), and do not prefer immediate results when long-term outcomes may be negative (Mean = 2.59, SD = 0.91). Views were more mixed regarding recommendations without a future income increase (Mean = 3.04, SD = 0.96) and hesitation when long-term environmental benefits lack immediate financial gain (Mean = 2.78, SD = 1.01), suggesting a pragmatic balance between stewardship and economic considerations. A related-samples Friedman test confirmed statistically significant differences across items ($\chi^2 = 493.786$, df = 10, $p < 0.001$), indicating that advisors differentiate clearly between long-term, cost-saving frames (most endorsed) and short-term or status-quo preferences (least endorsed).

Cognitive Limitations

The survey results on cognitive limitations among farm advisors (N = 130–131; 1–5 scale) indicate strong receptivity to clear, structured information and experiential learning, alongside moderate sensitivity to information complexity. Advisors most strongly endorsed that they would be more likely to suggest a new practice when steps are clearly explained and easy to follow (Mean = 4.17, SD = 0.74), when demonstrations are used (Mean = 4.11, SD = 0.73), when step-by-step guides are available (Mean = 4.08, SD = 0.81), and when visual aids accompany guidance (Mean = 3.97, SD = 0.79). Self-assessed comprehension was also high ("It is easy for me to understand information about sustainable practices": Mean = 3.88, SD = 0.88), while concerns that sustainable practices require "too much technical knowledge" were relatively low (Mean = 2.61, SD = 0.98), suggesting confidence in handling technical content. At the same time, advisors reported they may avoid suggesting a practice

if information is too complicated (Mean = 3.27, SD = 1.00) and sometimes feel overwhelmed by the volume of information (Mean = 3.19, SD = 1.05), indicating that clarity and curation matter. Overall variability was moderate, with the tightest consensus around the value of structured, demonstrative materials. A related-samples Friedman test confirmed statistically significant differences across items ($\chi^2 = 312.956$, df = 7, $p < 0.001$). Taken together, the pattern points to a practical pathway for uptake: simplify presentation, provide stepwise instructions, use visuals and live demonstrations, and streamline information to reduce cognitive load.

Trust and Reciprocity Biases

The results regarding trust and reciprocity biases indicate that advisors place the highest trust in evidence and recommendations coming from research and academic centres (M = 3.89), as well as in colleagues who have successfully implemented sustainable practices (M = 3.83) and individuals who have personally benefited from applying such practices (M = 3.78). This suggests that advisors value both scientific credibility and practical, demonstrated outcomes when considering whether to recommend sustainable practices. Conversely, lower trust is reported for advice from retailers (M = 2.75), the food/supply industry (M = 3.02), and non-governmental organizations (M = 3.01), indicating that advisors are more cautious about external or commercial sources. Additionally, advisors emphasize the importance of personal conviction in the feasibility of a practice before recommending it to farmers (M = 3.82). The Friedman test is statistically significant ($p < 0.001$), confirming meaningful differences among these items and highlighting that the source of information and perceived credibility strongly influence advisors' recommendations in sustainable agriculture. The related-samples Friedman test (N=126) indicated statistically significant differences among items, χ^2 (7) =266.404, $p<.001$, confirming that responses varied systematically across these trust/reciprocity sources and conditions.

Social Comparison Biases

Across the Social Comparison items (Likert 1–5), advisors most strongly endorsed discussing farming practices with other professionals (M=3.79, SD=0.79, N=131) and considering colleagues' advice in their own decisions (M=3.63, SD=0.87, N=131). Confidence increased when observing peers: feeling more confident suggesting a practice if other advisors do the same (M=3.50, SD=0.91, N=131), alongside a reasonably high willingness to suggest a sustainable practice even if no one else in the community does (M=3.46, SD=0.94, N=129), indicating both social influence and some independence. Preferences for conformity were more moderate: preferring common practices in the community (M=3.11, SD=0.86, N=131) and hesitancy until seeing how others perform (M=3.08, SD=0.88, N=130). Lower endorsement appeared for stronger conformity pressures: importance of aligning advice with colleagues (M=2.95, SD=0.90, N=130), suggesting a practice only if it becomes the most common locally (M=2.91, SD=0.91, N=131), and feeling pressured to suggest a new practice if most peers encourage it (lowest, M=2.73, SD=0.90, N=131). Dispersion was consistently moderate (SDs ≈0.79–0.94), responses spanned the full 1–5 range, and a related-samples Friedman test (Total N=124) indicated statistically significant differences among items, $\chi^2(8)=170.626$, $p<.001$, confirming meaningful variation across these social comparison tendencies

Summary of Decision-Making Biases

The survey examined a range of cognitive, behavioural, and social biases influencing farmers advisors' decisions, particularly regarding the recommendation of sustainable practices. The analysis included confirmation bias, optimism bias, ambiguity aversion, risk/loss aversion, status quo bias, cognitive limitations, trust/reciprocity biases, and social comparison biases. All biases showed statistically significant differences across their respective items (Friedman tests, $p < 0.01$), highlighting their heterogeneous impact on decision-making.

- Optimism Bias showed that advisors tended to underestimate the sufficiency of soil (M = 2.48) and water resources (M = 2.21) for sustaining current practices while acknowledging that environmental changes, such as drought or soil degradation, are likely to affect their farms or clients' farms in the next decade (M > 4.0). This suggests an awareness of future risks coupled with moderate confidence in current resource resilience.
- Confirmation Bias was prominent, with advisors placing high importance on both scientific (M = 4.18) and practical, field-based evidence (M = 4.36) when recommending sustainable practices. Advisors also reported verifying benefits, drawbacks, and prior adopters of new practices, reflecting a deliberate evaluation process.
- Ambiguity Aversion was evident, with advisors preferring to suggest practices with predictable outcomes (M = 3.52) and avoiding recommendations if benefits were uncertain (M = 3.65). Similarly, risk/loss aversion indicated caution toward potential financial loss or lower yields (M ~3.2–3.82), though advisors were willing to recommend practices with delayed environmental or productivity benefits (M ~3.97–3.98), reflecting balanced risk-taking for long-term gains.
- Status Quo Biases highlighted a mix of satisfaction with current advisory practices (M = 3.71) and consideration of long-term environmental impacts (M = 3.92), but lower willingness to prioritize short-term profits over sustainable outcomes (M = 2.33) or recommend practices without future income benefits (M = 3.04).
- Cognitive Limitations showed that advisors generally find sustainable practices understandable (M = 3.88), but they are more likely to recommend practices when clear explanations, step-by-step guides, visual aids, or demonstrations are provided (M ~3.97–4.17), indicating that accessible information significantly facilitates adoption.
- Trust/Reciprocity Biases revealed reliance on trusted sources, especially research/academic centres (M = 3.89) and colleagues with successful experience (M ~3.82–3.83), while less weight was given to NGOs, industry actors, or retailers (M ~2.75–3.02). This underscores the importance of credibility and demonstrated effectiveness in advisory recommendations.
- Finally, Social Comparison Biases highlighted the moderate influence of peers: advisors often consider colleagues' advice (M = 3.63) and discuss practices with others (M = 3.79), yet they are less influenced by conformity pressure or community norms alone (M ~2.73–2.95), reflecting a balance between peer input and independent judgment.

Overall, these results suggest that while farmers advisors are generally cautious, evidence-oriented, and responsive to credible guidance, they also integrate personal judgment and long-term environmental considerations into their decision-making. Biases such as confirmation, ambiguity, and social comparison shape advisory behaviour, but advisors demonstrate the capacity to weigh multiple factors, reflecting a nuanced decision-making process in promoting sustainable practices.

Farmers' Advisors' motives evaluation

This part of the analysis examines survey responses from farm advisors to identify which motives (economic, emotional, educational) and nudges most influence advisory decisions. For each domain, descriptives for advisors' own ratings and their perceptions of other advisors in the region are reported, followed by paired "Me−Others" tests to detect self–other gaps. Items were scored on Likert 1–5 scales; within-domain differences were assessed using related-samples Friedman's ANOVA, and paired differences with t-tests. The goal is to highlight the most salient levers and delivery mechanisms—without cross-category comparisons—to inform practical program design and communication strategies.

Economic Benefits – Motives

Across the Economics Benefits – Motives that could work for the respondent (Likert 1–5), advisors expressed strongest endorsement for direct financial incentives, notably subsidies for investments in

sustainable farming (M=4.26, SD=0.96, N=126) and increased subsidies for sustainable practices (M=4.25, SD=1.12, N=130). Cost-side benefits also rated highly, including reduced input costs (M=4.02, SD=1.25, N=125), water and energy efficiency (M=3.90, SD=1.17, N=125), and long-term benefits through climate resilience (M=3.87, SD=1.15, N=126). Market and risk-related advantages were moderately high: export opportunities to niche markets (M=3.65, SD=1.24, N=126), reduction in insurance costs (M=3.67, SD=1.17, N=126), and market premiums for certified organic/sustainable products (M=3.63, SD=1.24, N=126). Governance and policy mechanisms showed mixed appeal: subsidies discipline (M=3.98, SD=1.21, N=128), carbon credits/environmental payments (M=3.41, SD=1.23, N=127), and legal enforcement (M=3.28, SD=1.42, N=127). Punitive measures such as taxes for conventional products had the lowest endorsement (M=2.54, SD=1.32, N=127). Variability across items was relatively broad (SDs ≈0.96–1.42), responses spanned the full 1–5 range, and a related-samples Friedman test indicated statistically significant differences among motives, χ^2 (11) =249.771, N=123, p<.001.

Across the Economics Benefits – Motives that could work for other farmers' advisors (Likert 1–5), respondents perceive direct financial incentives as most motivating for peers, especially subsidies or grants for investments in sustainable farming (M=4.15, SD=0.97, N=123) and increased subsidies for sustainable practices (M=4.21, SD=1.09, N=127). Cost-side benefits are also seen as strong drivers, including reduced input costs (M=3.93, SD=1.23, N=122) and water and energy efficiency (M=3.80, SD=1.15, N=122). Market and risk-related incentives receive moderately high ratings: export opportunities to niche markets (M=3.63, SD=1.22, N=123), market premiums for certified organic/sustainable products (M=3.62, SD=1.22, N=122), and reduction in insurance costs (M=3.59, SD=1.19, N=123). Governance mechanisms are viewed with mixed strength: subsidies discipline (M=3.76, SD=1.25, N=125), carbon credits/environmental payments (M=3.34, SD=1.33, N=124), and legal enforcement (M=3.26, SD=1.44, N=124). Punitive measures such as taxes for conventional products are perceived as least motivating (M=2.60, SD=1.38, N=124). Variability is relatively broad (SDs ~1.09–1.44), responses span the full 1–5 range, and a related-samples Friedman test indicates statistically significant differences among items, χ^2 11) ==207.528, N=119, p<.001.

Using paired comparisons of respondents' own motivations versus what they believe motivates other advisors (difference scored as Me − Others), most items showed no statistically significant difference. Two items indicated significantly higher self-ratings: Subsidies discipline (ensure proper use of subsidies) (Mean diff=0.232, t (124) =3.110, p=0.002) and Long-term benefits through climate resilience (Mean diff=0.325, t(122)=3.715, p<0.001). Several items showed non-significant positive trends toward higher self-endorsement—subsidies/grants for investments (Mean diff=0.122, p=0.092), reduced input costs (Mean diff=0.123, p=0.092), and water & energy efficiency (Mean diff=0.115, p=0.071). All other differences were small and non-significant, including increased subsidies (Mean diff=0.031, p=0.694), legal enforcement (0.032, p=0.691), carbon credits (0.065, p=0.396), market premiums (0.049, p=0.469), export opportunities (0.049, p=0.441), and insurance cost reductions (0.089, p=0.234). Taxes for conventional products was the only item with a negative mean difference (−0.048, p=0.555), suggesting a (non-significant) tendency to view others as slightly more motivated by punitive taxes than oneself.

Farm advisors rated a variety of economic incentives as potential motivators for adopting or promoting sustainable practices. The highest-rated motives included increased subsidies, grants for sustainable farming investments, and reduced input costs, all with mean scores above 4.0, indicating strong perceived effectiveness. Other incentives, such as market premiums, export opportunities, and efficiency improvements (water and energy), were also viewed positively, though slightly lower in average rating (means ~3.6–3.9).

When considering their peers, advisors generally perceived similar patterns, with only minor differences. Paired comparisons revealed significant differences only for “subsidies discipline” and “long-term benefits through climate resilience,” suggesting that advisors see themselves slightly more responsive to these specific incentives than other advisors in their region. Overall, economic incentives are recognized as important motivators, particularly direct financial support and measures that reduce costs or enhance long-term sustainability benefits.

Emotional Motives

Across the Emotional Motives that could work for the respondent (Likert 1–5), advisors most strongly endorsed broader societal and legacy-oriented motives: pride in contributing to food security (M=4.07, SD=1.05, N=126) and pride in leaving a healthy, productive farm for future generations (M=4.00, SD=1.10, N=126). Close behind were pride in preserving fathers’ land (M=3.95, SD=1.14, N=127), pride in protecting wildlife/pollinators and the broader ecosystem (M=3.93, SD=1.04, N=126), and pride in contributing to food safety (M=3.94, SD=1.16, N=126). Personal satisfaction and responsibility clustered in the upper-mid range: satisfied by farming “the right way” (M=3.84, SD=1.08, N=126), responsible to protect the environment (M=3.79, SD=1.09, N=126), satisfied for helping the local community (M=3.78, SD=1.09, N=126), satisfied with improved personal sustainable skills (M=3.78, SD=1.07, N=126), and pride in contributing to climate resilience (M=3.82, SD=1.09, N=127). The least endorsed item was alignment with spiritual/religious beliefs (M=2.84, SD=1.51, N=127), which also showed the greatest dispersion, indicating more polarized views. Overall variability was moderate (SDs ≈1.04–1.16 for most items), responses spanned the full 1–5 range, and a related-samples Friedman test indicated statistically significant differences among emotional motives, $\chi^2(11)=131.622$, N=125, $p<.001$.

Across the emotional motives that could work for OTHER farmers (Likert 1–5), respondents attribute the greatest importance to pride in contributing to food security (M=3.81, SD=1.26, N=125) and pride in preserving fathers’ land (M=3.81, SD=1.23, N=125), followed by leaving a healthy, productive farm for future generations (M=3.76, SD=1.22, N=123). Mid-upper ratings cluster around farming “the right way” (M=3.61, SD=1.21, N=124), helping the local community (M=3.62, SD=1.13, N=124), improving personal sustainable skills (M=3.54, SD=1.09, N=123), responsibility to protect the environment (M=3.48, SD=1.14, N=124), and contributing to food safety (M=3.61, SD=1.24, N=124). Lower endorsements include cultivating land to preserve the environment (M=3.47, SD=1.27, N=124), protecting wildlife/pollinators (M=3.40, SD=1.21, N=125), and contributing to climate resilience (M=3.42, SD=1.21, N=125). The least endorsed item is alignment with spiritual/religious beliefs (M=2.66, SD=1.45, N=124), with the largest dispersion indicating more polarized views. Variability is moderate to high (SDs ≈1.09–1.27), responses span the full 1–5 range, and a related-samples Friedman test confirms statistically significant differences among items, $\chi^2(11)=127.257$, N=122, $p<.001$.

Across the paired “Me − Other advisors” comparisons for Emotional Motives, all mean differences were positive, indicating respondents consistently rated themselves as more emotionally motivated than their peers. Differences were statistically significant for 11 of 12 items, including the largest gaps for protecting wildlife/pollinators (Mean diff=0.540, $t(123)=5.664$, $p<.001$), contributing to climate resilience (0.416, $t(124)=4.644$, $p<.001$), cultivating land to preserve the environment (0.379, $t(123)=4.362$, $p<.001$), contributing to food safety (0.339, $t(123)=4.320$, $p<.001$), and responsibility to protect the environment (0.315, $t(123)=3.909$, $p<.001$). Smaller but still significant self-higher ratings appeared for leaving a healthy farm for future generations (0.268, $p=.004$), improving personal sustainable skills (0.252, $p=.001$), contributing to food security (0.250, $p=.003$), farming “the right way” (0.242, $p=.005$), spiritual/religious alignment (0.210, $p=.032$), and helping the local community (0.177, $p=.021$). The only non-significant item was pride in preserving fathers’ land (0.160, $t(124)=1.729$, $p=.086$). Dispersion of

differences was moderate (SDs ≈0.80–1.08), consistent with meaningful but not extreme variability in these perceptions.

Farm advisors reported that a variety of emotional factors strongly influence their decision-making regarding sustainable farming practices. The highest-rated motivations for themselves included pride in contributing to food security (Mean = 4.07), preserving fathers' land (3.95), and protecting wildlife and the broader ecosystem (3.93). Satisfaction from farming "the right way" and leaving a healthy farm for future generations were also highly rated (Means = 3.84 and 4.00, respectively). Lower importance was attributed to spiritual or religious alignment with sustainable practices (Mean = 2.84). When evaluating what they believe motivates other advisors in their region, similar trends emerged, though self-ratings were generally higher across most items, indicating that advisors perceive themselves as more strongly driven by emotional motives than their peers. Paired comparisons confirmed significant differences for the majority of items, particularly pride in cultivating land sustainably, protecting wildlife, contributing to food safety, and climate resilience. Only pride in preserving fathers' land showed no significant difference between self and peers. Overall, the results highlight that emotional motives—especially those related to pride, responsibility, and long-term stewardship—play a significant role in guiding farm advisors' promotion of sustainable practices..

Educational Motives

Across the Educational Motives that could work for the respondent (Likert 1–5), advisors showed the strongest endorsement for evidence-based messaging and hands-on learning: clear evidence of long-term cost savings (M=4.43, SD=0.88, N=127) and long-term financial benefits (M=4.40, SD=0.87, N=126) lead, closely followed by field days/practical training in new technology (M=4.38, SD=0.83, N=125) and field days in sustainable methods (M=4.33, SD=0.88, N=126). Peer learning and management skills also rate highly: farmer-to-farmer mentoring (M=4.09, SD=1.08, N=127), cooperation (M=4.07, SD=1.05, N=126), and farm management (M=4.01, SD=1.05, N=125). Mid-range endorsements include school-based programs (M=3.83, SD=1.13, N=126), time management (M=3.62, SD=1.22, N=125), marketing (M=3.56, SD=1.23, N=126), and sustainability-related certifications (M=3.56, SD=1.22, N=126), with reorganization management lowest among the set (M=3.47, SD=1.19, N=125). Variability is modest to moderate (SDs ~0.83–1.23), responses span the full 1–5 range, and a related-samples Friedman test indicates statistically significant differences among items, $\chi^2(11)=256.217$, N=122, p<.001.

Across the Educational Motives that could work for OTHER farmers' advisors (Likert 1–5), respondents attribute the greatest impact to evidence-based information, with clear evidence of long-term financial benefits (M=4.27, SD=1.02, N=124) and clear evidence of long-term cost savings (M=4.26, SD=1.07, N=125) leading. Hands-on learning is also viewed as strongly motivating: field days/practical training in new technology (M=4.09, SD=1.08, N=125) and field days in sustainable methods (M=4.06, SD=1.07, N=124). Peer learning and management skills sit in the upper-mid range: farmer-to-farmer mentoring (M=3.95, SD=1.11, N=125), cooperation (M=3.87, SD=1.13, N=125), and farm management (M=3.85, SD=1.04, N=123). Mid-level endorsements include school-based programs (M=3.54, SD=1.21, N=124) and time management (M=3.52, SD=1.20, N=123). The lowest ratings are for sustainability-related certification programs (M=3.27, SD=1.31, N=124), reorganization management (M=3.33, SD=1.08, N=123), and marketing (M=3.37, SD=1.29, N=123). Variability is moderate to high (SDs ~1.02–1.31), responses span the full 1–5 range, and a related-samples Friedman test confirms statistically significant differences among items, $\chi^2(11)=226.969$, N=121, p<.001.

For advisors' own motivations, ratings were highest for evidence-based information and hands-on learning: clear evidence of long-term cost savings (M=4.43) and long-term financial benefits (M=4.40) led, closely followed by field days/practical training in new technology (M=4.38) and sustainable methods (M=4.33). Peer learning also scored strongly—farmer-to-farmer mentoring (M=4.09) and

cooperation (M=4.07)—alongside farm management (M=4.01). Mid-tier items included school-based programs (M=3.83), time management (M=3.62), marketing (M=3.56), and sustainability certification programs (M=3.56), while reorganization management was lowest (M=3.47). Differences across items were statistically significant (Friedman $\chi^2(11)=256.217$, N=122, p<.001).

For other advisors in their region, respondents reported a similar hierarchy but generally lower means: evidence of financial benefits/cost savings remained top (Ms=4.27–4.26), followed by field days (Ms=4.09–4.06), then peer learning and farm management (Ms=3.85–3.95). Mid-range items were school-based programs and time management (Ms≈3.52–3.54). The lowest ratings were for certification programs (M=3.27), reorganization management (M=3.33), and marketing (M=3.37). Item differences were again significant (Friedman $\chi^2(11)=226.969$, N=121, p<.001).

In the paired "Me − Others" tests, all mean differences favoured self (Me > Others), and 11 of 12 were statistically significant. The largest gaps appeared for school-based programs (Δ=+0.306, p<.001), certification programs (+0.290, p<.001), and field days in new technology (+0.276, p<.001) and sustainable methods (+0.244, p<.001). Smaller but significant self-higher differences were observed for evidence of cost savings/financial benefits (+0.160 / +0.145; ps≤.017), farmer-to-farmer mentoring (+0.128, p=.019), cooperation (+0.210, p=.003), marketing (+0.211, p=.005), farm management (+0.179, p=.020), and reorganization management (+0.154, p=.030). The only non-significant difference was time management (+0.106, p=.087). Overall, advisors see themselves as more responsive than peers to educational interventions—especially evidence, practical training, and formal learning pathways.

The survey results indicate that farm advisors consider educational motives to be highly influential in their decision-making. Among the most valued motives for themselves were providing clear evidence of long-term financial benefits (Mean = 4.40) and cost savings (Mean = 4.43), as well as practical field training in new technologies (Mean = 4.38) and sustainable farming methods (Mean = 4.33). Peer-to-peer knowledge exchange, through mentoring (Mean = 4.09) and cooperation (Mean = 4.07), also ranked highly, along with general farm management (Mean = 4.01) and school-based educational programs (Mean = 3.83). Motives related to marketing, certifications, time management, and reorganization were rated moderately. When considering other advisors, respondents generally perceived them as slightly less influenced by the same educational motives, though the pattern of importance remained similar. Paired comparisons revealed statistically significant differences for most items, particularly field days, school-based programs, certification programs, and practical training, indicating that advisors tend to rate themselves as more motivated by educational factors than they perceive their peers to be. These results highlight the central role of educational incentives in motivating advisors toward sustainable farming practices.

Nudges Evaluation

For the Nudges that could work for the respondents (Likert 1–5), advisors most strongly endorsed analytic and experiential supports: decision-support systems that assess costs/benefits (M=4.13, SD=1.02, N=127), highlighting peers who achieved positive outcomes with sustainable methods (M=4.11, SD=1.07, N=125), and easy-to-follow guides/toolkits (M=4.09, SD=1.03, N=127). Upper-mid ratings followed for collective and consequence framing—sharing cooperative achievements (M=3.97, SD=1.12, N=126) and highlighting the consequences of not adopting sustainability practices (M=3.82, SD=1.22, N=125)—as well as digital delivery of guidance (M=3.81, SD=1.07, N=127). Motives emphasizing benefits and impacts via media were mid-range: specific, tangible benefits through social media (M=3.76, SD=1.17, N=127), environmental cost salience (M=3.70, SD=1.12, N=127), and environmental impact via media (M=3.63, SD=1.23, N=126). Visual cues (color-coding inputs) were

slightly lower (M=3.60, SD=1.21, N=127), and outdoor billboards were lowest (M=3.20, SD=1.32, N=127). Dispersion was moderate (SDs ≈1.02–1.32), responses spanned the full 1–5 range, and a related-samples Friedman test indicated statistically significant differences among nudge items, $\chi^2(10)=112.201$, N=124, p<.001.

cross the Nudges that could work for OTHER farmers' advisors (Likert 1–5), respondents attribute the strongest impact to peer success stories and analytical supports: highlighting farmers who use sustainable methods and achieve positive outcomes (M=3.97, SD=1.17, N=123), decision-support systems that assess costs/benefits (M=3.90, SD=1.08, N=123), and sharing collective achievements of farmer groups/cooperatives (M=3.88, SD=1.16, N=123). Practical guidance also rates highly, including easy-to-follow guides/toolkits (M=3.85, SD=1.11, N=124), with a slightly lower mean when delivered via social media/internet (M=3.60, SD=1.08, N=122). Mid-range endorsements appear for benefits framing via social media (M=3.54, SD=1.13, N=123) and consequence framing (M=3.53, SD=1.27, N=123). Lower ratings are seen for environmental salience tactics—environmental impact through media (M=3.44, SD=1.23, N=124), color-coding inputs (M=3.45, SD=1.28, N=124), and highlighting environmental costs (M=3.37, SD=1.13, N=123)—with outdoor billboards the lowest (M=3.11, SD=1.33, N=123). Variability is moderate to relatively high (SDs ≈1.02–1.33), responses span the full 1–5 range, and a related-samples Friedman test indicates statistically significant differences among nudge items, $\chi^2(10)=132.092$, N=119, p<.001.

For advisors' own responses, the most effective nudges are analytic supports and practical guidance: decision-support systems that assess costs/benefits (M=4.13, SD=1.02, N=127), highlighting peers with positive outcomes (M=4.11, SD=1.07, N=125), and easy-to-follow guides/toolkits (M=4.09, SD=1.03, N=127). Upper-mid endorsements include sharing cooperative achievements (M=3.97, SD=1.12, N=126), highlighting the consequences of not adopting (M=3.82, SD=1.22, N=125), and guides delivered via social media/internet (M=3.81, SD=1.07, N=127). Mid-range items are benefits via social media (M=3.76), environmental costs (M=3.70), and environmental impact via media (M=3.63), with color-coding inputs slightly lower (M=3.60) and outdoor billboards the lowest (M=3.20). Differences across items are statistically significant (Friedman $\chi^2(10)=112.201$, N=124, p<.001).

For other advisors in the region, respondents report a similar hierarchy: highest for peer success stories (M=3.97, SD=1.17, N=123), decision-support systems (M=3.90, SD=1.08, N=123), and sharing cooperative achievements (M=3.88, SD=1.16, N=123), followed by easy-to-follow guides/toolkits (M=3.85, SD=1.11, N=124). Mid-level endorsements include guides via social media (M=3.60), benefits via social media (M=3.54), and consequence framing (M=3.53). Lower means appear for environmental impact via media (M=3.44), color-coding (M=3.45), and environmental costs (M=3.37), with billboards again the lowest (M=3.11). Item differences are significant (Friedman $\chi^2(10)=132.092$, N=119, p<.001).

In the paired "Me − Others" comparisons, respondents rate themselves more responsive to most nudges. Significant self-higher differences include: environmental costs (Δ=+0.333, $t(122)=4.017$, p<.001), consequences of not adopting (+0.287, p<.001), easy-to-follow guides/toolkits (+0.226, p<.001), decision-support systems (+0.236, p=.001), benefits via social media (+0.252, p=.001), guides via social media (+0.197, p=.008), environmental impact via media (+0.195, p=.010), and peer success stories (+0.156, p=.011). Sharing collective achievements is borderline (+0.098, p=.051), while color-coding (+0.137, p=.075) and billboards (+0.098, p=.164) are non-significant. Overall, advisors see themselves as more responsive than peers to information-rich, practical, and consequence-focused nudges, with weaker differentiation for simple visual cues and billboards.

Farm advisors reported that nudges can moderately to strongly influence their decision-making in promoting sustainable practices. The most effective nudges, according to their self-evaluation, include decision-support systems, easy-to-follow guides, or toolkits, and highlighting farmers who achieve

positive outcomes, all receiving mean scores above 4.0. Other strategies, such as providing tangible benefits through social media and highlighting environmental costs, were also rated positively (means around 3.6–3.8), while less direct methods, like billboards or color-coding inputs, were perceived as less influential (means around 3.1–3.6). Comparisons with perceptions of other advisors show that respondents generally consider themselves more responsive to these nudges than their peers, especially for information- and evidence-based tools, while more generic or traditional reminders are perceived as less impactful.

Summary

This executive brief synthesizes survey findings across economic, emotional, educational motives, and nudges for farm advisors, reported for their own motivations, their perceptions of other advisors in the region, and paired “Me–Others” differences. Within each table, items differed significantly (Friedman tests, $p<.001$). Economically, advisors rated direct financial incentives—especially subsidies/grants for sustainable investments and increased subsidies—as the strongest levers, with cost-side benefits (reduced inputs, water/energy efficiency, long-term climate resilience) close behind; market/risk items (premiums, exports, insurance) were mid-high, and punitive taxes lowest. Advisors ascribe similar priorities to peers, and paired tests showed modest self–other gaps, significantly higher for subsidy discipline and long-term climate resilience, with other differences small or non-significant. Emotionally, advisors’ top drivers centred on societal/legacy values—food security and leaving a healthy farm for future generations—alongside preserving fathers’ land, protecting wildlife/pollinators, and food safety; spiritual/religious alignment was lowest and most variable. Perceptions of others followed the same shape at generally lower levels, and paired results revealed a pronounced self-enhancement pattern: 11 of 12 items were significantly higher for self (largest gaps in environmental stewardship, wildlife/pollinators, and climate resilience), with preserving fathers’ land the only non-significant difference. Educationally, evidence-based information (clear long-term cost savings and financial benefits) and hands-on learning (field days in technology and sustainable methods) led, supported by peer learning (mentoring, cooperation) and farm management; school programs, time management, marketing, and certifications sat mid-range, and reorganization management was lowest. Respondents attributed the same hierarchy to others but with lower means; paired tests showed 11 of 12 self-higher differences, largest for school programs, certifications, and field days, with time management non-significant. For nudges, advisors favoured decision-support systems, peer success stories, and easy-to-follow guides/toolkits, followed by cooperative achievements, consequence framing, and guides via social media; benefit/impact messaging was mid-tier, color-coding lower, and billboards lowest. Peers were viewed similarly, and paired comparisons indicated advisors see themselves as more responsive to information-rich, practical, and consequence-focused nudges, with borderline or non-significant gaps for collective achievements, color-coding, and billboards. Practically, these results support prioritizing financial support and cost-efficiency messaging, coupled with strong evidence, field-based learning, peer exchange, and decision tools—while leveraging success stories and clear consequences and deprioritizing punitive taxation and billboard campaigns.

Exploring Foresters' Biases

This briefing document synthesizes data concerning the demographics, management priorities, information-seeking behaviours, and future planning of foresters across several European regions. The data reveals a highly educated, predominantly male workforce with a strong conceptual commitment to sustainability, though actual management practices remain heavily oriented toward timber production.

All the relevant tables are presented in the appendix 2 in the first section about foresters.

Foresters' sample

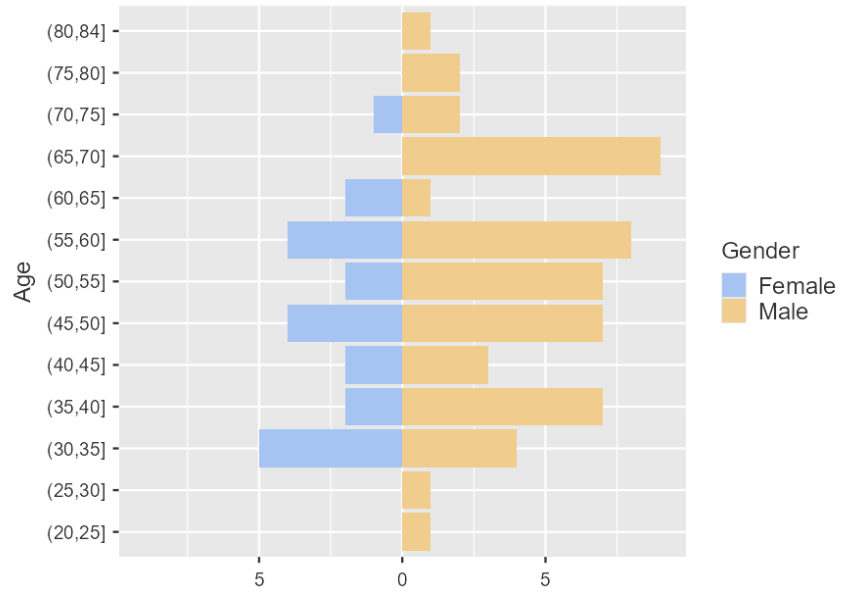
The survey captures responses from European forest owners and managers operating primarily in Lithuania (41.9%), Finland (16.2%), and the UK (16.2%), with additional representation from Sweden, Portugal, and Greece. The sample is predominantly male (70.7%) and highly educated, with nearly two-thirds (64.0%) holding a Master or a doctoral degree. Most respondents are married (69.4%) and have children, indicating a strong family and intergenerational context for forest management decisions.

Most respondents identify sustainability (54.7%) as their primary forest management priority, followed by economic objectives (29.7%) and conservation (14.1%). Despite this stated orientation, formal engagement in certification or support schemes remains uneven:

- 40.9% report participation in certification,
- 16.7% rely on grants or subsidies, and
- 37.9% operate without certification or formal support.

The dominant forestry activity is timber production and harvesting (51.5%), followed by forest management and silviculture (30.3%). Half of respondents characterize their system as sustainable productive forestry (50.7%), while 16.0% report sustainable agroforestry. However, one-third (33.3%) still describe their practices as conventional, highlighting a transition phase rather than full adoption of sustainable systems.

Figure 5: Age Pyramid for foresters participating in the survey



Foresters rely primarily on informal and peer-based information channels, including other forest owners, family and friends, and business partners. Institutional and commercial sources (e.g., suppliers, buyers, advisors) are rated as less influential. Statistical analysis indicates no significant differences among information sources, suggesting that foresters draw on a diverse mix of channels rather than a single dominant source. This finding underlines the importance of peer learning, local networks, and practical experience in shaping forestry decisions.

Over 80% of respondents report that their forest is definitely or possibly managed sustainably, reflecting a strong self-perception of sustainable practice. Despite this positive self-assessment, short-term intentions to change forestry systems are limited since nearly 75% do not plan to change their forestry system within the next five years. Intentions to move toward more sustainable or certified forestry practices are characterized by high levels of uncertainty and hesitation, with many respondents selecting “probably not,” “under discussion,” or “unsure.” This suggests a gap between sustainability awareness and behavioural change, particularly regarding formal certification and system transformation.

Engagement in European and national forestry schemes is low. Most respondents have never participated in: FSC / UK Forestry Standard or PEFC certification, Forest protection legal agreements, Voluntary Forest protection initiatives, or EU or national forest protection programs. An important exception is education and training programs, where nearly half of respondents report past or recent participation. This indicates that foresters are more willing to invest in knowledge and skills than to commit to formal regulatory or certification frameworks.

Respondents show strong agreement that understanding sustainable practices is important, alongside moderate agreement with statements reflecting management consistency, cautious decision-making, and personal responsibility for outcomes. Beliefs attributing outcomes solely to luck, genetics, or external factors receive comparatively low support. Statistical testing confirms significant variation across these attitudes, highlighting a heterogeneous but generally management-oriented and learning-focused mindset among foresters.

As a priority, timber production (60.6%) dominates. However, as a second priority, conservation and nature values (45.2%) are most frequently selected. This pattern suggests that economic and production goals are often balanced with environmental considerations, rather than being mutually exclusive. Most respondents plan to transfer their forest to children or descendants (61.1%), indicating a strong long-term and intergenerational perspective. This reinforces the relevance of sustainability not only as an environmental concern but also as a legacy and continuity issue.

Foresters generally perceive themselves as competent and responsible managers who place a high value on sustainability, while at the same time demonstrating caution toward operational change. This is most clearly reflected in the strong agreement with the statement “It is important that I understand sustainable practices”, which received the highest mean score (4.32), underscoring the central role of knowledge and understanding in forestry decision-making. At the operational level, respondents show a moderate preference for methodological consistency, as indicated by the tendency to use the same production methods from year to year (mean = 3.59). Environmental responsibility is also evident, with foresters expressing concern when they miss opportunities to protect the environment (mean = 3.31). In terms of locus of control, respondents tend to attribute success to management quality rather than chance, as reflected in the moderate agreement with the view that “luck” is essentially the outcome of good or poor management (mean = 3.32).

Looking ahead, the data point to a period of relative stability in forestry management systems over the next five years. Nearly three-quarters of respondents (74.6%) report that they probably or definitely do not plan to change their forestry system. While some openness to sustainability transitions exists, it is

often accompanied by uncertainty: 23.9% consider a move toward more sustainable forestry as a possibility, yet 21.1% report that such changes are still under discussion and 16.9% remain unsure. Intentions to adopt certified sustainable forestry practices are even more limited, with only 18.6% stating that they definitely plan to move in this direction within the next five years.

Patterns of land acquisition and succession further reinforce this long-term, stability-oriented perspective. Most foresters have acquired their land either through inheritance (39.44%) or purchase (23.94%), reflecting both familial continuity and investment-driven entry into forestry. Consistent with this, a strong intergenerational outlook emerges, as the majority of respondents (61.11%) plan to transfer their forest holdings to their children or descendants. Nevertheless, a notable minority (18.06%) remain undecided about future succession, indicating some uncertainty regarding long-term planning and continuity.

Foresters' attitudes, and perceptions

The table provides insight into foresters' self-perceptions, management attitudes, and underlying behavioural traits related to sustainability, control, and openness to change. Overall, the results portray foresters as knowledgeable, environmentally aware, and management-oriented, yet relatively cautious and conservative in their decision-making.

Table 6: Descriptives of Foresters' attitudes

Foresters' Attitudes	Counts	Mean	Std. Deviation
It is important that I understand sustainable practices	75	4.32	.932
I'm using the same production methods each year	74	3.59	1.072
I seldom change my management and production systems unless I'm sure the change will be positive.	75	3.33	1.143
I reckon 'good luck' doesn't exist: 'luck' is good management and 'bad luck' poor management.	75	3.32	1.221
It bothers me when I miss an opportunity to help protect the environment	75	3.31	1.315
When things go wrong this is often due to events beyond my control (e.g. bad weather).	75	3.19	1.205
In local community matters it's easy for a hard-working and dedicated individual to have an impact in getting changes for the better.	73	3.14	1.122
I avoid trying things unless I'm sure they will work.	75	2.52	1.223
When the forest has shown poor growth, this is due to circumstances totally out of my control.	75	2.40	1.174
Although good forest management requires some training, experience and reading, the ability to manage is mainly determined by genes.	74	2.26	1.335
Other forest owners/managers are helping protect environment more than me	74	2.14	1.151

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 72 Test Statistic 185.185 Degree of Freedom 10, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among the 11 information sources)*

The strongest agreement is observed for the statement “It is important that I understand sustainable practices” (mean = 4.32), indicating that knowledge and understanding of sustainability are central to foresters’ professional identity. This high mean, coupled with a relatively low standard deviation, suggests broad consensus across respondents. At the operational level, foresters show a clear tendency toward stability, as reflected in moderate agreement with using the same production methods each year (mean = 3.59) and with changing management practices only when they are confident the change will be beneficial (mean = 3.33). These findings point to a preference for proven practices and risk-averse behaviour rather than experimentation.

Environmental concern is also evident. Respondents moderately agree that it bothers them when they miss opportunities to protect the environment (mean = 3.31), highlighting an internalized sense of environmental responsibility. In terms of perceived control, foresters tend to attribute outcomes more to management quality than to chance, as shown by agreement with the idea that “luck” is essentially good or poor management (mean = 3.32). However, this internal locus of control is balanced by some recognition of external constraints, such as weather or uncontrollable conditions, which also receive moderate agreement (mean = 3.19).

Social and collective dimensions appear somewhat weaker. While respondents moderately agree that dedicated individuals can influence positive change in their local communities (mean = 3.14), they generally do not perceive other forest owners or managers as outperforming them in environmental protection (mean = 2.14). This may reflect confidence in their own practices or limited peer comparison.

Lower mean scores are observed for statements associated with rigidity or determinism. Foresters tend to disagree with avoiding new approaches unless outcomes are guaranteed (mean = 2.52), suggesting that while cautious, they are not entirely closed to innovation. Similarly, there is low agreement with the idea that poor forest growth is entirely beyond managerial control (mean = 2.40) and strong disagreement with the notion that management ability is mainly genetically determined (mean = 2.26). Together, these responses reinforce the view that foresters see management outcomes as shaped by learning, experience, and decision-making rather than fixed traits or fate.

The following table summarizes foresters’ perceptions regarding environmental responsibility, ecosystem awareness, and professional identity. Overall, the results indicate a relatively high level of environmental awareness and systems thinking, although the strength of agreement varies significantly across different dimensions, as confirmed by the Friedman test ($\chi^2 = 101.284$, $df = 16$, $p < 0.001$).

The highest mean scores relate to ecosystem-level understanding and responsible management. Foresters strongly recognize that their forest functions as part of a broader ecosystem interacting with neighbouring landscapes (mean = 3.81), and that plant protection products and other treatments should be applied appropriately and in line with recommendations (mean = 3.75). Similarly high agreement is observed for the importance of managing biodiversity to protect and enhance it (mean = 3.73) and for understanding forestry primarily through an ecological lens (mean = 3.72). These findings suggest that ecological awareness and responsible use of inputs are well internalised among respondents.

Perceptions of personal environmental responsibility are also relatively strong. Respondents tend to see themselves as forest owners or managers who prioritise the environment (mean = 3.70) and agree that protecting the environment is their personal responsibility (mean = 3.65). Closely related statements - such as recognising that their actions and forestry practices have an environmental impact - also receive high and consistent agreement (means = 3.62), indicating an awareness of agency and accountability in forest management.

Moderate agreement is observed for broader social and long-term sustainability considerations. Foresters acknowledge the link between community well-being and environmental preservation (mean

= 3.55), as well as the importance of enabling organic carbon formation in soils and biomass (mean = 3.52). Attention to energy consumption (mean = 3.46) and willingness to prioritise environmental protection even at the expense of economic growth (mean = 3.43) suggest a balanced, though not unconditional, commitment to sustainability goals.

Lower mean scores are found for items related to continuous impact assessment, identity, and collective belonging. While being a forest owner is seen as an important part of personal identity (mean = 3.42), agreement is slightly weaker for the continuous assessment of environmental and social impacts (mean = 3.38) and for a strong sense of belonging to the forestry community (mean = 3.21). The lowest levels of agreement concern more technical or structured management practices, such as applying soil management plans (mean = 3.10) and water management plans (mean = 3.06). These results may indicate gaps between general environmental awareness and the systematic implementation of specific management tools.

Foresters display strong recognition of ecological interdependencies and personal responsibility for environmental outcomes, coupled with moderate support for broader sustainability trade-offs and community considerations. However, comparatively weaker agreement with formal soil and water management planning suggests potential areas where targeted guidance, training, or policy support could help translate environmental awareness into more structured and comprehensive management practices.

Table 7: Descriptives of Foresters' perceptions

Perceptions	N	Min	Max	Mean	Std. Dev.
I recognize that my forest is a forest ecosystem that interacts with neighbouring landscapes.	73	2	5	3.81	0.967
I recognize that plant protection products and other treatments should be applied appropriately and as recommended.	72	3	5	3.75	0.801
I recognize that biodiversity should be managed to enable its protection and enhancement	71	1	5	3.73	0.910
I understand that the ecology of the forest is what forestry is about	72	2	5	3.72	0.859
I see myself as a forest owner/manager who prioritises the environment	73	1	5	3.70	0.996
It is my personal responsibility to help protect the environment.	72	2	5	3.65	0.825
My actions have an impact on the environment	73	1	5	3.62	0.860
My forestry practices have an impact on the environment	74	1	5	3.62	0.753
The well-being of the community depends on the preservation of the environment	73	1	5	3.55	1.106
I recognize that I should enable the formation of organic carbon in soils and in biomass	71	1	5	3.52	.984
I recognize that I should manage energy consumption of my forestry activities	72	1	5	3.46	1.034
It is important to me to protect the environment even if it slows down economic growth of my forestry activities.	72	1	5	3.43	1.072

Being a forest owner is an important reflection of who I am	72	2	5	3.42	0.801
It is important to continuously assess the environmental and social impact of my forestry activities	73	1	5	3.38	0.937
I have a strong sense of belonging to the forestry community	73	1	5	3.21	0.957
I recognize that I should apply a soil management plan to improve and optimize soil health	71	1	5	3.10	0.928
I recognize that I should apply a water management plan to improve and optimize water use and quality	70	1	5	3.06	1.006

Note*: Answers range from Much less than the foresters that I know to Much more than foresters that I know.*

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 63 Test Statistic 101.284 Degree of Freedom 16, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*

Foresters' biases

All answers of the foresters participated in the survey are presented in the appendix 2. Here there is a brief presentation of the main findings concerning the examined categories of biases

Optimism Bias

The optimism bias indicators suggest that foresters generally hold a positive view of the long-term capacity of their natural resources. Respondents strongly believe that their forest's soil (mean = 4.01) and water resources (mean = 3.93) are sufficient to sustain current practices over the long term, indicating confidence in the resilience of their own forest systems. At the same time, perceptions of environmental risk are more moderate: foresters acknowledge that environmental changes such as drought or soil degradation are likely to affect both their own forest (mean = 3.45) and forestry in their wider area (mean = 3.44) over the next decade. Belief in natural recovery without human intervention receives the lowest agreement (mean = 3.28), suggesting that while optimism exists, it is tempered by recognition that active management may still be necessary. The Friedman test confirms statistically significant differences across these perceptions, highlighting a nuanced balance between confidence in resource sufficiency and awareness of environmental threats.

Confirmation Bias

The confirmation bias measures reveal that foresters place high importance on evidence when considering the adoption of sustainable practices. Scientific evidence (mean = 4.09) and practical, in-field evidence (mean = 4.04) are both highly valued, indicating that decisions are strongly evidence-driven. Respondents also show an active information-seeking approach, with moderate agreement that they research the benefits (mean = 3.75) and drawbacks (mean = 3.52) of sustainable practices. Attention to who has applied these practices (mean = 3.44) and reliance on recommendations from trusted individuals (mean = 3.33) suggest that personal credibility and peer experience play an important supporting role. The significant Friedman test result indicates that not all sources or types of evidence are weighted equally, with formal and practical evidence clearly prioritised over social endorsement alone.

Ambiguity Aversion

The ambiguity aversion indicators point to a moderate reluctance to adopt practices with uncertain outcomes. Foresters tend to avoid adopting new practices unless they fully understand the expected results (mean = 3.40) and are hesitant when benefits are not guaranteed (mean = 3.12). A similar moderate preference is observed for inputs with predictable but lower returns over those with potentially higher yet uncertain outcomes (mean = 3.11). However, the absence of statistically significant differences among these items suggests a relatively consistent attitude toward uncertainty, reflecting cautious but not extreme ambiguity aversion.

Risk or Loss Aversion

Results related to risk and loss aversion indicate a generally pragmatic stance toward change. Foresters show relatively high willingness to try new practices to protect the environment (mean = 3.68) or to accept short-term yield reductions in exchange for higher long-term yields (mean = 3.63). Concerns about financial loss (mean = 3.39) and lower yields (mean = 3.10) are present but not dominant. Other potential barriers, such as lack of knowledge (mean = 3.04), operational risks (mean = 2.97), and market uncertainty (mean = 2.79), receive lower levels of agreement. The significant Friedman test result indicates meaningful variation in how different types of risks are perceived, with environmental motivation outweighing purely financial or operational concerns.

Status Quo Biases

The status quo bias measures suggest that foresters are generally satisfied with their current practices yet remain open to change under certain conditions. Respondents' express willingness to adopt sustainable practices if they offer long-term income gains despite higher initial costs (mean = 3.70) and report overall satisfaction with existing practices (mean = 3.67). Long-term considerations of soil and water impacts are also relatively strong (mean = 3.64). However, willingness declines when adoption does not promise future income increases (mean = 3.15), and immediate financial considerations still influence decision-making (mean = 3.00). Low agreement with prioritizing short-term profits over long-term forest health (mean = 1.90) and with avoiding new practices altogether (mean = 2.41) indicates that deep inertia is limited. The strong Friedman test result confirms substantial variation across these dimensions, suggesting a conditional rather than absolute status quo bias.

Cognitive Limitations

The cognitive limitations indicators show that most foresters feel capable of understanding information about sustainable forestry practices (mean = 3.85). Adoption likelihood increases notably when information is presented through demonstrations (mean = 3.67), clear explanations (mean = 3.58), step-by-step guides (mean = 3.58), and visual aids (mean = 3.53), highlighting the importance of accessible communication formats. At the same time, respondents tend to disagree that information overload (mean = 2.38) or excessive technical complexity (mean = 2.15) are major barriers. The significant differences identified by the Friedman test suggest that while cognitive capacity is generally high, the format and clarity of information play a crucial role in facilitating adoption.

Trust and Reciprocity Biases

Trust and reciprocity patterns indicate that foresters place greatest trust in formal and experience-based sources. Advice from research or academic centres is highly trusted (mean = 3.83), followed by guidance from forestry advisory officers (mean = 3.53). Peer-based trust is also important, as respondents are more likely to trust advice from individuals who have personally benefited from sustainable practices (mean = 3.57) and to recommend practices to neighbours only after successful personal implementation (mean = 3.49). Trust in non-government organizations is noticeably lower (mean = 2.62). The significant Friedman test result underscores clear differentiation among trusted sources, with institutional expertise and proven peer experience carrying the most weight.

Social Comparison Biases

The social comparison indicators reveal a balanced relationship between individual autonomy and social influence. Foresters show a relatively high willingness to adopt sustainable practices even if others in the community do not (mean = 3.56), suggesting independence in decision-making. Nonetheless, social interaction is common, as many respondents frequently discuss forestry practices with other owners (mean = 3.41) and managers (mean = 3.39). Observing others' behaviour provides some reassurance, with moderate agreement that seeing peers adopt practices increases confidence (mean = 3.32) and that widespread adoption would encourage uptake (mean = 3.30). Lower agreement with feeling pressured by peers (mean = 2.51) or strongly aligning practices with neighbours (mean = 2.43) indicates that social norms influence but do not dominate decision-making. The significant Friedman test confirms meaningful variation across these social comparison mechanisms.

The analysis of foresters' responses reveals a generally balanced and pragmatic attitude toward the adoption of sustainable forestry practices. Foresters display moderate optimism about the long-term sufficiency of their forest resources, coupled with awareness of environmental risks and recognition of the need for active management. Their decision-making is strongly evidence-based, with scientific and practical experience valued more than social endorsement alone. While some caution toward uncertainty and potential losses is evident, environmental motivation and long-term benefits outweigh financial and operational concerns. Status quo bias appears conditional rather than rigid, as foresters are open to change when long-term gains are expected. Cognitive barriers are limited, though clear, practical, and well-structured information significantly facilitates adoption. Trust is primarily placed in institutional expertise and proven peer experience, while social influence plays a supportive but not dominant role, allowing foresters to maintain decision-making autonomy alongside peer interaction.

Foresters' motives evaluation

In the survey there were 3 types of motivations economical, emotional and educational. Foresters were asked to evaluate in two levels firstly for their selves and secondly for other foresters in their area. All analysis is presented in the appendix 2.

Economic Benefits – Motives

Foresters rated a series of economic benefits that could motivate them to adopt more sustainable forestry practices, showing clear differentiation in perceived importance. Subsidies or grants for investments in sustainable forestry (Mean = 4.00) and increased subsidies for sustainable practices (Mean = 3.99) were rated highest, indicating that direct financial support is seen as the strongest personal incentive. Private sector payments for environmental services, such as carbon credits (Mean = 3.69), and market premiums for certified organic or sustainable products (Mean = 3.57) were also considered important, although slightly less motivating than direct subsidies.

Long-term benefits through climate resilience (Mean = 3.48) and mechanisms ensuring proper use of subsidies (Mean = 3.33) were rated moderately, reflecting awareness of systemic incentives and accountability measures. Export opportunities to niche markets (Mean = 3.04) and reduction in insurance costs (Mean = 2.99) were perceived as weaker motivators, alongside legal enforcement (Mean = 2.97) and industry investments or other market mechanisms (Mean = 2.89). Traditional operational savings, such as reduced input costs (Mean = 2.83) and improvements in water and energy efficiency (Mean = 2.82), as well as taxation of conventional products (Mean = 2.63), were perceived as the least influential motivators. Overall, the results suggest that foresters prioritize direct, tangible financial incentives over regulatory or indirect economic mechanisms when considering changes in sustainable practices.

When evaluating economic benefits that might motivate other foresters, respondents rated subsidies or grants for sustainable forestry even higher (Mean = 4.41) than for themselves, indicating a perception that peers may be more strongly driven by financial support. Increased subsidies for sustainable practices also ranked very high (Mean = 4.13), confirming the dominant role of direct financial incentives in perceived peer behaviour. Private sector payments for environmental services (Mean = 3.83) and market premiums for certified sustainable products (Mean = 3.45) were also seen as motivating for others, similar to the self-assessment, though slightly less influential than direct subsidies.

Moderate ratings were assigned to subsidy discipline (Mean = 3.19), reduced input costs (Mean = 3.13), and legal enforcement (Mean = 3.10), suggesting that foresters perceive peers as responsive to accountability and cost-reduction mechanisms. Other incentives, such as reduction in insurance costs (Mean = 3.02), industry investment (Mean = 2.97), export opportunities (Mean = 2.89), and long-term benefits through climate resilience (Mean = 2.77), were considered less important for motivating peers. Water and energy efficiency (Mean = 2.60) and taxes for conventional products (Mean = 2.65) were rated lowest, similar to self-assessment, indicating a perception that these indirect incentives have limited influence.

The paired samples analysis compares foresters' self-evaluation of economic benefits motivating their sustainable behaviour with their evaluation of what could motivate other foresters. Overall, several differences emerge, although most are small and statistically non-significant.

Foresters rated subsidies or grants for investments in sustainable forestry slightly lower for themselves than for others (Mean difference = -0.270, $p = 0.031$), indicating a statistically significant perception that peers are more motivated by direct financial support than they are personally. Similarly, market premiums for certified organic or sustainable products were rated higher for self than for others (Mean difference = 0.258, $p = 0.038$), suggesting foresters perceive this incentive as slightly more personally relevant than for peers. Long-term benefits through climate resilience showed the largest difference (Mean difference = 0.800, $p < 0.001$), reflecting that foresters see themselves as more motivated by future-oriented ecological-economic gains compared to other foresters.

For most other items, including increased subsidies for sustainable practices, private sector payments for environmental services, legal enforcement, export opportunities, and reduction in insurance costs, the differences between self and peer evaluation were small and statistically non-significant (p-values > 0.05). This indicates general agreement between foresters' personal incentives and their perception of what motivates peers. Items like taxes for conventional products showed no difference at all (Mean difference = 0.000, $p = 1.000$).

Significant differences were observed for investment subsidies, market premiums, water and energy efficiency, and long-term climate resilience benefits. However, after accounting for multiple comparisons, only long-term climate resilience benefits remained statistically significant, $t(59) = 5.27$, $p < .001$, indicating that respondents perceived these benefits as substantially more effective for themselves than for other foresters.

The paired analysis suggests that while foresters align in their assessment of economic motivators for themselves and others, they perceive subtle distinctions: peers are thought to respond more to immediate financial support (grants/subsidies), whereas foresters themselves value longer-term benefits and market premiums more strongly. The few significant differences highlight where foresters may underestimate or overestimate peer motivations. Overall, the comparison between self-evaluation and peer evaluation suggests that foresters view others as slightly more motivated by direct financial incentives (subsidies, grants) and less by long-term or indirect benefits (climate resilience, efficiency measures), reflecting a subtle optimism bias regarding the economic drivers of sustainable behaviour in the forestry community.

Emotional Motives

The evaluation of emotional motives that could encourage foresters to adopt more sustainable behaviours highlights strong personal attachment and pride in responsible forest management. Among respondents, the highest-rated motives relate to leaving a healthy, productive forest for future generations (Mean = 4.24), managing forests “the right way” (Mean = 4.11), and the functional value of forests (Mean = 4.15). These high scores indicate that foresters are strongly driven by long-term stewardship and the intrinsic value of sustainable forestry practices.

Other highly rated motives include pride in cultivating land that preserves the environment (Mean = 4.07), pride in protecting wildlife and the broader ecosystem (Mean = 4.06), and preserving ancestral forests (Mean = 3.99). Foresters also report a sense of personal responsibility for environmental protection (Mean = 3.85) and commitment to promoting ecosystem and biodiversity health (Mean = 3.76), reflecting strong environmental ethics. Motives that were moderately rated include personal skill development and knowledge enhancement (Mean = 3.72), emotional attachment to local forests (Mean = 3.73), and pride in contributing to climate resilience (Mean = 3.77), showing that while personal growth and environmental impact are valued, they are slightly less salient than broader ecological or intergenerational considerations. Lower-rated motives include spiritual or religious alignment with sustainable forestry (Mean = 2.88) and dedication linked to organizational mission (Mean = 2.52), suggesting that intrinsic organizational or spiritual motivations are less influential than personal pride, responsibility, and environmental legacy.

When evaluating how these emotional motives might influence other foresters, the pattern differs notably. Overall, mean ratings are lower across all items compared to self-evaluation, suggesting that foresters perceive themselves as more emotionally motivated than their peers. For example, the motive “proud to cultivate land in a way that preserves the environment” has a mean of 3.21 for others, compared to 4.07 for self. Similarly, leaving a healthy, productive forest for future generations is rated 3.56 for others versus 4.24 for self, and managing forests “the right way” is rated 3.53 for others versus 4.11 for self. This trend continues across other statements: pride in protecting wildlife (Mean = 3.34 vs. 4.06), personal responsibility for protecting the environment (Mean = 2.81 vs. 3.85), and commitment to ecosystem and biodiversity health (Mean = 2.87 vs. 3.76). Motives such as emotional attachment to local forests, contribution to climate resilience, and functional value of forests also follow this pattern, showing that foresters see themselves as more driven by these emotional and ethical considerations than their peers.

Lower-rated motives for others, such as spiritual/religious alignment (Mean = 2.28) and organizational mission dedication (Mean = 2.38), mirror the self-evaluation pattern, though still perceived as slightly weaker relative to self-ratings.

The table of paired differences between foresters’ self-evaluations and their perceptions of other foresters’ emotional motives reveals statistically significant differences across nearly all items, indicating that respondents consistently view themselves as more emotionally motivated toward sustainable forestry than their peers.

The largest differences are observed for statements reflecting personal responsibility and environmental commitment. For example, foresters rated themselves significantly higher than others on “Feel responsible for protecting the environment” (Mean difference = 1.079, $p < 0.001$), “I feel committed to promoting the health of forest ecosystems and biodiversity” (Mean difference = 0.968, $p < 0.001$), and “Proud to cultivate land in a way that preserves the environment” (Mean difference = 0.952, $p < 0.001$). These results suggest that foresters perceive their own sense of ecological responsibility as substantially stronger than that of other forest owners.

Other notable differences include pride in protecting wildlife, pollinators, and the broader ecosystem (Mean difference = 0.859, $p < 0.001$), leaving a healthy, productive forest for future generations (Mean difference = 0.778, $p < 0.001$), managing forests “the right way” (Mean difference = 0.694, $p < 0.001$), and emotional attachment to local forests (Mean difference = 0.667, $p < 0.001$). These results reinforce the pattern of foresters perceiving themselves as more motivated by long-term ecological and ethical considerations than their peers.

Moderate but significant differences are also observed for statements related to community contribution and functional value of forests, including “Satisfied for helping local community” (Mean difference = 0.452, $p = 0.001$), “Forests are essential for our local identity and preserving them is our responsibility” (Mean difference = 0.556, $p < 0.001$), and “The forests offer functional value” (Mean difference = 0.397, $p = 0.003$). Conversely, some items show smaller differences or non-significant effects. Notably, “Dedication to sustainable forestry because of commitment to organizational mission” had a mean difference of 0.049 and was not statistically significant ($p = 0.761$), indicating that foresters do not perceive themselves as more motivated by organizational loyalty than their peers.

Overall, paired-samples t-tests revealed a consistent self–other asymmetry across emotional motivations for sustainable forestry. For 17 of the 18 items, respondents rated emotional motives as significantly more motivating for themselves than for other foresters (mean differences = 0.36–1.08, $p < .01$). The strongest differences concerned feelings of environmental responsibility, pride in sustainable land management, commitment to biodiversity, and climate resilience. Only motivation linked to organizational mission did not differ between self and others. These results indicate a robust self-enhancement bias in the perception of moral and emotional drivers of sustainable forestry.

Educational Motives

The third category of motives examined was a series of educational and informational needs evaluation that could act as motivation to move to more sustainable choices. Respondents were also asked to evaluate two tables. The first table, presenting educational motives that could work for the respondents themselves, shows that foresters place the highest importance on clear evidence of long-term financial benefits (Mean = 3.90) and long-term cost savings (Mean = 3.76) as motivators for adopting more sustainable practices. This indicates a strong pragmatic orientation, where financial and operational advantages drive interest in sustainable behaviour. Practical learning opportunities, such as field days for sustainable forestry methods (Mean = 3.63) and general forest management training (Mean = 3.39), are also moderately valued, suggesting foresters appreciate hands-on and knowledge-based approaches. Peer learning, including forest-owner mentoring (Mean = 3.11) and cooperation (Mean = 3.43), and marketing or certification programs receive slightly lower ratings, reflecting that educational incentives linked to direct personal gain are prioritized over indirect or social forms of learning. The lowest-rated items include restructuring organizational operations (Mean = 2.28) and time management programs (Mean = 2.74), which may be perceived as less directly relevant or more burdensome.

The second table, presenting educational motives that could work for other foresters, shows a similar pattern, with slightly higher mean ratings for financial-oriented motives. Clear evidence of long-term financial benefits (Mean = 4.29) and cost savings (Mean = 4.13) are seen as the most influential motivators for peers, indicating that respondents perceive their colleagues as more responsive to financial incentives than themselves. Practical learning opportunities, such as field days in new technology (Mean = 3.48) and sustainable forestry methods (Mean = 3.62), remain moderately important, whereas mentoring and cooperation are viewed as less impactful for others (Means = 2.98 and 3.33, respectively). Certification programs, school-based education, and strategic organizational

training again rank lower, highlighting that foresters believe these types of educational support are less compelling motivators for their peers.

A paired comparison analysis shows the differences between foresters' evaluations of educational motives for themselves versus their perceptions of what motivates other foresters. Negative mean values indicate that respondents perceive other foresters as more motivated by that factor than themselves, while positive values suggest the opposite.

The most notable differences are observed in financial-oriented motives. For clear evidence of long-term financial benefits (Mean = -0.349, p = 0.005) and clear evidence of long-term cost savings (Mean = -0.333, p = 0.001), the differences are statistically significant. This indicates that foresters perceive other forest owners as more strongly influenced by financial incentives than they are themselves.

For practically oriented learning opportunities, such as field days for new technology (Mean = -0.127, p = 0.172) and field days for sustainable forestry methods (Mean = 0.016, p = 0.896), the mean differences are small and not statistically significant. This suggests that foresters view hands-on training as equally relevant for themselves and for others. Similarly, forest-owner-to-forest-owner knowledge exchange, both through mentoring (Mean = 0.063, p = 0.521) and cooperation (Mean = 0.172, p = 0.078), shows minor and non-significant differences, implying that peer-based learning is perceived as moderately important across both self and others.

Other educational motives, including marketing about sustainable forestry, certification programs, school-based programs, ownership strategy, and effective communication or high-quality relations among forest owners/managers, show minimal differences with no statistical significance ($p > 0.05$). This indicates that foresters perceive these educational factors as roughly equally influential for themselves and their peers.

Overall, the paired comparison reinforces the earlier observation that financial incentives stand out as the domain where foresters see a clear self-other perception gap, whereas practical training, peer knowledge exchange, and broader educational initiatives are viewed as similarly motivating for both themselves and others. This suggests that while foresters value financial evidence and cost benefits, they consider experiential and cooperative learning universally important, with less discrepancy between self-perception and perceptions of others.

Paired-samples t-tests for educational and informational measures revealed limited self–other differences. Respondents perceived financial information - specifically clear evidence of long-term financial benefits and cost savings - as more effective for other foresters than for themselves. No significant differences were observed for most training, cooperation, certification, or communication-based educational actions. After adjusting for multiple comparisons, only perceptions regarding cost-saving information remained statistically robust.

Nudges Evaluation

In the last part of the survey respondents were asked to evaluate a series of practices that could nudge a sustainable choice. Also, in this part of the survey respondents were asked to evaluate the effectiveness of a series of practices for themselves and for others. The first table presents foresters' evaluations of various nudges that could personally motivate them to adopt more sustainable behaviours. Among the measures, decision-support systems that help assess the costs and benefits of different sustainable practices received the highest mean score (3.48), indicating that foresters value analytical tools that clarify trade-offs and outcomes. Similarly, easy-to-follow guides or toolkits (Mean = 3.37) and highlighting peers' success with sustainable practices (Mean = 3.28) are perceived as

moderately effective motivators, suggesting that practical, actionable guidance and social proof are important drivers. In contrast, nudges such as billboards outdoors (Mean = 2.16) and color-coding environmentally friendly inputs (Mean = 2.29) scored lowest, indicating that passive reminders or symbolic cues are less influential. Messaging via media highlighting environmental impact or consequences of unsustainable practices falls in the mid-range (Means ~2.86–3.14), suggesting some awareness-raising effect but lower than hands-on or decision-support interventions. Overall, foresters appear to favour practical, informative, and peer-influenced nudges over symbolic or mass-media approaches.

The second table shows foresters' perceptions of what nudges would motivate other forest owners. The patterns are largely similar, with decision-support systems again receiving the highest score (Mean = 3.55), followed by easy-to-follow guides (3.47) and highlighting successful peers (3.38). This indicates that foresters believe their peers are also most influenced by tools that reduce uncertainty and demonstrate tangible benefits. Social media-based information (Mean = 3.30) and highlighting environmental impacts or costs (Means ~3.08–3.13) are seen as moderately motivating for others, while billboards (2.43) and color-coding of inputs (2.54) remain among the least influential. Interestingly, the perceived effectiveness of media-based nudges is slightly higher for others than for themselves, suggesting that foresters may see their peers as more responsive to informational campaigns than they are personally.

The paired comparison table for nudges examines the differences between foresters' perceptions of what motivates themselves versus what motivates other forest owners. Across most nudges, the mean differences are relatively small, indicating that foresters generally see themselves and others as responding similarly to the proposed interventions. However, a few differences are statistically significant. Notably, providing forest owners with information on tangible benefits via social media shows a mean difference of -0.397 ($t = -2.332$, $p = 0.023$), indicating that foresters perceive this nudge as slightly less effective for themselves than for others. Similarly, billboards outdoors reminding forest owners of key sustainable practices show a mean difference of -0.254 ($t = -2.050$, $p = 0.045$), again suggesting foresters believe such passive, public reminders are more effective for others than for themselves.

For the remaining nudges, including highlighting environmental impacts or costs, easy-to-follow guides, decision-support systems, color-coding inputs, and peer examples, the mean differences are small and not statistically significant ($p > 0.05$). This implies that foresters largely perceive these nudges as equally effective for themselves and for other forest owners.

Summary

The evaluation of foresters' motives highlights distinct patterns across economic, emotional, and educational drivers of sustainable forestry adoption, as well as notable differences between self-perceptions and perceptions of peers. Economic motives are dominated by direct financial incentives, with subsidies and grants rated as the strongest motivators for both self and others, while indirect or regulatory mechanisms are viewed as less influential. Foresters tend to see peers as more responsive to immediate financial support, whereas they perceive themselves as slightly more motivated by long-term benefits such as climate resilience and market premiums, revealing a mild self–other perception gap.

Emotional motives emerge as particularly strong for foresters' self-evaluation, with high importance placed on environmental stewardship, responsibility toward future generations, pride in sustainable land management, and biodiversity protection. However, respondents consistently rate these emotional and ethical drivers as significantly weaker for other foresters, indicating a pronounced self-enhancement bias in moral and environmental motivation. This asymmetry is especially strong for feelings of

responsibility, ecological commitment, and pride, while organizational or spiritual motives remain weak for both self and peers.

Educational motives show a more pragmatic and aligned pattern. Foresters value clear evidence of long-term financial benefits and cost savings most highly, alongside practical, hands-on learning opportunities such as field days and training. While respondents perceive other foresters as slightly more motivated by financial information, most educational and experiential learning measures—peer exchange, training, certification, and communication—are seen as equally relevant for both self and others. Overall, the findings suggest that while financial evidence drives motivation across groups, emotional drivers are strongly internalized and under-attributed to peers, and educational measures are broadly viewed as universally supportive rather than differentially motivating.

The evaluation of behavioural nudges indicates that foresters favour practical and information-based interventions to support sustainable choices. Decision-support systems that clarify the costs and benefits of sustainable practices are perceived as the most effective nudges for both self and others, followed by easy-to-follow guides and examples of successful peers. These findings suggest that tools reducing uncertainty and providing actionable guidance are particularly valued. In contrast, passive or symbolic nudges, such as billboards or colour-coding of inputs, are consistently rated as least effective, while media-based messaging shows only moderate influence. Perceptions of nudges for oneself and for other foresters are largely aligned, with only small differences overall. Foresters tend to view social media information and public reminders as slightly more effective for others than for themselves, indicating a modest self–other bias for these interventions. For most nudges, however, no significant differences emerge, suggesting a shared view that practical decision-support tools and peer-based examples are universally more effective than awareness-raising or symbolic approaches in encouraging sustainable forestry practices.

Exploring Foresters' Advisors' Biases

Foresters' advisors' sample

The survey included a sample of foresters' advisors, who were interviewed on similar topics to those addressed to foresters, to capture the advisory perspective on sustainable forest management. In total, 35 advisors participated in the study. The gender distribution of the sample was moderately male-dominated, with 60% male and 40% female respondents, indicating a relatively balanced representation compared to traditionally male-heavy forestry professions.

In terms of educational attainment, the advisors exhibited a high level of formal education. More than half of the respondents (54.3%) held a master's, postgraduate, or doctoral degree, while a further 40.0% had completed a bachelor's degree or equivalent qualification. Only a small proportion (5.7%) reported a college entrance–level qualification as their highest completed education. This educational profile suggests that the advisory sample is highly specialized and academically trained, which is consistent with the technical and regulatory complexity of contemporary forest advisory services.

Regarding marital status, the majority of advisors were married (71.4%), followed by single respondents (20.0%), and a smaller share who were divorced (8.6%). This distribution reflects a relatively mature professional group, which is also consistent with the advanced educational background and the advisory roles reported.

The advisors were geographically distributed across several European countries, with the largest shares active in Portugal (37.1%) and the United Kingdom (34.3%), followed by Lithuania (22.9%). A small number of respondents reported activity in Finland and Sweden (each 2.9%). This cross-country distribution provides a diverse institutional and policy context, strengthening the relevance of the findings across different European forestry systems.

In terms of professional roles, advisors were engaged in a variety of complementary advisory functions. The largest group specialized in Sustainability, Biodiversity, and Climate-related advisory services (32.0%), followed by those involved in Forest Management and general advisory services (28.0%). Advisors working in Certification, Regulation, and Compliance accounted for 20.0% of the sample, while an equal share (20.0%) focused on Grants, Projects, and Stakeholder Engagement. This diversity highlights the multifaceted nature of forest advisory services and the integration of environmental, regulatory, and economic dimensions.

The analysis of advisors' activities further illustrates their professional focus. On average, advisors reported frequent involvement in forest policy and regulatory compliance (Mean = 4.09), making this the most prominent activity in the sample. High levels of engagement were also observed in implementing sustainable forest management practices (Mean = 3.97) and biodiversity conservation and habitat restoration (Mean = 3.91), underscoring the central role advisors play in translating sustainability objectives into operational practices. Community engagement and stakeholder consultation (Mean = 3.63), managing forestry subsidies and grants (Mean = 3.54), and forest certification schemes (Mean = 3.56) were also reported as regular activities, reflecting the importance of institutional coordination and incentive mechanisms.

Moderate levels of involvement were reported for forest inventory and mapping, training and education, introducing new technologies, and forest health monitoring, suggesting that technical support and capacity-building are important but not dominant components of advisors' daily work. In contrast,

activities such as advising on carbon projects, promoting agroforestry systems, ecosystem services and PES schemes, and forest product marketing were rated closer to the midpoint of the scale, indicating more occasional engagement. The least frequently reported activities were forest fire prevention and management, ownership services and transitions, and particularly forest taxation, which recorded the lowest mean value (Mean = 1.85), suggesting that these areas are either more specialized or less commonly addressed within the advisors' current mandates.

Overall, the descriptive results portray a highly educated, professionally diverse, and sustainability-oriented group of foresters' advisors, whose activities strongly emphasize regulatory compliance, sustainable management, and biodiversity conservation, while economic and ownership-related services appear to play a more limited role. This profile provides an important contextual backdrop for interpreting advisors' views on incentives, nudges, and educational tools aimed at promoting sustainable forestry practices.

Foresters' Advisors attitudes, and perceptions

The following table describes foresters' advisors' characteristics and highlights several important attitudinal and behavioural patterns relevant to decision-making and sustainability orientation. Across the 11 items assessed, responses reveal notable variation in both mean scores and dispersion, indicating differing levels of agreement and heterogeneity among advisors.

Overall, advisors show relatively low agreement with statements reflecting risk-avoidant or rigid management tendencies. For example, the item "I avoid trying things unless I'm sure they will work" has a mean of 2.40 (SD = 1.063), while "I'm using the same methods over years" shows a similar pattern (M = 2.29, SD = 1.126). Likewise, the belief that management ability is primarily determined by genetics receives low endorsement (M = 2.23, SD = 1.087). These findings suggest that, on average, advisors do not strongly identify with deterministic or highly conservative management attitudes.

Perceptions of external control show moderate levels of agreement. Statements such as "When my organization has shown poor results, this is due to circumstances totally out of my control" (M = 2.53, SD = 1.022) and "When things go wrong this is often due to events beyond my control (e.g., bad weather)" (M = 2.50, SD = 1.022) indicate that advisors acknowledge external influences but do not overwhelmingly attribute outcomes to uncontrollable factors. In contrast, the belief that individual effort can influence local affairs is more strongly endorsed, with "In local body affairs it's easy for a hard-working and dedicated individual to have an impact" showing a higher mean of 3.20 (SD = .994). This suggests a generally internalized sense of agency in community-level decision-making.

Environmental attitudes emerge as one of the strongest dimensions in the dataset. Advisors express very high agreement with the importance of understanding sustainable practices (M = 4.60, SD = .553), indicating a shared recognition of sustainability as a core professional value. They also report being bothered when missing opportunities to protect the environment (M = 3.71, SD = 1.274), reflecting a sense of personal responsibility. Conversely, the item "I fear that other advisors are helping to protect the environment more than me" has the lowest mean (M = 1.97, SD = 1.294), suggesting that feelings of inadequacy or competitive comparison in environmental stewardship are not widespread.

Regarding openness to change, advisors show moderate reluctance to alter their management approaches without certainty of positive outcomes (M = 2.66, SD = 1.187). This aligns with earlier findings on risk aversion but still indicates a generally flexible rather than rigid mindset.

To assess whether these characteristics differ significantly across items, a Related-Samples Friedman's Two-Way Analysis of Variance by Ranks was conducted. The test yielded a statistically significant result ($\chi^2 = 100.083$, df = 10, $p < .001$), providing strong evidence that advisors' responses vary meaningfully across the different attitudinal dimensions measured. This confirms that the observed differences in means are not due to random variation but reflect distinct patterns in advisors' beliefs and behaviours.

Table 8: Descriptives of Foresters' Advisors attitudes

Forest Advisors Attitudes	N	Min	Max	Mean	Std. Dev.
I avoid trying things unless I'm sure they will work.	35	1	4	2.40	1.063
I'm using the same methods over years	35	1	5	2.29	1.126
I reckon 'good luck' doesn't exist: 'luck' is good management and 'bad luck' poor management.	34	1	5	3.09	1.190
Although good management requires some training, experience and reading, the ability to manage is mainly determined by genes.	35	1	4	2.23	1.087
When my organization has shown poor results, this is due to circumstances totally out of my control.	34	1	5	2.53	1.022
In local body affairs it's easy for a hard-working and dedicated individual to have an impact in getting changes for the better.	35	2	5	3.20	.994
I seldom change my management and working approaches unless I'm sure the change will be positive.	35	1	5	2.66	1.187
When things go wrong this is often due to events beyond my control (e.g. bad weather).	34	1	5	2.50	1.022
I fear that other advisors are helping to protect environment more than me.	35	1	5	1.97	1.294
It is important that I understand sustainable practices.	35	3	5	4.60	.553
It bothers me when I miss an opportunity to help protect the environment	35	1	5	3.71	1.274

Note: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 32 Test Statistic 100.083 df 10, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)

Overall, advisors do not appear to be strongly risk-averse, although a degree of caution is evident. Statements reflecting reluctance to experiment - such as avoiding new approaches unless they are certain to work and rarely changing management practices without clear positive outcomes - received mean scores slightly below the midpoint of the scale, indicating moderate but not dominant conservatism. Similarly, the low average agreement with using the same methods over many years suggests that advisors do not strongly adhere to rigid routines and may be open to adaptation when justified.

The analysis of foresters' perceptions presented in the following table provides a comprehensive view of how advisors position themselves in relation to their professional identity, environmental responsibility, and understanding of ecological principles.

Table 9: Descriptives of Foresters' Advisors perceptions

Perceptions	N	Min	Max	Mean	Std. Dev.
Helping /advising forest owners/managers is an important reflection of who I am	35	3	5	3.51	0.702
I have a strong sense of belonging to the forestry community	35	1	5	2.97	1.361
I understand that the ecology of the forest is what forestry is about	35	1	5	3.46	1.067
I see myself as a professional who prioritises the environment	35	1	5	3.51	0.981
My forestry advice has an impact on the environment	35	1	5	3.49	0.919
It is my personal responsibility to help protect the environment.	35	1	5	3.63	1.114
It is important to me that forest owners/managers should protect the environment even if it slows down economic growth of their forestry activities.	35	1	5	3.43	1.008
The well-being of the community depends on the preservation of the environment	34	1	5	3.47	1.134
It is important to continuously assess the environmental and social impact of forestry activities	35	1	5	3.49	1.011
I recognize that forests are dynamic ecosystems that interact with neighbouring landscapes.	35	1	5	3.66	.998
I recognize that biodiversity should be managed to enable its protection and enhancement	35	1	5	3.63	1.060
I recognize that forest owners and managers should manage the energy consumption of their forestry activities.	35	1	5	3.23	1.031
I recognize that forest owners and managers should enable the formation of organic carbon in soils and biomass.	35	1	5	3.46	0.886
I recognize that forest owners and managers should implement a soil management plan to enhance and optimize soil health	35	1	5	3.34	0.998
I recognize that forest owners/managers should apply a water management plan to improve and optimize water use and quality	35	1	5	3.46	0.950
I recognize that forest protection products and other treatments should be applied appropriately and as recommended.	35	1	5	3.31	1.022

Note 1: Answers range from Much less than the advisors that I know to Much more than the advisors that I know

Note 2: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 34 Test Statistic 15.285 Degree of Freedom 15, Asymptotic Sig.(2-sided test) 0.485, (there is NO evidence of statistically significant differences among these perceptions)

The responses indicate consistently positive attitudes across all items, with mean scores clustering around the upper mid-range of the scale. This suggests that advisors generally perceive themselves as environmentally conscious professionals who recognize the broader ecological and social implications of forestry.

Advisors express a strong sense of purpose in their professional role. The statement *"Helping/advising forest owners/managers is an important reflection of who I am"* receives a relatively high mean score (M = 3.51, SD = 0.702), indicating that advisory work is closely tied to personal identity for many respondents. However, their sense of belonging to the forestry community is more variable, with a lower mean (M = 2.97, SD = 1.361) and the highest standard deviation among all items. This suggests that while some advisors feel deeply connected to the professional community, others may experience weaker ties or more ambivalent identification.

Environmental and ecological awareness emerges as a central theme in the dataset. Advisors show strong agreement with statements emphasizing ecological understanding and environmental prioritization. For instance, *"I understand that the ecology of the forest is what forestry is about"* (M = 3.46, SD = 1.067) and *"I see myself as a professional who prioritises the environment"* (M = 3.51, SD = 0.981) both reflect a clear alignment with ecological principles. Similarly, respondents acknowledge the environmental impact of their professional actions (M = 3.49, SD = 0.919), reinforcing the perception that forestry advice carries meaningful ecological consequences.

Personal responsibility toward environmental protection is also strongly endorsed. The item *"It is my personal responsibility to help protect the environment"* has one of the highest means (M = 3.63, SD = 1.114), indicating that advisors view environmental stewardship as an individual obligation. This sense of responsibility extends to expectations placed on forest owners and managers. Advisors agree that environmental protection should be prioritized even when it may slow economic growth (M = 3.43, SD = 1.008), and they emphasize the importance of assessing environmental and social impacts of forestry activities (M = 3.49, SD = 1.011).

Perceptions related to ecological processes and sustainable management practices are similarly positive. Advisors recognize forests as dynamic ecosystems interacting with surrounding landscapes (M = 3.66, SD = 0.998), and they strongly support biodiversity protection (M = 3.63, SD = 1.060). They also endorse a range of sustainable management practices, including managing energy consumption (M = 3.23, SD = 1.031), enhancing soil health through soil management plans (M = 3.34, SD = 0.998), enabling organic carbon formation (M = 3.46, SD = 0.886), and applying water management plans (M = 3.46, SD = 0.950). The appropriate use of forest protection products is also recognized as important (M = 3.31, SD = 1.022). Although these items show slightly lower means compared to broader environmental attitudes, they still reflect a generally positive orientation toward sustainable forestry practices.

To determine whether perceptions differed significantly across the items, a Related-Samples Friedman's Two-Way Analysis of Variance by Ranks was conducted. The test yielded a non-significant result ($\chi^2 = 15.285$, df = 15, p = .485), indicating no statistically significant differences among the various perception items. This statistical consistency implies that advisors hold a relatively uniform set of perceptions regarding their environmental role, professional identity, and ecological responsibilities. Overall, the findings portray Forest Advisors as environmentally conscious professionals with a well-integrated understanding of sustainability, responsibility, and ecosystem-based forestry, expressed consistently across different perceptual dimensions.

In summary, Forest Advisors demonstrate a strong and consistent commitment to environmental values, ecological understanding, and sustainable management practices. Their perceptions reflect a professional identity closely tied to environmental stewardship, with little variation across the different

dimensions measured. This uniformity underscores the central role of environmental responsibility within the professional culture of forestry advising.

Foresters' Advisors' biases

All answers of the foresters' advisors participated in the survey are presented in the appendix 2B. Here there is a brief presentation of the main findings concerning the examined categories of biases

Optimism Bias

The optimism bias indicators suggest that foresters' advisors hold a cautious and differentiated view of environmental resilience and future risks. Confidence in the long-term sufficiency of soil and water resources is moderate, with water resources viewed more critically than soil, indicating uncertainty rather than strong optimism. Advisors also express limited belief that the environment can recover naturally without human intervention, suggesting recognition of the need for active management.

The items assessing optimism bias reveal notable variation in foresters' perceptions of environmental resilience and future risks. Advisors show moderate agreement with the idea that soil resources can sustain current forestry practices over the long term ($M = 3.03$, $SD = 1.141$), while confidence in water resource sufficiency is slightly lower ($M = 2.82$, $SD = 1.193$). Respondents express even less optimism regarding the environment's ability to recover naturally without human intervention ($M = 2.71$, $SD = 1.088$), indicating scepticism toward passive ecological recovery.

In contrast, advisors demonstrate stronger concern about future environmental impacts. They believe that environmental changes such as drought or soil degradation are likely to affect their own business within the next decade ($M = 3.59$, $SD = 1.158$), and they express even higher expectations that such changes will affect forests more broadly ($M = 4.03$, $SD = 1.058$). These results suggest that while advisors hold moderate optimism about current resource sufficiency, they anticipate significant environmental challenges ahead.

A Related-Samples Friedman's Two-Way ANOVA indicated statistically significant differences among the optimism bias items ($\chi^2 = 23.078$, $df = 4$, $p < .001$), confirming that advisors' levels of optimism vary meaningfully across different environmental domains.

Confirmation Bias

The items assessing confirmation bias reveal that foresters' advisors place strong emphasis on both scientific and practical forms of evidence when evaluating sustainable forestry practices. Scientific evidence is rated as highly important ($M = 4.53$, $SD = 0.615$), closely followed by practical, in-field evidence ($M = 4.50$, $SD = 0.622$). These consistently high means suggest that advisors rely heavily on empirical validation before recommending sustainable practices.

Advisors also report actively seeking information when encountering new sustainable forestry practices. They research benefits ($M = 4.12$, $SD = 0.640$), drawbacks ($M = 4.00$, $SD = 0.550$), and who has applied the practices ($M = 4.03$, $SD = 0.674$). This pattern indicates a thorough and balanced approach to information gathering, reflecting a desire to evaluate practices from multiple angles rather than relying on a single source.

In contrast, trust in new forestry techniques based solely on recommendations from familiar individuals is notably lower ($M = 3.18$, $SD = 0.797$). While advisors value trusted sources, this lower mean suggests they do not rely exclusively on personal networks when forming judgments about sustainable practices.

A Related-Samples Friedman's Two-Way ANOVA showed statistically significant differences among the confirmation bias items ($\chi^2 = 69.465$, df = 5, $p < .001$), indicating meaningful variation in how advisors weigh different types of information and sources when evaluating sustainable forestry practices.

Ambiguity Aversion

The items assessing ambiguity aversion indicate that foresters' advisors show moderate reluctance toward recommending practices with uncertain outcomes. Advisors report a tendency to avoid suggesting new forestry practices unless they fully understand the expected results (M = 3.24, SD = 1.208), reflecting a preference for clarity and predictability in decision-making. This cautious approach is also evident in their preference for forestry inputs that offer predictable, even if modest, yield improvements over alternatives with higher but uncertain potential (M = 3.38, SD = 1.181), which is the highest mean among the three items.

Similarly, advisors express moderate hesitation to recommend new or sustainable practices when benefits are not guaranteed (M = 3.18, SD = 0.968). Although these means suggest a general inclination toward risk-averse behaviour, the overall scores remain in the mid-range, indicating neither strong aversion nor strong openness to uncertainty.

A Related-Samples Friedman's Two-Way ANOVA found no statistically significant differences among the three ambiguity aversion items ($\chi^2 = 2.370$, df = 2, $p = .306$), suggesting that advisors respond consistently across these aspects of uncertainty.

Risk or Loss Aversion

The items assessing risk or loss aversion reveal a nuanced pattern in foresters' willingness to adopt or recommend new forestry practices. Advisors show relatively low agreement with the statement "I prefer suggesting methods I know, even if new ones could be better" (M = 2.76, SD = 0.819), suggesting that most are not strongly anchored to familiar methods. Concerns about financial loss (M = 2.91, SD = 0.933) and lower yields (M = 3.30, SD = 0.883) are moderate, indicating that while economic considerations matter, they are not the dominant barriers to recommending sustainable practices.

In contrast, lack of knowledge emerges as a more prominent concern (M = 3.68, SD = 0.727), highlighting the importance of training and information availability in shaping advisors' decisions. Despite these concerns, advisors express strong willingness to recommend new forestry practices when environmental benefits are clear. They are particularly open to practices that may result in lower yields initially but offer higher yields in later rotations (M = 4.12, SD = 0.769), and they also show substantial willingness to suggest practices that may reduce yields in order to protect the environment (M = 3.70, SD = 0.951). More generally, they report high readiness to adopt new practices for environmental protection (M = 4.00, SD = 1.015).

The Friedman's test indicated statistically significant differences among the items ($\chi^2 = 54.930$, df = 8, $p < .001$), confirming that advisors weigh different types of risks and motivations in distinct ways. Overall, the pattern suggests that advisors are not strongly loss-averse in economic terms, but rather cautious due to informational uncertainty.

Status Quo Biases

The results suggest limited status quo bias among foresters' advisors, combined with a clear long-term orientation in their advisory behaviour. Advisors report relatively high satisfaction with their current advising practices (mean = 3.62), yet this satisfaction does not translate into resistance to change, as indicated by the low tendency to avoid suggesting new forestry practices (mean = 2.29). This implies confidence in existing approaches alongside openness to innovation.

Economic considerations play a moderate role in advisory decisions. Immediate profits exert only modest influence (mean = 2.76), while cost savings are somewhat more influential (mean = 3.32). Importantly, advisors show strong willingness to recommend sustainable practices that require higher upfront costs but deliver benefits over time, whether through increased income in the long run (mean = 3.85) or reduced costs over a five-year horizon (mean = 3.79). This further underscores a forward-looking decision framework.

Preferences clearly lean away from short-termism. Advisors generally reject practices that yield quick but potentially unsustainable results (mean = 2.21) and strongly disagree with prioritizing short-term profits over future forest health (mean = 1.76). Consistently, they report a high tendency to consider the long-term impacts of their advice on soil and water resources (mean = 4.15). Hesitation toward practices with long-term environmental benefits but no immediate financial gain remains relatively low (mean = 2.41), and advisors are moderately willing to recommend sustainable practices even without future income increases (mean = 3.56).

Overall, the significant Friedman revealed statistically significant differences among the items (χ^2 = 170.604, df = 10, $p < .001$), confirming that advisors' tendencies toward maintaining the status quo vary substantially across different decision-making contexts. This suggests a meaningful variation across status quo–related attitudes, but the pattern points to low inertia and strong intertemporal and environmental awareness, rather than a pronounced bias toward maintaining existing practices.

Cognitive Limitations

The results for cognitive limitations indicate that foresters' advisors generally feel confident in understanding information related to sustainable forestry practices. Respondents report high agreement with the statement "It is easy for me to understand information about sustainable forestry practices" (M = 4.09, SD = 0.712), suggesting strong perceived comprehension. At the same time, advisors show a clear preference for information that is structured and easy to follow. They express greater willingness to suggest new practices when steps are clearly explained (M = 4.24, SD = 0.781), when step-by-step guides are available (M = 4.29, SD = 0.629), and when visual aids (M = 4.32, SD = 0.535) or demonstrations (M = 4.18, SD = 0.834) are provided. These consistently high means highlight the importance of accessible, well-designed communication tools in supporting adoption of new practices.

Despite this overall confidence, some cognitive barriers remain. Advisors show moderate agreement with avoiding sustainable practices when information is too complicated (M = 2.71, SD = 0.871) and report occasional feelings of being overwhelmed by the volume of available information (M = 2.79, SD = 0.893). However, they strongly disagree with the notion that sustainable forestry practices require too much technical knowledge for them to suggest (M = 1.94, SD = 0.776), indicating that complexity is a challenge but not a prohibitive barrier.

The statistically significant Friedman test (χ^2 = 154.089, df = 7, $p < .001$), confirms that advisors' cognitive limitations and support needs vary substantially across different aspects of information processing. Overall, the pattern suggests that reducing cognitive load through clear, visual, and demonstrative tools can substantially increase advisors' willingness to promote sustainable forestry practices, even though fundamental understanding is already high.

Trust and Reciprocity Biases

The analysis of trust and reciprocity biases among the respondents shows clear differences in how various sources and conditions influence attitudes toward sustainable practices. Respondents expressed the highest trust in advice from research and academic centres (Mean = 4.33, SD = 0.48), indicating strong and consistent confidence in these sources. Peer influence also plays an important

role: suggestions from colleagues who have successfully implemented a practice scored 3.94 (SD = 0.70), while advice from individuals who have personally benefited from sustainable forestry practices averaged 3.79 (SD = 0.82). These findings suggest that practical experience and demonstrated success significantly enhance credibility.

Caution is evident when recommending practices to others, with respondents moderately agreeing that they would recommend only if fully convinced of successful implementation (Mean = 3.45, SD = 0.94). In contrast, trust in advice from Non-Government Organizations (NGOs) was the lowest among the items (Mean = 3.15, SD = 1.12), reflecting mixed opinions and greater variability in perceptions of NGO credibility.

A Friedman test confirmed statistically significant differences among these biases ($\chi^2 = 32.352$, df = 4, $p < 0.001$), indicating that respondents do not value these sources equally. The results highlight the importance of leveraging academic credibility, using peer testimonials and case studies, and providing clear evidence of feasibility to increase adoption of sustainable practices. Conversely, NGOs may need to strengthen trust through partnerships with research institutions and transparent, evidence-based communication. Thus, the source of advice strongly affects the likelihood of adoption or recommendation, with academic credibility and peer experience emerging as the most influential factors.

Social Comparison Biases

The analysis of Social Comparison biases among foresters' advisors indicates that peer influence plays a notable but nuanced role in shaping advisory behaviour. Advisors frequently consider colleagues' advice when making their own decisions (mean = 4.03) and feel more confident recommending sustainable practices if others in their community are doing the same (mean = 3.91). These results highlight the importance of observing peer behaviour and community norms in reinforcing sustainable practices.

At the same time, advisors show independence in certain situations: they are moderately willing to suggest a sustainable practice even if no one else in their community does (mean = 3.62), suggesting that while social norms are influential, they do not entirely constrain individual decision-making. Conversely, the inclination to only suggest a practice if it becomes the most common locally is low (mean = 2.22), and hesitation to adopt new methods until others have tested them is also limited (mean = 2.59).

Discussion and communication with peers remain relevant, as advisors often discuss forestry practices with other professionals (mean = 3.85), yet alignment with colleagues' advice is moderate (mean = 3.09). The Friedman test confirms significant differences across these items, emphasizing that social comparison influences are strongest when observing peer behaviour and confidence-building, while complete conformity to community norms is less pronounced.

Summary

The analysis of foresters' advisors' responses reveals a generally cautious, evidence-driven, and forward-looking professional profile with limited behavioural biases hindering the promotion of sustainable forestry practices. Advisors show moderate optimism regarding current soil and water resource sufficiency, paired with strong awareness of future environmental risks and a clear recognition of the need for active management. Their decision-making is strongly grounded in scientific and practical evidence, with systematic information-seeking behaviour and relatively low reliance on informal recommendations alone. While advisors display moderate aversion to uncertainty, they are not

strongly risk- or loss-averse in economic terms; instead, informational gaps emerge as the main constraint. Status quo bias is limited, as advisors are open to innovation and strongly oriented toward long-term environmental and economic outcomes rather than short-term gains. Cognitive capacity is generally high, with clear preferences for well-structured, visual, and demonstrative information to reduce complexity and support adoption. Trust is placed primarily in academic institutions and proven peer experience, while NGOs are viewed with more caution. Finally, social comparison plays a reinforcing rather than constraining role: advisors value peer behaviour and discussion but retain autonomy in their recommendations. Overall, the findings suggest that enhancing clarity, evidence quality, and peer-supported learning can further strengthen advisors' role in advancing sustainable forestry practices.

Foresters' Advisors' motives evaluation

In the survey there were 3 types of motivations economical, emotional and educational. Forester advisors were asked to evaluate in two levels firstly for their selves and secondly for other advisors in their area. All analysis is presented in the appendix 2B.

Economic Benefits – Motives

The evaluation of economic motives that forest advisors could use to promote sustainable forestry practices reveals clear preferences among respondents. The most strongly endorsed incentives were increased subsidies for sustainable practices (Mean = 4.34, SD = 1.15), subsidies or grants for investments in sustainable forestry (Mean = 4.28, SD = 1.11), and private sector payments for environmental services such as carbon credits (Mean = 4.28, SD = 0.92). These findings indicate that direct financial support and market-based mechanisms are perceived as highly effective motivators. Long-term benefits through climate resilience also scored relatively high (Mean = 3.94, SD = 0.80), suggesting that advisors recognize the importance of framing sustainability as a future-oriented economic advantage.

Moderate support was observed for motives such as market premiums for certified sustainable products (Mean = 3.66, SD = 1.36), reduction in insurance costs (Mean = 3.61, SD = 1.20), and ensuring proper use of subsidies (Mean = 3.75, SD = 1.41). Legal enforcement (Mean = 3.38, SD = 1.10), water and energy efficiency (Mean = 3.34, SD = 1.21), and export opportunities to niche markets (Mean = 3.31, SD = 1.42) were rated somewhat lower, indicating these measures may be less persuasive compared to direct financial incentives. The least favoured motives were reduced input costs (Mean = 3.09, SD = 1.30) and taxes for conventional products (Mean = 2.91, SD = 1.49), suggesting that punitive measures and indirect savings are not seen as strong drivers of behavioural change.

The Friedman test confirmed statistically significant differences among these motives ($\chi^2 = 63.904$, df = 11, $p < 0.001$), indicating that respondents prioritize certain economic incentives over others. Overall, strategies emphasizing subsidies, grants, and payments for ecosystem services appear most promising for motivating sustainable forestry practices, while measures relying on penalties or minor cost reductions may require complementary approaches to be effective.

The evaluation of economic motives that other forest advisors could use to promote sustainable forestry practices indicates clear priorities among respondents (N = 31). The strongest incentives identified were increased subsidies for sustainable practices (Mean = 4.35, SD = 1.20) and long-term benefits through climate resilience (Mean = 4.35, SD = 1.20), followed closely by subsidies or grants for investments in sustainable forestry (Mean = 4.00, SD = 1.32). These results suggest that direct financial support and framing sustainability as a future-oriented economic advantage are considered highly effective strategies.

Moderate support was observed for market premiums for certified sustainable products (Mean = 3.55, SD = 1.61), reduction in insurance costs (Mean = 3.42, SD = 1.46), private sector payments for environmental services such as carbon credits (Mean = 3.42, SD = 1.34) and ensuring proper use of subsidies (Mean = 3.42, SD = 1.46). Legal enforcement (Mean = 3.19, SD = 1.22), water and energy efficiency (Mean = 3.13, SD = 1.09), and export opportunities to niche markets (Mean = 3.06, SD = 1.39) were rated somewhat lower, indicating these measures may be less persuasive compared to direct financial incentives. The least favoured motives were reduced input costs (Mean = 3.06, SD = 1.24) and taxes for conventional products (Mean = 2.77, SD = 1.48), suggesting that punitive measures and indirect savings are not seen as strong drivers of behavioural change.

A Friedman test confirmed statistically significant differences among these motives ($\chi^2 = 66.079$, df = 11, $p < 0.001$), indicating that respondents prioritize certain economic incentives over others. Overall, strategies emphasizing subsidies, grants, and highlighting long-term resilience benefits appear most promising for motivating sustainable forestry practices, while measures relying on penalties or minor cost reductions may require complementary approaches to be effective.

Paired comparisons indicate that advisors rate several economic motives as more effective for themselves than for other advisors. Specifically, ensuring proper use of subsidies ("subsidies discipline") shows a significant positive self–other gap (Mean difference = 0.355, t(30) = 2.99, p = 0.006), as do private-sector payments for environmental services (e.g., carbon credits) (Mean difference = 0.903, t(30) = 3.79, p = 0.001), and long-term benefits through climate resilience (Mean difference = 0.655, t(28) = 3.49, p = 0.002). These results suggest advisors see targeted oversight of subsidies, market-based incentives, and resilience framing as particularly compelling in their own practice compared to what they believe motivates peers.

For all other motives, self–other differences are not statistically significant, including increased subsidies (Mean difference = −0.032, p = 0.845), grants for sustainable investments (0.258, p = 0.147), legal enforcement (0.194, p = 0.374), taxes on conventional products (0.129, p = 0.442), market premiums (0.129, p = 0.536), export opportunities (0.258, p = 0.161), reduced input costs (0.000, p = 1.000), water/energy efficiency (0.194, p = 0.161), and reduced insurance costs (0.333, p = 0.178). Overall, advisors perceive most financial levers similarly for themselves and others, with notable self-favouring differences centred on subsidy oversight, carbon-credit style payments, and climate resilience benefits.

Emotional Motives

The evaluation of emotional motives that forest advisors could use in a specific area to promote behavioural change indicates strong resonance with stewardship and legacy themes (N = 30–32). The highest endorsements were a sense of responsibility to leave healthy, productive forests for future generations (Mean = 4.34, SD = 0.79) and a commitment to promoting forest ecosystem health and biodiversity (Mean = 4.34, SD = 0.94), followed closely by feeling proud to manage forests in ways that preserve the environment (Mean = 4.16, SD = 0.88) and feeling responsible for protecting the environment (Mean = 4.16, SD = 0.88). Advisors also reported solid support for pride in protecting wildlife and the broader ecosystem, emotional attachment to local forests, and recognition of forests' functional value (each Mean ≈ 4.03, SD ≈ 0.97–1.00), as well as satisfaction from "doing things the right way" (Mean = 4.00, SD = 1.05). Community-oriented motives were moderately strong (helping the local community and wellbeing connected to nature, Means ≈ 3.87–3.88), while pride in contributing to forest safety/security and dedication due to organizational mission showed mixed views with higher variability (Means ≈ 3.75–3.84; SDs ≈ 1.19–1.24). The least endorsed frame was alignment with spiritual/religious beliefs (Mean = 3.00, SD = 1.80), suggesting limited and heterogeneous appeal.

A Friedman test confirmed significant differences across motives ($\chi^2 = 54.630$, df = 17, $p < 0.001$), indicating advisors weigh emotional appeals differently. Overall, messages emphasizing intergenerational responsibility, biodiversity, environmental stewardship, and local attachment appear most persuasive, whereas religious framing and security-focused appeals may require careful, context-specific use.

The evaluation of emotional motives that other forest advisors could use to promote sustainable forestry practices reveals moderate endorsement overall, with notable variation across motives (N = 28–31). The highest-rated motives were emphasizing the functional value of forests (Mean = 3.87, SD = 1.18), emotional attachment to local forests (Mean = 3.71, SD = 1.24), and a sense of responsibility to leave healthy, productive forests for future generations (Mean = 3.77, SD = 1.23). These findings suggest that appeals to practical benefits and local identity may resonate most strongly when motivating peers. Other moderately supported motives include managing forests "the right way" (Mean = 3.55), preserving local identity (Mean = 3.52), and pride in contributing to forest safety and security (Means ≈ 3.39–3.45). In contrast, motives linked to spiritual or religious beliefs received the lowest endorsement (Mean = 2.13, SD = 1.36), indicating limited relevance for most advisors.

Overall, ratings for motives such as protecting wildlife, promoting biodiversity, and climate resilience were modest (Means ≈ 3.23–3.35), suggesting these appeals may require complementary framing to be persuasive. A Friedman test confirmed significant differences among motives ($\chi^2 = 84.709$, df = 17, $p < 0.001$), highlighting that advisors perceive emotional drivers unevenly. In summary, strategies emphasizing functional benefits, local attachment, and intergenerational responsibility appear most promising for influencing other advisors, while spiritual framing and highly abstract appeals may be less effective.

The comparative evaluation of emotional motives shows that advisors themselves consistently endorse stewardship-oriented frames more strongly than they believe other advisors in the area do. Paired t-tests indicate significant self–other gaps for pride in managing forests that preserve the environment ($\Delta=0.74$, $p=0.005$), pride in protecting wildlife and the broader ecosystem ($\Delta=0.65$, $p<0.001$), feeling responsible for protecting the environment ($\Delta=0.81$, $p<0.001$), and emphasizing climate resilience ($\Delta=0.58$, $p<0.001$). Advisors also rate community-focused and personal growth appeals higher for themselves - helping the local community ($\Delta=0.65$, $p=0.001$) and improved sustainable skills ($\Delta=0.74$, $p=0.001$) - as well as intergenerational responsibility ($\Delta=0.55$, $p=0.011$), commitment to ecosystem health and biodiversity (the largest gap; $\Delta=1.10$, $p<0.001$), alignment with spiritual/religious beliefs ($\Delta=0.87$, $p=0.001$), dedication due to organizational mission ($\Delta=0.61$, $p<0.001$), and the belief that psychological wellbeing is connected to nature ($\Delta=0.68$, $p=0.001$). In contrast, there are no statistically significant differences for practical, place-based frames such as forests' functional value ($\Delta=0.13$, $p=0.423$) and emotional attachment to local forests ($\Delta=0.29$, $p=0.194$), with several other items showing only marginal trends (e.g., ancestors' forests, local identity, "doing things the right way," safety/security; $p\approx0.06–0.10$). Taken together with the descriptive means - higher for "self" on stewardship, biodiversity, and future-generations themes, and highest for "others" on functional value and local attachment - these results suggest that advisors see morally grounded stewardship and resilience narratives as especially persuasive in their own practice, while expecting peers to respond more to tangible, locally anchored benefits.

Educational Motives

The evaluation of educational motives that advisors could use to promote sustainable forestry practices highlights strong preferences for evidence-based and practical learning approaches (N = 30–32). The most highly endorsed strategies were providing clear evidence of long-term financial benefits and cost savings (both Mean = 4.44, SD = 0.80), indicating that demonstrating tangible economic outcomes is considered the most persuasive educational tool. Practical engagement methods such as field days for

training in new technology and sustainable forestry methods also scored very high (Means = 4.25, SD ≈ 0.92–0.98), along with forest-owner-to-forest-owner knowledge exchange through mentoring (Mean = 4.22, SD = 1.01) and cooperation (Mean = 4.13, SD = 0.98). These findings suggest that experiential learning and peer-to-peer interaction are key drivers for motivating behavioural change.

Moderate support was observed for educational programs leading to sustainability certifications (Mean = 3.84, SD = 1.22), general forestry management training (Mean = 4.00, SD = 1.34), and school-based programs (Mean = 4.00, SD = 1.16), while marketing about sustainable forestry (Mean = 3.38, SD = 1.29) and organizational restructuring or time management (Means ≈ 3.22, SD ≈ 1.36–1.48) were rated lower, indicating these approaches may be less influential. Effective communication among forest owners and managers (Mean = 3.71, SD = 1.44) was also moderately endorsed, suggesting that shared visions and goals can complement technical training.

A Friedman test confirmed significant differences among these motives ($\chi^2 = 67.857$, df = 12, $p < 0.001$), underscoring that advisors prioritize clear economic evidence and hands-on learning over abstract or organizational strategies. Overall, combining financial proof with practical demonstrations and peer learning appears most promising for promoting sustainable forestry practices.

The evaluation of educational motives that other forest advisors could use to promote sustainable forestry practices shows moderate endorsement overall, with clear differences across strategies (N = 29–31). The most valued approaches were providing clear evidence of long-term financial benefits (Mean = 4.03, SD = 1.17) and cost savings (Mean = 3.94, SD = 1.21), indicating that economic proof remains a key motivator, though less strongly than when advisors consider their own practice. Practical learning methods such as field days for sustainable forestry (Mean = 3.74, SD = 1.21) and new technology (Mean = 3.61, SD = 1.23), as well as forest-owner-to-forest-owner mentoring and cooperation (Means ≈ 3.61–3.65), were moderately endorsed, suggesting experiential and peer-based approaches retain relevance but with lower perceived impact for peers.

Educational programs for sustainability certifications (Mean = 3.42, SD = 1.18), general forestry management training (Mean = 3.65, SD = 1.25), and effective communication among forest owners and managers (Mean = 3.50, SD = 1.36) were rated in the mid-range, while marketing about sustainable forestry (Mean = 3.00, SD = 1.21), school-based programs (Mean = 3.10, SD = 1.40), and organizational restructuring or time management (Means ≈ 2.65–2.87) were least favoured, indicating these strategies may have limited influence. A Friedman test confirmed significant differences among motives ($\chi^2 = 61.503$, df = 12, $p < 0.001$), showing that advisors perceive educational levers for peers unevenly.

The comparative assessment of educational motives shows that advisors rate evidence-based and hands-on learning approaches more highly for their own practice than they believe other advisors in the area do (N ≈ 30–32 vs. 29–31). For “self,” the strongest levers were clear evidence of long-term financial benefits and cost savings (both Mean = 4.44), alongside field days focused on new technology and sustainable methods (both Means = 4.25) and peer learning via forest-owner mentoring and cooperation (Means = 4.22 and 4.13). Moderately high endorsements included general forestry management and school-based programs (both Means = 4.00), certification programs (Mean = 3.84), and effective communication among owners/managers (Mean = 3.71), while marketing, time management, and organizational restructuring were lower (Means ≈ 3.38 and 3.22). For “others,” financial evidence remained top-ranked but weaker (Means = 4.03 and 3.94), with field days (Means ≈ 3.61–3.74) and peer learning (Means ≈ 3.61–3.65) only moderately endorsed; certifications (Mean = 3.42), forestry management (Mean = 3.65), and effective communication (Mean = 3.50) sat mid-range, and marketing, school-based, time management, and restructuring were lowest (Means ≈ 2.65–3.10). Paired comparisons confirm significantly higher self-ratings for most levers - field days (Δ=0.61 and 0.48; p=0.004 and 0.020), peer knowledge exchange (mentoring Δ=0.55, p=0.048; cooperation Δ=0.48,

p=0.026), marketing (Δ=0.32, p=0.023), certification programs (Δ=0.39, p=0.016), forestry management (Δ=0.32, p=0.010), time management (Δ=0.32, p=0.010), organizational restructuring (Δ=0.55, p=0.001), and school-based programs (Δ=0.87, p=0.004); effective communication showed no significant gap (Δ=0.17, p=0.134), and the financial evidence items were marginal (Δ=0.39–0.48; p=0.083–0.062). Friedman tests were significant for both datasets (χ^2 = 67.857 and 61.503; df = 12; $p < 0.001$), indicating that motives are prioritized differently within each perspective. Overall, advisors view financial proof, field-based training, and peer-to-peer learning as especially persuasive in their own work and expect other advisors to be comparatively less responsive - particularly to hands-on, organizational, and school-based approaches - while financial evidence remains a broadly valued but not distinctly different lever across groups.

Nudges Evaluation

The evaluation of nudges that forest advisors could use to motivate behavioural change indicates a clear preference for practical, decision-oriented tools and positive, success-focused messaging (N = 32–33). The strongest endorsement was for decision-support systems that help forest owners/managers assess costs and benefits (Mean = 4.13, SD = 0.83), followed by showcasing peers' success with higher profits or improved forest health (Mean = 3.97, SD = 1.20). Easy-to-follow guides/toolkits also scored highly, both in general (Mean = 3.81, SD = 1.15) and via social media/internet (Mean = 3.63, SD = 1.26), as did media highlighting of environmental impacts (Mean = 3.78, SD = 0.98) and sharing collective achievements of groups/cooperatives (Mean = 3.72, SD = 1.30). Information on tangible benefits via social media was moderately endorsed (Mean = 3.67, SD = 1.47), though with higher variability, suggesting uneven traction across audiences. In contrast, loss-framed nudges - highlighting environmental costs (Mean = 3.34, SD = 1.23) and the consequences of not adopting sustainable practices (Mean = 3.36, SD = 1.41) - and simple visual cues like color-coding (Mean = 3.28, SD = 1.33) or billboard reminders (Mean = 3.19, SD = 1.38) were comparatively less persuasive. A Friedman test (χ^2 = 35.362, df = 10, $p < 0.001$) confirms significant differences among these nudges. Overall, the results suggest that advisors in this area are most likely to motivate change by combining evidence-based decision aids, clear how-to guidance, and social proof (individual and collective success), while relying less on negative framings or generic cues.

The evaluation of nudges that other forest advisors could use to promote sustainable forestry practices reveals moderate endorsement overall, with clear differences across strategies (N = 31–32). The most strongly rated approach was highlighting forest managers who successfully use sustainable practices and achieve positive outcomes (Mean = 4.00, SD = 1.27), followed by decision-support systems that help assess costs and benefits (Mean = 3.84, SD = 1.16) and sharing collective achievements of forestry groups or cooperatives (Mean = 3.71, SD = 1.22). These findings suggest that social proof and practical decision tools are perceived as the most effective nudges for motivating peers.

Moderate support was observed for easy-to-follow guides/toolkits (Mean = 3.42, SD = 1.23) and their delivery via social media (Mean = 3.32, SD = 1.11), while information on tangible benefits through social media (Mean = 3.19, SD = 1.17) and media highlighting environmental impacts (Mean = 3.06, SD = 1.18) were rated lower. Nudges emphasizing negative framing - such as highlighting environmental costs (Mean = 2.90, SD = 1.08) or consequences of not adopting sustainable practices (Mean = 3.28, SD = 1.42) - and visual cues like color-coding (Mean = 2.94, SD = 1.18) or billboard reminders (Mean = 2.71, SD = 1.44) were least favoured, indicating limited perceived effectiveness. A Friedman test confirmed significant differences among these nudges (χ^2 = 62.352, df = 10, $p < 0.001$), showing that advisors expect peers to respond more to positive, success-oriented messaging and decision aids than to punitive or generic cues.

The comparative assessment of nudges shows broadly similar priorities for advisors versus what they expect from other advisors in the area, with social proof and decision aids ranked near the top in both

datasets. Advisors rated decision-support systems highest for themselves (Mean = 4.13) and showcasing successful peers next (3.97), while for other advisors the pattern was reversed - showcasing successful peers led (4.00) followed by decision-support systems (3.84). Practical how-to supports - easy-to-follow guides/toolkits (3.81 for self; 3.42 for others) and delivery via social media (3.63 vs. 3.32) - and sharing collective achievements (3.72 vs. 3.71) were also valued, whereas loss-framed cues (environmental costs and consequences) and generic prompts (color-coding, billboards) sat lower for both groups (≈2.7–3.4), with advisors' own ratings generally a bit higher. Paired comparisons confirm significantly higher self-ratings for a wide set of levers: highlighting environmental impacts through media (Δ=0.68, p=0.004), highlighting environmental costs (Δ=0.39, p=0.037), easy-to-follow guides (Δ=0.36, p=0.009), decision-support systems (Δ=0.26, p=0.030), color-coding (Δ=0.32, p=0.010), and billboard reminders (Δ=0.52, p=0.047), with marginal self-advantages for tangible-benefit messages via social media (Δ=0.52, p=0.054) and guides via social media (Δ=0.26, p=0.058). In contrast, there were no meaningful self–other gaps for showcasing successful peers (Δ≈0, p=0.768), sharing collective achievements (Δ=0.07, p=0.677), or highlighting consequences of non-adoption (Δ=0.13, p=0.354). Friedman tests were significant in both sets (χ^2 = 35.362 and 62.352; df = 10; $p < 0.001$), indicating distinct within-set preferences. Overall, the evidence suggests that advisors see themselves as especially responsive to decision aids and instructional/media nudges, while expecting peers to respond most to positive social proof; loss-framed and generic cues remain comparatively less persuasive for both.

Summary of Motives and Nudges for Promoting Sustainable Forestry Practices

The analysis reveals that forest advisors prioritize economic incentives, emotional appeals, educational strategies, and behavioural nudges differently for themselves compared to what they expect peers to value, though some common themes emerge.

Both perspectives strongly favour direct financial incentives - such as increased subsidies, grants for sustainable investments, and payments for ecosystem services - alongside long-term climate resilience benefits. Advisors rate private-sector payments and subsidy discipline higher for themselves, while they expect peers to respond more to subsidies and resilience framing. Punitive measures (e.g., taxes on conventional products) and indirect savings (e.g., reduced input costs) are consistently least persuasive.

Advisors place greater emphasis on stewardship and moral responsibility, including protecting biodiversity, leaving healthy forests for future generations, and aligning with organizational mission. Paired comparisons show significant self–other gaps for these motives, as well as for community-oriented and personal growth appeals. In contrast, both groups rate local attachment and functional value similarly, while spiritual/religious framing remains least influential overall.

Clear evidence of financial benefits and cost savings, combined with hands-on learning (field days) and peer-to-peer knowledge exchange, dominates advisors' own priorities. They also value certification programs and school-based initiatives more than they believe peers do. For other advisors, financial proof remains important but less strongly endorsed, and practical training and organizational restructuring rank lower. Paired tests confirm advisors see themselves as more responsive to experiential and organizational learning approaches.

Both groups favour positive, success-oriented messaging and decision-support tools, but advisors rate instructional aids (guides, toolkits) and media-based environmental framing higher for themselves. Social proof - highlighting successful forest managers - shows no self–other gap, indicating universal

appeal. Loss-framed nudges (environmental costs, consequences) and generic cues (billboards, color-coding) rank lowest for both, though advisors perceive slightly more value in these than peers.

Advisors consistently rate themselves as more receptive to complex, evidence-based, and stewardship-driven approaches, while expecting peers to respond primarily to financial incentives, social proof, and practical benefits. Across all categories, strategies combining economic viability, moral responsibility, experiential learning, and visible success stories appear most promising for promoting sustainable forestry practices, whereas punitive measures, abstract appeals, and generic cues require complementary framing to be effective.

Exploring Food Consumers' Biases

This survey of European consumers provides a granular picture of how people define, value, and act upon sustainability in food. The sample is predominantly male and highly educated, with most respondents responsible for household food purchasing and reporting low-to-moderate financial strain. Across three multi-item questions, sustainability is anchored in health and naturalness, reinforced by ethical criteria and locality/availability. Trust in sustainable foods is generally high and word-of-mouth intentions are strong, while price acceptance is conditional on credible quality/taste and fairness benefits. Agreement patterns reveal category-specific taste expectations and a pragmatic stance toward premiums. Willingness-to-pay clusters between 0–10% and 11–20%, with higher premia tolerated for fresh staples and animal products (fruits, eggs, vegetables/legumes, meat, fish, cheese) and minimal premia for commoditized beverages and convenience items.

Interpreting these results through the lens of behavioural biases clarifies the adoption pathway: halo effects and affect/availability can accelerate uptake when identification is effortless; loss aversion, status-quo inertia, present bias, and ambiguity aversion keep decisions price-gated and evidence-driven. Practically, credible front-of-pack identification, category-specific sensory/quality proof, fairness/locality signalling, and price architectures by category - amplified by social proof - are the most reliable levers to convert attitudes into sustained purchase behaviour

Food Consumers' sample

The sample consisted predominantly of male respondents. Specifically, 148 participants (61.8%) identified as male, while 248 respondents (36.9%) identified as female. The cumulative percentages indicate that almost the entire sample was covered by these two categories.

The educational profile of respondents was relatively high. More than half of the participants (54.6%) reported holding a Master's, postgraduate, or doctoral degree. A further 24.9% had completed a Bachelor's degree or an equivalent qualification. Smaller proportions reported upper secondary education (8.5%), a college entrance qualification (7.0%), or lower secondary/primary education or below (5.0%). Overall, nearly four out of five respondents had completed tertiary education.

In terms of marital status, the majority of respondents were married (54.9%), followed by single individuals (38.7%). A smaller proportion of the sample reported being divorced (5.7%). These results suggest that most participants lived within family or long-term partnership contexts.

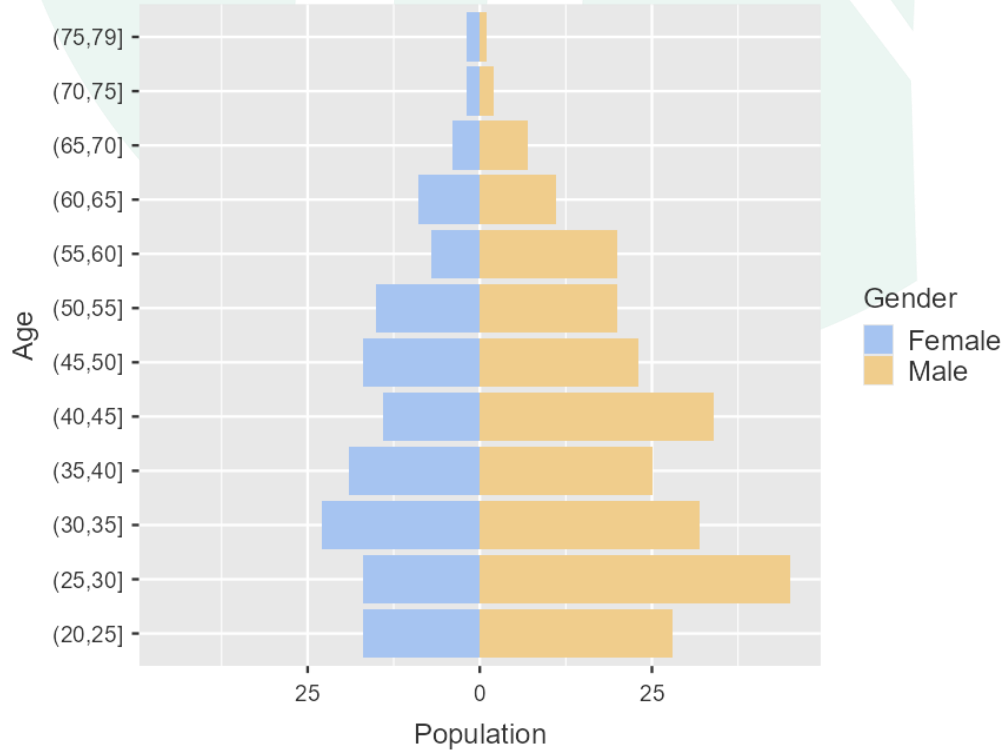
An overwhelming majority of respondents (92.5%) stated that they are responsible for decision-making regarding food purchases in their household. Only 7.5% indicated that they are not responsible for such decisions, highlighting the strong relevance of the sample for research on consumer food choices.

Among respondents who indicated that they are not responsible for food purchasing decisions, responsibility was most frequently attributed to parents (2.5%), followed by the respondent's wife (2.0%), mother (1.5%), or father (1.0%). A very small proportion (0.5%) reported shared responsibility with their spouse. Overall, these cases represent a small minority of the sample.

Half of the respondents (50.9%) reported having no children. Among those with children, 13.2% had one child, 22.2% had two children, and 10.5% had three children. Households with four or more children were relatively rare, accounting for approximately 3.2% of the sample combined.

Most respondents lived in households with two adults, representing 52.4% of the sample. Single-adult households accounted for 19.0%, while households with three adults represented 15.5%. Larger households with four or five adults were less common, accounting for 9.5% and 3.7% of respondents, respectively.

Figure 6: Age Pyramid for food consumers participating in the survey



The survey included respondents from a wide range of European and neighbouring countries. The largest shares came from Greece (16.5%) and Portugal (16.0%), followed by Lithuania (11.7%) and Tunisia (11.2%). Other countries represented included Sweden (7.5%), Spain (7.2%), France (7.0%), Serbia (6.7%), and Slovenia (5.2%). Smaller proportions were reported for the United Kingdom, Poland, and other countries, indicating a geographically diverse sample.

Nearly half of the respondents (47.6%) reported living in a large city. A further 32.2% lived in small towns, while 19.0% resided in rural villages. This distribution suggests that the sample was primarily urban and semi-urban, with a substantial rural representation.

Levels of awareness of the EU Common Agricultural Policy varied across respondents. Approximately 17.5% reported being not aware at all, while 27.2% indicated slight awareness. About one quarter of the sample (25.7%) reported an average level of awareness. Higher awareness levels were reported by 21.0% of respondents, and 7.2% stated that they were fully aware of the CAP.

Regarding financial strain, 44.9% of respondents reported never having difficulties paying bills, and a further 28.2% indicated that they almost never experience such difficulties. Approximately 19.0% reported sometimes having difficulties, while 7.0% stated that they experience difficulties most of the time. Overall, the majority of respondents reported relatively low levels of financial stress.

Food Consumers' perceptions about sustainable food products

In this part of the survey Three multi-item questions were asked to respondents regarding sustainable food products. The first one capturing what consumers associate with sustainable food products and the second how important specific characteristics are, while the third asked respondents to indicate their level of agreement with a series of statements about sustainable food products indicating their attitudes towards sustainable food products.

The descriptive statistics indicate that respondents clearly differentiate among the importance of various characteristics of sustainable food products, a finding supported by the statistically significant Friedman test ($\chi^2 = 450.905$, df = 13, $p < 0.001$). Overall, most characteristics receive relatively high importance ratings, suggesting a broadly positive and demanding consumer view of sustainability. The highest mean score is observed for "Nutritious and healthy" (SD 0.71; N=400) — the single most important attribute, with the lowest dispersion, indicating with abroad consensus that health considerations are the most important attribute of sustainable food products. Very high importance is also assigned to social and ethical dimensions, such as respecting workers' rights, fair pay, health and safety (Mean = 4.35, SD = 0.81) and fair revenue for farmers (4.22, 0.88). Similarly, localness and accessibility are strongly valued, with locally produced (4.23, 0.80) and available near me (4.11, 0.84) ranking among the most important characteristics.

Attributes related to affordability and environmental responsibility are also rated highly. Respondents consider affordable prices important (4.15, 0.87), while low environmental and climate impact (3.92, 0.96) and supporting animal welfare (4.04, 0.96) receive consistently high evaluations. Production-related aspects such as little or no use of pesticides (4.04, 1.01) and minimally processed products (3.96, 1.03) further underline the emphasis on naturalness and responsible farming practices.

Moderately high importance is attributed to supply chain and packaging characteristics, including transferred through local or short supply chains (3.76, 1.02), minimal packaging (Mean = 3.78), and no plastic on packaging (3.73, 1.14). The organic attribute receives the lowest mean score among the listed characteristics (3.58, 1.10), although it is still evaluated above the midpoint of the scale, indicating that it remains relevant but is not the primary defining feature of sustainability for respondents.

As far the importance of the selected series sustainable food characteristics 22 statement were examined. Across these statements ($N \approx 388–396$; 5-point scale), perceptions of what defines sustainable food products cluster well above the neutral point for health, quality, "naturalness," trust, and recognizability, and well below neutral for indifference or outright scepticism. The highest endorsements are that such products are grown or produced with fewer chemicals (mean 4.08, SD 1.01), have better quality (4.00, 0.95), are healthier (3.99, 1.01), "deserve my trust" (3.84, 1.09), and should be clearly identified with a logo (3.81, 1.11); respondents also see them as "authentic because they ensure a proper future of agriculture" (3.81, 1.03) and say they "look natural" (3.74, 1.05). Taste tilts positive but with heterogeneity (3.53, 1.26). Mid-range ratings reveal realism about cost and production: people acknowledge they are "more expensive" (3.35, 1.11) and only moderately endorse "I accept their higher price" (3.30, 1.00), consider sophisticated irrigation somewhat characteristic (3.38, 1.06), and split on whether taste is like conventional (3.27, 1.22). Items implying misconceptions or negative externalities are at or below neutrality: "packed using non-degradable plastics" sits around neutral (2.98, 1.31), and "more water is required" is below neutral (2.85, 1.19). The least endorsed statements reject sustainability's relevance or familiarity: "no need for sustainable products" (2.15, 1.40), "I have never heard about sustainable food products" (2.27, 1.37), "I do not care too much about them" (2.49, 1.24), "they do not attract my attention" (2.43, 1.24), and negative taste claims ("poor flavour," 2.25, 1.26). Aesthetic/marketing cues are not persuasive: "nice packaging/bright colours" (2.32, 1.21) and "homogeneous size" (2.33, 1.25) are both low. Dispersion is modest for the top beliefs

(SDs ≈ 0.95–1.10), indicating broad agreement on health/quality/naturalness, while variability is larger where knowledge or salience differ (e.g., “plenty of natural resources” 2.62, SD 1.48; “non-degradable plastics” 2.98, SD 1.31; “taste” 3.53, SD 1.26). The related-samples Friedman test is highly significant ($\chi^2(22) = 2114.85$, $p < .001$; $N = 355$), confirming statistically meaningful differences across these perceptions rather than uniform agreement.

When the two multi-item questions are jointly considered—one capturing what consumers associate with sustainable food products and the other how important specific characteristics are—a coherent and multidimensional consumer profile emerges. Overall, respondents demonstrate a high level of engagement and differentiation, as evidenced by statistically significant differences in both sets of items (Friedman tests, $p < 0.001$), indicating that sustainability is neither a vague nor a uniform concept for consumers.

Across both tables, health, naturalness, and reduced chemical use form the strongest common core of sustainability perceptions. In the perception-based items, sustainable foods are widely seen as healthier, of better quality, grown with fewer chemicals, and more natural. These associations align closely with the importance ratings, where nutritious and healthy, little or no use of pesticides, and minimally processed products rank among the most important characteristics. This convergence suggests that consumers’ beliefs about what sustainable food is are largely consistent with what they actively value when making food choices, reflecting a health-driven sustainability mindset.

A second strong convergence appears around social and ethical dimensions. Sustainable food products are perceived as authentic, trustworthy, and contributing to the future of agriculture, while the importance ratings highlight fair revenue for farmers, respect for workers’ rights, and animal welfare as central criteria. Together, these results indicate a clear ethical consumption pattern, where sustainability is understood not only as an environmental issue but also as a matter of fairness, social responsibility, and long-term system viability.

Local production and short supply chains also emerge as a unifying behavioural theme. Respondents perceive sustainable foods as more traditional and authentic, and they strongly value local production, availability near the consumer, and short supply chains. This combination reflects a proximity-based trust mechanism, whereby sustainability is associated with geographical closeness, transparency, and reduced distance between producer and consumer.

At the same time, price-related perceptions reveal a nuanced and pragmatic stance. Sustainable foods are widely perceived as more expensive, and respondents moderately agree that they accept higher prices. However, in the importance ratings, affordability remains a highly valued characteristic. This indicates a conditional willingness to pay, where consumers accept price premiums only when sustainability benefits—especially health, quality, and ethical standards—are clear and credible.

Environmental considerations such as low carbon footprint, minimal packaging, and reduced plastic use are consistently evaluated as important, yet they tend to rank slightly below health and social attributes. In the perception items, respondents do not strongly associate sustainable food with visually attractive packaging or homogeneity, reinforcing the idea that substance is valued over appearance. Sustainability, therefore, is framed more in terms of production practices and impacts than marketing aesthetics.

Finally, the low agreement with statements expressing indifference, lack of awareness, or rejection of sustainable food suggests that disengaged or sceptical consumers represent a minority. Most respondents show familiarity with the concept and express clear expectations regarding what sustainable food should deliver.

Taken together, the two tables reveal a holistic but selective sustainability orientation among consumers. At the shelf, respondents are most likely to favour products that clearly state: (i) strong health/safety credentials (nutrition, low pesticides, minimal processing), (ii) ethical assurances (worker rights, fair farmer revenue), and (iii) local origin/ready availability, provided they are reasonably priced. Environmental and packaging credentials can tip the balance - especially for some subgroups - but are less decisive alone. “Organic” labelling, while beneficial, may be insufficient on its own unless it is connected to the specific benefits people value (health, fewer pesticides, fairness, locality) and offered at an acceptable price point.

Rather than focusing on single labels or symbolic attributes, consumers appear to adopt a pragmatic sustainability logic, integrating personal benefits with broader societal and environmental considerations. This consistency between perceptions and stated importance suggests a relatively stable and meaningful sustainability framework guiding consumer attitudes toward food products.

The third multiitem question examined respondents’ attitudes about sustainable food products. All Items were rated on a 1–5 agreement scale. Agreement was strongest for the proposition that sustainable products are environmentally friendly (mean 4.11, SD 0.94), indicating broad acceptance of the environmental framing. Positive social influence is also notable: “I recommend their purchase to my family/friends” averages 3.71 (1.03), suggesting many respondents would advocate for these products.

Taste perceptions are favourable, at least in poultry: “Sustainable chicken tastes better” scores 3.61 (SD 0.96). On affordability within that category, “Sustainable chicken price is affordable” is 3.20 (SD 0.93), slightly above neutral. At the broader level, price as a barrier is only moderately endorsed: “Their price is too high for me. I’m not buying them” sits near the midpoint at 2.92 (SD 1.05), implying mixed views.

For tomatoes, respondents disagree that sustainability makes no difference: “The taste of tomatoes is the same, no matter their sustainable origin” averages 2.31 (SD 1.17), and “The price of tomatoes is the same, no matter their sustainable origin” is 2.32 (SD 1.08). Together, these indicate an expectation of taste and price differences by sustainable origin.

Trust is generally present: “I do not trust sustainable food products” is 2.05 (SD 1.11), showing clear disagreement. Dispersion is lowest where consensus is strongest (e.g., environmental friendliness and chicken affordability/taste have SDs ~0.93–0.96), and highest for tomato taste (SD 1.17), reflecting greater heterogeneity in that domain. The Related-Samples Friedman test is highly significant ($\chi^2(7) = 945.453$, $p < .001$, $N = 371$), confirming that the differences in agreement across items are statistically meaningful rather than random variation.

The above findings suggest that in real purchase situations, many respondents are primed to choose sustainable options because they believe they’re environmentally friendly and generally trustworthy, and they’re willing to recommend them. Adoption is strongest where perceived taste advantages are clear (e.g., chicken), and price is framed as reasonable. For categories like tomatoes, where consumers still debate taste differences and anticipate price variation, clear sensory proof points and value framing (e.g., quality + sustainability benefits) are likely to convert interest into purchase without relying solely on premium positioning.

To summarize section B by considering all the multi-item questions asked to respondents it can be concluded that:

Firstly, trust does not appear to be a binding constraint: respondents clearly reject the statement “I do not trust sustainable food products” ($M \approx 2.05$). Consequently, the function of labels and certifications shifts from repairing scepticism to facilitating rapid identification and reinforcing a favourable baseline

orientation. In other words, recognizable, credible marks primarily serve to make the preferred choice easier to locate rather than to create trust “de novo”.

Second, social diffusion mechanisms are salient. Self-reported willingness to recommend sustainable products to family or friends is high (M ≈ 3.71), indicating that positive word-of-mouth (WOM) is likely to operate as a meaningful adoption accelerator. This finding adds a social propagation channel to the otherwise individually anchored drivers observed previously.

Third, sensory expectations are explicitly category-specific rather than generic. Agreement that “sustainable chicken tastes better” is above neutral (M ≈ 3.61), whereas respondents disagree that “the taste of tomatoes is the same regardless of sustainable origin” (M ≈ 2.31), signalling that consumers anticipate taste differences where sustainability cues are present. This reframes prior, more general “taste matters” inferences into a set of product-level heuristics: in animal products, perceived feed and welfare improvements are tied to flavour and texture, whereas in produce such as tomatoes, varietal, soil, and seasonality narratives are expected to translate into discernible sensory outcomes.

Fourth, price sensitivity emerges as qualified rather than absolute. For poultry, the statement “sustainable chicken price is affordable” is modestly above the midpoint (M ≈ 3.20), while the broader claim “their price is too high; I’m not buying them” sits near neutral (M ≈ 2.92). For tomatoes, respondents reject the proposition that prices are the same irrespective of sustainable origin (M ≈ 2.32), implying an expectation of category-specific price differentiation. These patterns suggest price remains a gate to purchase but not a blanket barrier; acceptable premia appear contingent on clear, category-relevant quality and sensory proof.

Fifth, environmental positioning is mainstream and safe to lead. Agreement that “sustainable products are environmentally friendly products” is high (M ≈ 4.11), elevating environmental friendliness to a co-lead message alongside health and fairness. To translate attitude into purchase, however, environmental framing should be tied to concrete co-benefits (e.g., nutrition, producer fairness, taste/quality) that matter at the point of choice.

Finally, the tomato items collectively indicate that consumers expect sustainable origin to make a difference—both in taste and in price. Communication that implies “no difference” risks contradicting lived expectations; more effective are explanations of what changes under sustainable practices and why those changes yield superior sensory or quality outcomes, made tangible through provenance, freshness, or process transparency.

Taken together, these results revise the behavioural decision rule as follows: consumers begin from an accepted premise of environmental friendliness and from readily available, credible identification (logos/certifications); they then seek category-specific evidence of sensory and quality advantages (particularly strong in animal products and explicitly articulated for produce); they look for alignment with fairness and locality values (workers’ rights, fair revenue for farmers, local origin and availability); they evaluate price reasonableness at the category level (near-parity for staples, justified premia where quality/taste gains are evident); and they are further propelled by social proof and word-of-mouth that supports initial trial and repeat purchase.

This refinement also clarifies segment tendencies. Health-first ethical localists retain their value profile and, given high WOM propensity, are likely advocates. Label-guided pragmatists continue to require unambiguous identification and reasonable prices; once satisfied, they too recommend. Taste-led category adopters (now more clearly delineated) convert most rapidly where sensory benefits are demonstrated and respond strongly to sampling and specific sensory claims. Price-gated realists remain selective, entering first in affordable categories (e.g., chicken) and expanding with promotions

or compelling value framing. A small low-attention sceptic segment persists and may require parity pricing and default shelf availability to convert.

Food consumption attitudes

In this part of the survey respondents were asked to a series of consuming attitudes, the descriptive results indicate that respondents generally hold favourable attitudes toward sustainability-related aspects of food consumption, although the strength of agreement varies across dimensions. High mean scores are observed for statements related to environmental protection, social responsibility, and local food systems. In particular, strong agreement is expressed regarding the importance of animal welfare, the role of seasonal vegetables in environmental sustainability, the necessity of reducing land, water, and fossil fuel use in food production, and the importance of social aspects such as fair trade and workers' rights. Similarly, respondents show high support for the economic viability of sustainable agriculture and the essential role of small farmers in achieving long-term sustainability.

Attitudes toward local food consumption are also notably positive. Respondents tend to agree that local food is fresher, more nutritious, and that choosing local products helps reduce transportation and packaging costs. Willingness to pay a slightly higher price for local or sustainably produced foods is moderately high, especially when prices are perceived as reasonable.

In contrast, knowledge- and belief-based statements related to specific production technologies or nutritional equivalences receive more moderate or uncertain evaluations. For example, respondents show weaker agreement regarding the environmental benefits of vegetarian diets, the nutritional equivalence between conventional and organic fruits, or claims related to water use efficiency in different crops. Similarly, statements suggest that conventional or highly automated farming necessarily leads to higher quality products receiving neutral to slightly negative evaluations.

Responses can be grouped as follows.

- ***Highest endorsements (means ≥ 4.0).***
  - Sustainable agriculture must ensure the economic viability of the farm and the farmer - 4.22 (SD 0.89)
  - Consuming seasonal vegetables is environmentally friendly - 4.21 (0.89)
  - If the price is reasonable, I will buy food produced using sustainable strategies - 4.18 (0.89)
  - Social aspects of food production (e.g., fair trade, workers' rights) are important to me - 4.12 (0.91)
  - Small farmers are essential to guarantee farming sustainability in the world - 4.09 (0.96)
  - Assurance of animal welfare in food production is important to me - 4.07 (0.85)
  - When I choose local foods, I reduce transporting and packaging costs - 4.08 (0.96)
  -
- ***Strong/upper-mid endorsements (3.7–3.99).***
  - Food/gastronomic/agricultural tourism helps small local farmers' sustainability - 3.98 (0.89)
  - I prefer buying food from local/nearby producers - 3.89 (0.94)
  - Reducing land use, freshwater consumption, and fossil fuels should be an important goal of food producers - 3.89 (1.02)
  - Food produced locally is fresher than that sold in supermarkets/hypermarkets - 3.80 (1.09)
  - Consuming products from environmentally friendly grains is more expensive - 3.77 (0.87)
  - Local products are more nutritious because they are picked riper/fresher - 3.72 (1.07)
  - The price I pay for organic or more sustainable foods is worth it - 3.70 (0.97)
  - I will avoid producers/products known to have high environmental impact - 3.69 (1.02)
  - I avoid buying processed food because it is not healthy - 3.65 (1.11)

- The less food packaging, the more sustainable the food - 3.61 (1.07)
- I am willing to pay a slightly higher price for local foods - 3.84 (0.92)
- I pay attention to environmental information on food labels - 3.50 (1.08)
- Even if the price of organic products is slightly higher, I will buy the organic products - 3.52 (1.08)

- ***Near-neutral to moderately endorsed (3.0 - 3.3).***
  - World food production cannot be maintained through local products; intensive agriculture is needed - 3.31 (1.11)
  - A vegetarian diet can reduce greenhouse gas emissions - 3.16 (1.20)
  - I enjoy eating rain-fed vegetables because they are tastier than irrigated products - 3.01 (1.04)
  - Greenhouse tomatoes have fewer nutrients because they contain more water - 2.95 (1.00)
  - Conventional and highly automated farming leads to higher quality products - 2.99 (1.07)
  - Cooking oils from plants grown with less water have a healthier fatty acid profile - 3.03 (0.90)
- ***Lower endorsements / sceptical of specific claims (≤ 2.81).***
  - Conventional fruits have the same nutrient/antioxidant content as organic fruits - 2.81 (1.11)
  - Organic vegetables have a nice appearance and are uniform - 2.73 (1.09)
  - Water needed to grow 1 kg tomatoes is approximately the same as 1 kg wheat - 2.71 (0.96)

Consumers' Willingness to pay for sustainable food products

In this part of the survey respondent were asked to indicate how much more money they were willing to pay for sustainable food products (choose the proper value for each food category) rating their answers from: zero (0%), 1 (0-10%), 2 (11-20%), 3 (21 – 30%), 4 (31 -50%) and 5 (>50%).

The results reveal substantial variation in consumers' willingness to pay a price premium for sustainable food products across product categories, as confirmed by the highly significant Friedman test ($p < 0.001$). Means across the 28 categories span roughly 1.04 to 2.14 on the 0–5 scale, indicating that, on average, respondents converge between the 0–10% and 11–20% premium bands, with the upper end of that range (≈ 11–20%) reserved for a handful of fresh staples. Standard deviations are generally ~1.20–1.48, signalling heterogeneous WTP within categories: many respondents are near zero premium while some are willing to pay substantially more.

The lowest willingness to pay is observed for staple or low-involvement products, particularly tap water, sugar and sugar products, soft drinks, bottled water, vegetable soups (ready to eat), snack foods, and cereal-based mixed dishes, all of which record mean scores close to 1.0. These results suggest limited consumer readiness to accept higher prices for sustainability attributes in product categories that are either perceived as basic necessities, highly price-sensitive, or weakly associated with sustainability differentiation.

Moderate willingness to pay is reported for a broad range of products, including coffee, tea and cocoa, cereals and cereal products, cocoa and chocolate, fats, alcoholic beverages, fruit and vegetable juices, fish-based preparations, seafood, and meat-based preparations. Mean values for these categories generally lie between 1.3 and 1.7, indicating a modest premium acceptance, typically up to 10–20%. These categories often combine habitual consumption with some perceived ethical, environmental, or quality-related attributes, but price sensitivity remains present.

The highest willingness to pay is recorded for fresh and nutritionally salient products, especially fruits, eggs, vegetables/nuts/beans, cheese, dairy products, and meat and fish products. Fruits show the highest mean WTP (2.14), followed by eggs (2.07) and vegetables/nuts/beans (1.97). These values suggest a willingness to pay premiums in the range of 11–30%, reflecting stronger consumer associations between sustainability, health, animal welfare, and product quality in these categories.

Notably, animal-based products (eggs, dairy, meat, fish) tend to attract higher WTP compared to processed or discretionary items, possibly due to heightened concerns about production practices, environmental impact, and ethical issues such as animal welfare.

To make the results actionable, products are grouped by average WTP (using the 0–5 coding).

1. Low willingness to pay (≈ 0–10% premium) These products are characterized by strong price sensitivity and weak sustainability differentiation:

- Tap water
- Bottled water
- Sugar and sugar products
- Soft drinks
- Snack foods
- Vegetable soups (ready to eat)
- Cereal-based mixed dishes
- Beer and other alcoholic beverages
- Wine and substitutes

2. Moderate willingness to pay (≈ 11–20% premium) These categories show conditional acceptance of sustainability premiums:

- Coffee, tea and cocoa
- Cereals and cereal products
- Cocoa and chocolate
- Fats (vegetable and animal)
- Fruit and vegetable juices
- Fish-based preparations
- Seafood and seafood products
- Meat-based preparations
- Milk and dairy-based drinks
- Starchy roots and potatoes

3. High willingness to pay (≈ 21–30% or higher premium) These products are perceived as closely linked to health, quality, and ethical concerns:

- Fruits
- Vegetables, nuts and beans
- Eggs
- Cheese
- Dairy-based products
- Meat, meat products and substitutes
- Fish and fish products
- Food for special dietary uses

Overall, the results suggest that consumers are selective rather than uniform in their willingness to financially support sustainability. Willingness to pay higher premiums is concentrated in fresh, health-related, and ethically sensitive product categories, while highly processed or convenience products remain price-driven. This pattern highlights the importance of product-specific sustainability communication and pricing strategies, rather than a one-size-fits-all approach across food categories.

Food Consumers biases

The survey's attitudinal profile—strong emphasis on health, naturalness, animal welfare, fairness, locality, and conditional price acceptance—maps closely onto well-documented judgment biases that can either facilitate or impede transitions to sustainable food. Importantly, these biases do not indicate resistance to sustainability per se; rather, they reveal how consumers simplify complex decisions and under what conditions sustainable options are most likely to be adopted.

Firstly, consumers exhibit a strong health halo bias, associating sustainable products with being healthier, more natural, and of higher quality. The halo effect is triggered by sustainability and health cues: when a product carries an eco/organic signal, people tend to generalize that cue to other attributes such as taste, quality, and even willingness to pay. Controlled experiments show that eco-labels can elevate perceived taste and healthfulness across multiple product types and judgment dimensions, although the magnitude depends on category (e.g., fruit vs. water) and the specific evaluation considered (taste vs. health vs. WTP). Likewise, "healthy" positioning can lead consumers to underestimate calories in the main dish and over-select higher-calorie sides—a cautionary parallel for sustainability claims that risk "moral licensing." These patterns echo respondents' desire for clear logos, high trust, and positive taste expectations in selected categories (Sörqvist et al., 2015; Chandon & Wansink, 2007). This creates a mental shortcut whereby sustainability cues automatically trigger positive health inferences, sometimes beyond what is objectively verifiable. While this bias facilitates adoption, it also means that sustainable products that fail to clearly communicate health benefits may be undervalued.

Because many sustainability attributes are credence attributes (e.g., reduced pesticide use, fair pay, lower carbon footprint) that cannot be verified at the shelf or even post-consumption, attention and reliance on credible labels become pivotal. Cross-country evidence indicates that paying attention to eco-labels depends on trust, understanding, and perceived relevance; for credence goods, third-party certification helps mitigate information asymmetry and the "lemons" problem by clarifying diagnosis (what is assessed) and treatment (how practices change). This aligns with respondents' strong preference for recognizable marks and concise reasons-to-believe (Thøgersen, 2000; Sheldon, 2017; Schrobback et al., 2023)

The survey's high stated word-of-mouth (WOM) propensity suggests a foundation for social diffusion, yet literature cautions that social-norm interventions show mixed effectiveness unless messages are tailored to referent groups and framed appropriately (injunctive vs. descriptive). Field evidence from workplace restaurants, for instance, finds limited average effects but hints at subgroup responsiveness and complementarity when norms are combined, implying that segment-specific design is essential (Pollicino et al., 2025; Salmivaara & Lankoski, 2021; Pristl et al., 2020).

On price and defaults, two robust biases are salient. First, loss aversion means immediate price premiums loom larger than equal prospective gains, which helps explain the survey's conditional willingness to pay; respondents accept premiums when tangible quality/taste and ethical benefits are evident but revert to conventional options when such benefits are opaque. Second, status-quo bias fosters preference for the current choice architecture; sustainable options that are not salient, defaulted, or easily reversible face inertia even among sympathetic consumers. Respondents' emphasis on affordability and ready availability resonates with both biases, indicating that price framing and default positioning can materially shift uptake (Samuelson & Zeckhauser, 1988). A related barrier is present bias: consumers overweight near-term costs relative to future environmental and social benefits. Hyperbolic discounting models predict that without commitment devices or friction-reducing aids, immediate price salience can dominate long-term value, reinforcing the survey finding that affordability

is a high-priority criterion even among respondents who otherwise endorse sustainability principles (Laibson, 1997)

The survey also spotlights the role of affect and availability in guiding risk–benefit judgments. Strong feelings about animal welfare, fairness, and locality create affect-rich cues that speed decisions, while vivid examples (e.g., stories of worker safety or biodiversity loss) are more "available" in memory and thus judged as more important or likely. This helps explain high ratings for social and ethical dimensions and the desire for proximity and transparency; it also explains heterogeneity around packaging and plastics, where emotional salience and recall vary by consumer (Slovic et al., 2007) The prominence of localism/home-bias in the survey -"locally produced," "available near me," and freshness at the top - acts as a proximity heuristic and trust proxy. Label designs that make relative environmental impacts salient (e.g., graded or traffic-light carbon labels) can strengthen such heuristics and steer choices without over-reliance on abstract claims, provided they remain simple and human-centred.

Category-specific expectation effects further shape adoption. Respondents anticipate taste and price differences by sustainable origin examined in two samples poultry and tomatoes; experimental work confirms that eco-labels can influence taste expectations and WTP, with effects contingent on product type. This reinforces the need for category-specific sensory and quality proof (e.g., blind tastings, third-party awards) that connect production practices to outcomes consumers experience. (Sörqvist et al., 2015; Chandon & Wansink, 2007)

Finally, ambiguity aversion around label heterogeneity can slow adoption when standards are unclear or trade-offs (e.g., necessary packaging for safety) are not explained. Reviews of eco-labelling stress that effectiveness is heterogeneous and that clarity, comparability, and credible scoring improve understanding and trust—consistent with respondents' call for logos and succinct, verifiable claims (Stein & de Lima, 2022; Tiboni-Oschilewski et al., 2024).

In sum, the survey's positive sustainability orientation is mediated by predictable behavioural biases. On the enabling side, halos, social diffusion, and affective proximity (localism) can hasten adoption when identification is effortless and benefits are tangible. On the constraining side, loss aversion, status-quo inertia, present bias, and ambiguity aversion keep purchase decisions price-gated and evidence-driven. Practically, the path forward is clear: make sustainable options easy to identify and compare, frame gains and avoided losses together, bring near-term benefits forward, activate credible social proof, and provide category-specific sensory/quality evidence. Done well, these steps translate the survey's values—health, fairness, locality—into consistent market choices.

Exploring Forestry Products' Consumers' Biases

Understanding consumers' perceptions, attitudes, and behavioural biases toward sustainable forestry products is essential for designing effective policies and market strategies that promote sustainable resource use. This section presents an integrated analysis of a multi-country consumer survey examining how individuals evaluate sustainable forestry products across demographic characteristics, perceived product attributes, attitudes toward sustainability, and willingness to pay price premiums.

By combining evidence from four survey sections—covering perceptions of sustainability-related characteristics, evaluative beliefs, consuming attitudes, and stated willingness to pay—the analysis aims to capture not only general support for sustainability, but also the conditions under which such support translates into purchasing intentions. Particular attention is given to the role of quality, environmental and social responsibility, trust and certification, local origin, and price sensitivity in shaping consumer decision-making. The results provide a nuanced picture of consumers who are broadly favourable toward sustainable forestry products, yet selective and conditional in their adoption, highlighting key behavioural biases that either facilitate or constrain market uptake.

All relevant data are presented in the appendix 3B

Forestry Products' Consumers' sample

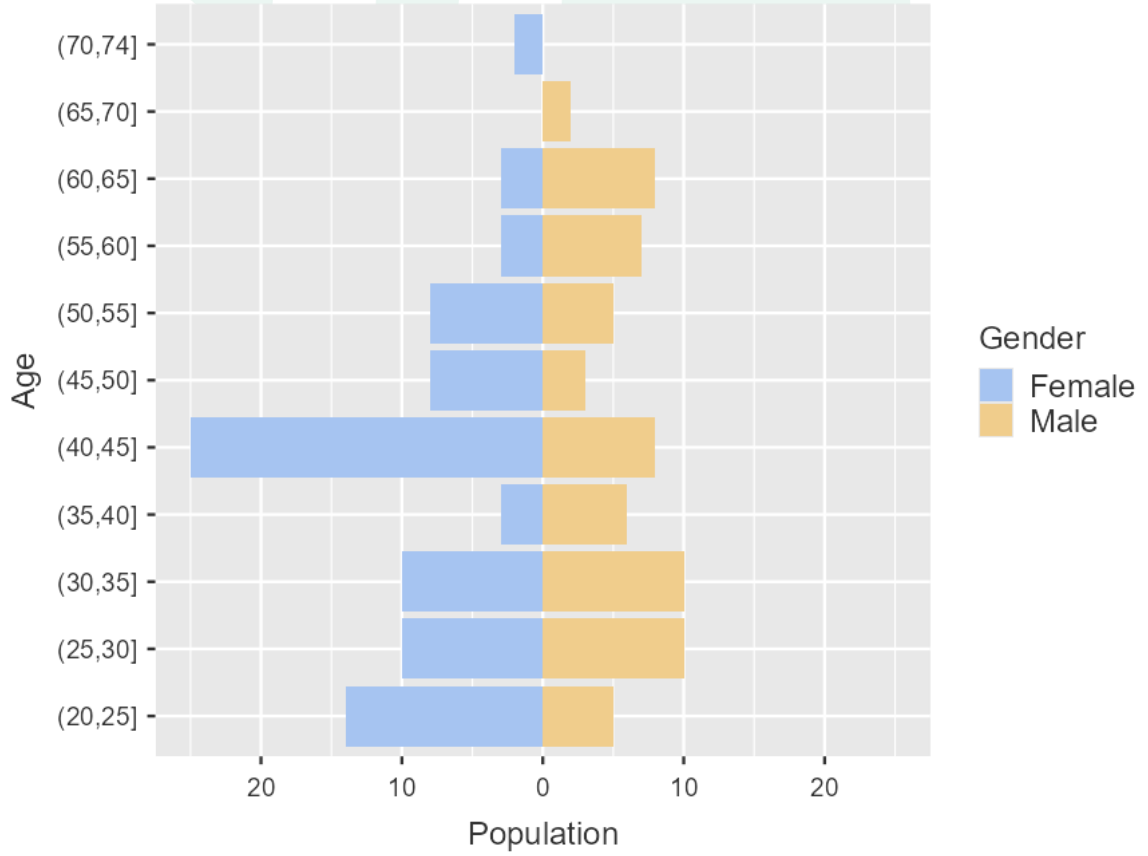
Across the sample (*N* = 152), the gender distribution indicates a female majority, with 87 respondents (57.24%) identifying as female and 65 (42.76%) as male. Educational attainment is notably high and internally consistent with the full sample size: 88 respondents (57.89%) report a Master's, postgraduate, or doctoral degree, and a further 34 (22.37%) hold a Bachelor's degree or equivalent, yielding just over four in five with tertiary qualifications. Smaller shares report a college entrance qualification (15; 9.87%), upper secondary education (12; 7.89%), or lower secondary/primary or below (3; 1.97%). Marital status skews toward partnered living contexts, with 75 respondents (49.34%) married and 65 (42.76%) single; a minority report being divorced (7; 4.61%). The marital status counts sum to 147, implying a small amount of missing data relative to the overall *N*.

Household composition is reported in two ways. For children, 74 respondents provided counts, among whom 34 (45.9%) report two children - the modal category - followed by 17 (23.0%) with three children, 16 (21.6%) with none, 6 (8.1%) with one, and 1 (1.4%) with four. Adults per household were reported by 141 respondents and show that two-adult households predominate (84; 59.6%), with single-adult households comprising 21 (14.9%), followed by homes with three adults (14; 9.9%), four adults (17; 12.1%), and more than four adults (4; 2.8%). A single entry lists zero adults (1; 0.7%), which is likely a data-entry anomaly given the variable definition.

Regarding household decision making, respondents overwhelmingly report personal responsibility for purchasing forestry products: 137 (90.1%) indicate they are responsible, versus 15 (9.9%) who are not. Among the non-responsible subgroup (n = 15), responsibility is most often attributed to parents (7; 4.61% of the total sample), followed by the respondent's mother (5; 3.29%), wife (2; 1.32%), and husband (1; 0.66%); these allocations sum coherently to the 15 non-responsible cases. Place of residence, reported by 150 respondents, skews urban and semi urban: 66 (43.42%) live in large cities, 56 (36.84%) in small/medium towns, and 28 (18.42%) in rural villages.

Country of activity reflects a broadly European distribution with some concentration in Portugal and the Baltic region. Among the 152 entries, the largest shares are Portugal (36; 23.68%), Lithuania (32; 21.05%), Greece (29; 19.08%), and the United Kingdom (28; 18.42%), followed by Sweden (12; 7.89%) and Finland (4; 2.63%). Smaller counts appear for France and Germany (each reported in low single digits), alongside a small N/A group (5; 3.29%). Minor duplications in country labels (e.g., repeated entries for France and Portugal in single count rows) suggest some coding inconsistencies; nonetheless, the distribution indicates balanced representation across Southern, Western, and Northern Europe.

Figure 6: Age Pyramid for food consumers participating in the survey



Awareness of the EU Forest Strategy for 2030 (reported by 144 respondents) centers on the lower to middle of the scale: 34 (23.6%) are not at all aware and 46 (31.9%) slightly aware, while 27 (18.8%) report average awareness. Higher awareness is less common: 32 (22.2%) describe themselves as aware and 5 (3.5%) as fully aware. Finally, self-reported financial strain (149 responses) is generally low, with 67 (44.08%) indicating they never have difficulties paying bills and 53 (34.87%) almost never; occasional difficulty is reported by 27 (17.76%), and persistent difficulty ("always") by 2 (1.32%). Taken together, the demographic profile describes a highly educated, predominantly female, urban/semi-urban cohort that is largely responsible for household purchasing decisions, shows moderate to low awareness of EU forestry policy, and reports relatively low levels of financial stress.

Forestry Products' Consumers' perceptions about sustainable products

In this part of the survey Three multi-item questions were asked to respondents regarding sustainable forestry products. The first one capturing how important specific characteristics are and the second one what consumers associate with sustainable forestry products, while the third asked respondents to indicate their level of agreement with a series of statements about sustainable forestry products indicating their attitudes towards sustainable forestry products

The analysis examines consumers' evaluations of the importance of specific characteristics associated with sustainable forestry products and services. Overall, respondents attach high importance to a wide range of attributes, with mean scores consistently above the midpoint of the scale. The Related-Samples Friedman test confirms that respondents clearly differentiate among these characteristics ($\chi^2(17) = 179.332$, $p < 0.001$), indicating a structured and non-uniform understanding of sustainability in the forestry context.

The highest importance is attributed to attributes related to product performance, ethics, and environmental responsibility. "Quality and durability" receive the strongest endorsement (Mean = 4.47, SD = 0.67), suggesting that functional value remains a central prerequisite for sustainable forestry products. Closely following are social and ethical considerations, particularly "respecting workers' rights, fair pay, health and safety" (Mean = 4.32, SD = 0.76), highlighting the prominence of social sustainability in consumer evaluations. Environmental stewardship is also strongly emphasized, with high ratings for "sustainable and resilient" (4.28, 0.78), "protecting biodiversity" (4.21, 0.88), and "low environmental and climate impact" (4.19, 0.85).

Economic and accessibility-related attributes are likewise considered highly important. Respondents place substantial value on "affordable" products (Mean = 4.21, SD = 0.73) and on "fair compensation for those involved in the initial stages of the forestry supply chain" (Mean = 4.13, SD = 0.83). Local availability and proximity also matter: "locally produced" (4.13, 0.80) and "available near me" (3.99, 0.82) both receive high scores, reflecting a preference for short supply chains and locally embedded forestry systems.

Attributes related to production practices and transparency further reinforce this pattern. "Natural" (4.11, 0.74) and "chemical-free" (4.01, 1.02) are rated as important, indicating consumer sensitivity to inputs and processing methods. Similarly, "transparent and traceable" products are strongly valued (4.06, 0.83), suggesting that information availability and supply chain visibility are key components of perceived sustainability. Certification also plays a role, with "eco-certified" receiving a relatively high mean score (3.95, 0.93), although it is slightly less central than intrinsic product or ethical attributes.

Moderately high importance is assigned to packaging and circularity aspects. Respondents value "reusability and ability to recycle" (4.15, 0.92), "minimal packaging" (3.99, 0.98), and "no plastic on packaging" (3.84, 1.07), indicating concern for downstream environmental impacts beyond forest management itself. Cultural and relational dimensions, such as "cultural heritage and traditional knowledge" (3.73, 0.92) and "transferred through local or short supply chains" (3.71, 0.94), receive somewhat lower—but still clearly positive—evaluations, suggesting that while these elements contribute to sustainability perceptions, they are secondary to quality, environmental impact, and social fairness.

Taken together, the results indicate that consumers conceptualize sustainable forestry products through a multidimensional lens that integrates functional performance, ethical production, environmental protection, and economic accessibility. Sustainability is not perceived as a trade-off against quality or

affordability; rather, high quality, durability, and fair pricing are seen as integral components of what makes forestry products truly sustainable.

The second multi-item question examines respondents' level of agreement with a series of statements describing sustainable forestry products and services, providing insight into how such products are perceived in terms of production practices, value, quality, and relevance. Overall, responses show a predominantly positive orientation toward sustainable forestry, combined with a realistic awareness of price and production trade-offs. The Related-Samples Friedman test indicates statistically significant differences across statements ($\chi^2(22) = 842.064$, $p < 0.001$), confirming that respondents clearly distinguish among different aspects of sustainable forestry products rather than responding uniformly.

Strongest agreement is observed for statements related to environmental performance and responsible management. Respondents largely agree that sustainable forestry products come from forests with advanced forest management techniques (Mean = 3.81, SD = 0.86) and that they are healthier for the ecosystem (Mean = 3.93, SD = 0.76), indicating broad recognition of their environmental benefits. Closely aligned with this are positive perceptions of production practices, including agreement that such products are produced with fewer chemicals (Mean = 3.68, SD = 0.85) and in a more traditional way (Mean = 3.35, SD = 0.88). Together, these results suggest that sustainability in forestry is strongly associated with responsible resource management and reduced environmental pressure.

Perceptions of quality, authenticity, and trust are also favourable. Respondents tend to agree that sustainable forestry products have better quality (Mean = 3.67, SD = 0.84), look natural (Mean = 3.68, SD = 0.88), and increase their trust (Mean = 3.63, SD = 0.89). The statement that these products are "authentic because they ensure a proper future of agriculture" also receives positive endorsement (Mean = 3.55, SD = 0.92), indicating that sustainability is perceived not only as an environmental attribute but also as a marker of long-term system viability and credibility. In contrast, statements implying inferior performance, such as "they lack durability," are generally rejected (Mean = 2.52, SD = 0.98), reinforcing the view that sustainability does not come at the expense of functional quality.

Price-related perceptions reflect a nuanced and pragmatic stance. Respondents agree that sustainable forestry products are more expensive (Mean = 3.53, SD = 0.81), yet acceptance of this higher price is more moderate (Mean = 3.40, SD = 0.92). This pattern suggests conditional willingness to pay, where price premiums are tolerated when linked to clear environmental and quality benefits. Similarly, agreement that less water is required in their production is moderate (Mean = 3.39, SD = 0.85), pointing to partial but not universal certainty regarding specific environmental efficiencies.

Statements reflecting indifference, unfamiliarity, or rejection of sustainable forestry products receive low agreement. Respondents generally disagree that they "do not care too much about them" (Mean = 2.38, SD = 1.11), that there is "no need for sustainable products" (Mean = 2.02, SD = 1.27), or that such products "do not attract my attention" (Mean = 2.36, SD = 0.99). Likewise, lack of awareness is limited, as disagreement is also evident for "I have never heard about sustainable forestry products" (Mean = 2.29, SD = 1.22). These findings indicate that disengagement or scepticism toward sustainable forestry is confined to a relatively small segment of respondents.

Finally, attributes related to marketing and aesthetics are of secondary importance. Statements about attractive packaging and bright labels (Mean = 2.66, SD = 1.02) or homogeneity in size (Mean = 2.84, SD = 1.01) receive only weak endorsement, suggesting that visual appeal is not a primary driver of perceived sustainability. Overall, the results portray consumers as informed and selectively supportive: sustainable forestry products are valued for their environmental integrity, quality, and trustworthiness, while price acceptance and specific production claims remain conditional on credibility and perceived relevance.

The third multiitem questions examines consumers' agreement with specific statements about sustainable forestry products and services. Overall, respondents express favourable attitudes, with most mean scores at or above the midpoint of the scale. The Related-Samples Friedman test confirms that respondents clearly differentiate among these statements ($\chi^2(7) = 359.317$, $p < 0.001$), indicating a structured and non-uniform understanding of sustainability claims in the forestry context.

The strongest agreement centres on environmental benefits and social endorsement. Respondents affirm that "sustainable products are environmentally friendly products" (Mean = 4.13, SD = 0.69), and report a high propensity to recommend them to others ("I recommend purchasing sustainable forestry products to my family/friends," 3.83, 0.88). Perceived product advantages are also evident: "sustainable timber/products are of higher quality" (3.57, 0.91) and "sustainable paper is affordable" (3.54, 0.69) both receive solid agreement, suggesting that quality and category-specific affordability are part of the sustainability value proposition.

Economic and category-comparison perceptions are more nuanced. While the statement "their price is too high for me. I'm not buying them" (Mean = 2.86, SD = 0.92) falls below neutrality—implying limited outright price rejection—cost remains a salient consideration. Claims that products are indistinguishable by origin yield net disagreement: "wood pellets are the same, no matter their sustainable origin" (2.72, 1.16) and "wooden flooring is the same, no matter their sustainable origin" (2.63, 1.14), suggesting that many consumers perceive meaningful differences tied to sustainability. The relatively high dispersion (SD > 1) on these items indicates segment heterogeneity and possible confusion for some respondents.

Scepticism appears limited. "I do not trust sustainable products" receives low agreement (Mean = 2.10, SD = 1.05), pointing to generally positive trust levels, albeit with variance that warrants attention. Together, these results suggest that consumers associate sustainability with environmental friendliness, superior quality, and word-of-mouth advocacy, while recognizing price considerations and product differentiation by sustainable origin. Practical implications include reinforcing the environmental and quality benefits, communicating category-level affordability (e.g., paper), and clarifying how sustainable sourcing translates into perceptible product differences—particularly in commodity categories such as pellets and flooring.

To summarize section B by considering all the multi-item questions asked to respondents it can be concluded that the results from the three tables can provide a comprehensive picture of how consumers perceive sustainable forestry products, combining normative expectations, cognitive beliefs, and evaluative judgements. Overall, consumers exhibit a strongly positive and multidimensional perception of sustainability in forestry, albeit moderated by economic considerations and partial knowledge gaps.

First, the importance ratings of product characteristics indicate that consumers primarily associate sustainable forestry products with quality, ethical responsibility, and environmental protection. Attributes such as quality and durability, respect for workers' rights, protecting biodiversity, affordability, low environmental and climate impact, and sustainability and resilience receive the highest importance scores. This suggests that sustainability in forestry is understood holistically, encompassing not only environmental stewardship but also social justice and long-term economic viability. Practical attributes, such as local availability, traceability, and minimal or plastic-free packaging, are also valued, reinforcing the expectation that sustainability should be both ethically grounded and operationally transparent.

Second, consumers' agreement with statements about sustainable forestry products reveals generally favourable beliefs and low scepticism. Respondents tend to associate these products with healthier ecosystems, fewer chemicals, advanced forest management practices, and better overall quality. Statements expressing indifference, lack of awareness, or rejection of sustainability (e.g. "I do not care too much about them" or "No need for sustainable products") receive low agreement, indicating that outright disengagement is limited. At the same time, moderate agreement levels for statements related

to resource abundance and knowledge gaps suggest that some misconceptions or incomplete understanding persist, particularly regarding long-term resource scarcity and production impacts. The strong agreement on the need for a clear logo highlights a desire for better communication and clearer market signalling.

Third, evaluative judgements regarding trust, price, and differentiation further clarify consumers' positioning. Sustainable forestry products are widely perceived as environmentally friendly and of higher quality, and distrust appears relatively low. Consumers also tend to disagree that sustainably sourced products are indistinguishable from conventional ones, implying that sustainability is seen as a value-adding attribute rather than a neutral label. Willingness to recommend these products to family and friends is high, pointing to positive social endorsement and diffusion potential. However, price remains a conditional barrier: while respondents do not overwhelmingly reject higher prices, agreement levels indicate that affordability still influences purchasing decisions, and acceptance of price premiums varies by product type (e.g. greater acceptance for sustainable paper than for other timber-based products).

In brief, combining the three tables reveals consumers conceptualize sustainable forestry products through a multidimensional lens combining:

- Functional performance (quality, durability)
- Ethical and social responsibility (workers' rights, fair pay)
- Environmental stewardship (ecosystem health, biodiversity, chemical reduction)
- Economic considerations (affordability vs. price premium)
- Trust and transparency (traceability, certification, clear labelling)

Attitudes are broadly positive: sustainability is seen as valuable, distinctive, and recommendable, not as a trade-off against quality or usability. Price remains a barrier for some, but willingness to pay exists when benefits are clear. Packaging and cultural heritage are secondary priorities, suggesting communication strategies should emphasize quality, environmental impact, and social fairness, while clarifying product differentiation and affordability.

Forestry Products' Consumers' attitudes

The analysis examines consumers' agreement with statements reflecting consuming attitudes toward sustainable forestry products and services. Overall, respondents express strong pro-sustainability orientations, with most mean scores at or above the midpoint of the scale. The Related-Samples Friedman test confirms clear differentiation among these attitudes ($\chi^2(31) = 593.894$, $p < 0.001$), indicating a structured and non-uniform understanding of consumption choices in the forestry context.

The highest endorsements emphasize environmental goals, conditional purchase intent, and socio-economic viability. "Conserving forest land and reducing use of water and fossil fuels should be an important goal for forest industry" receives the strongest agreement (Mean = 4.24, SD = 0.82), underscoring conservation as a core priority. Consumers also signal pragmatic willingness to buy when value is clear: "If the price is reasonable, I buy wood and products produced using sustainable forestry practices" (4.19, 0.78) and "Sustainable forestry must ensure the economic viability of the forest and people working in forestry" (4.19, 0.74). Climate and localism are salient: "A sustainable forest management approach can reduce greenhouse gas emissions" (4.15, 0.77), "I prefer buying forest products from local or nearby producers" (4.05, 0.87), "Assurance of sustainable forest practices is important to me" (4.04, 0.88), and "Paying a fair price for sustainably managed forest-based products is a worthwhile investment" (4.04, 0.76). Baseline environmental friendliness is strongly endorsed ("Using sustainably harvested wood is environmentally friendly," 4.00, 0.80), alongside support for small

local forestry businesses (3.99, 0.93), social aspects (3.94, 0.88), and recognition that sustainable production must also operate at global scale (3.95, 0.87). Practical benefits of local sourcing are acknowledged ("When I choose local forest products, I reduce transportation and packaging costs," 3.95, 0.90).

Environmental responsibility and pro-social attitudes extend across multiple items. Respondents find biodiversity loss from intensive logging unacceptable (3.91, 1.05) and affirm that sustainably sourced wood is better for the environment because it does not harm biodiversity (3.84, 0.82). They value social labels (3.85, 0.93), avoid high-impact producers (3.85, 0.95), and see eco-tourism as supportive of local sustainability (3.87, 0.93). Informational engagement is notable: attention to environmental information on labels is above neutral (3.67, 1.03), and product-level choices (e.g., sustainably managed paper) are positively viewed (3.69, 0.92).

Economic considerations are acknowledged but do not dominate. Consumers agree that sustainable products can be more expensive (3.70, 0.79) yet show readiness to pay a slightly higher price for locally sourced wood (3.75, 0.93) and to purchase sustainable products even with a **modest** price uplift (3.64, 0.89). This pattern indicates conditional acceptance—price matters, but willingness increases when sustainability benefits and local value are transparent.

Views on product comparability and technical attributes are more mixed. Respondents are ambivalent about parity between conventional and sustainable products ("same durability and functionality," 3.21, 0.94; "highly automated logging can lead to higher quality timber," 3.16, 1.02) and moderately agree that water availability can influence structural quality (3.40, 0.86). Perceptions of local product quality are cautiously positive ("local… more durable and of higher quality," 3.51, 1.01), while statements about uniform appearance of sustainably harvested products receive moderate agreement (3.23, 0.86). Packaging and processing attitudes align with sustainability heuristics ("the less packaging, the more sustainable," 3.64, 1.01; "avoid heavily processed/manufactured wood," 3.24, 1.04), though higher dispersion (SD ≈ 1.0) suggests segment heterogeneity.

Taken together, these results indicate that consumers' attitudes toward sustainable forestry products integrate conservation and climate goals, socio-economic viability, local development, and environmental integrity. Purchase intent is conditional but robust—willingness to pay is present when prices are reasonable and benefits are clear—while information (assurance, labels) and local provenance strengthen trust and action. Areas of mixed perceptions (comparability with conventional products, processing, and aesthetics) highlight opportunities for targeted communication and education to reduce ambiguity and reinforce the tangible value of sustainable forestry practices.

Consumers' Willingness to Pay for sustainable forestry products

The fourth section of the survey examines consumers' self-reported willingness to pay a premium for sustainable forestry-related products and services on a 0–5 scale (with 0 indicating 0% price premium and 5 indicating more than 50% price premium). Overall, willingness to pay is modest, with category means clustering between 1.47–2.39 and an overall average ≈ 1.89 across items. The Related-Samples Friedman test confirms that respondents clearly differentiate among categories ($\chi^2(25) = 314.512$, $p < 0.001$; Total N = 132), indicating a structured and non-uniform valuation of sustainability premiums by product type.

Higher WTP is directed toward everyday naturals and durable home goods. The top endorsements are honey (Mean = 2.39, SD = 1.49) and wood furniture (2.36, 1.56), with wild berries (2.15, 1.61), wood flooring (2.15, 1.53), and natural cosmetics (2.13, 1.66) also above the sample average. These categories plausibly bundle perceived health/quality benefits (e.g., food/cosmetics) or long-lived functional value (e.g., furniture/flooring), making modest premiums more acceptable.

By contrast, commodity-like or low-involvement categories show the lowest WTP: paper packaging (1.47, 1.34), fuelwood/charcoal/wood pellets (1.51, 1.26), rattan products (1.51, 1.54), tissue paper (1.53, 1.20), and printed paper (1.64, 1.32). These items are price-sensitive, frequently purchased, and/or have less visible sustainability differentiation, which likely dampens premium tolerance.

Dispersion is high across most categories (SDs ~1.3–1.7), signalling segment heterogeneity. The greatest variability appears in essential oils (Mean = 1.97, SD = 1.67), natural cosmetics (2.13, 1.66), forest-based beverages (1.75, 1.65), wild berries (2.15, 1.61), and forest-based crafts (1.96, 1.61). This suggests that for discretionary or niche products, some consumers are willing to pay materially more, while others are price-anchored, creating a barbell pattern in WTP.

Taken together, respondents exhibit a selective premium bias: they are more willing to pay for sustainability in categories where benefits are personally salient (health, naturalness, quality, durability) and less willing in commoditized, low-salience, or purely functional categories. Practical implications include prioritizing value communication and credible proof (e.g., durability claims for furniture/flooring; provenance and environmental benefits for foods/cosmetics), while using entry-tier sustainable options and cost-neutral design changes (e.g., packaging efficiencies) in categories with low premium tolerance. Clear labelling and assurance—shown elsewhere in the survey to reinforce trust—can further nudge modest premiums, but expectations should remain measured given the overall low-to-moderate WTP levels.

Based on observed WTP patterns, forestry products can be grouped into three behavioural categories:

- High-value sustainable goods (higher WTP) Products with strong links to durability, craftsmanship, health, or authenticity, such as furniture, flooring, honey, medicinal plants, natural cosmetics, and wild foods. Sustainability here acts as a value amplifier, justifying higher price premiums.
- Experiential and symbolic products (moderate WTP) Products and services offering experiential, recreational, or lifestyle benefits, including ecotourism, crafts, wood-based textiles, and wellness-related forest services. Consumers value sustainability but apply budgetary caution.
- Every day and commoditized products (low WTP) Paper goods, fuelwood, pellets, and packaging materials, where sustainability is perceived as a baseline expectation rather than a differentiating attribute, resulting in limited willingness to pay price premiums.

Forestry Products' Consumers' biases

Based on the previous analysis – the four survey sections – we can attempt to characterize consumers' "biases" to adopt and prefer sustainable forestry products. Across sections, respondents consistently rate sustainability attributes above the midpoint, and Friedman tests confirm non-uniform, structured perceptions, indicating that consumers actively differentiate among sustainability signals rather than exhibiting undirected "green liking." In the broader literature, this pattern aligns with findings that sustainability influences purchase decisions when embedded in credible, comprehensible attributes, yet remains filtered through core value drivers such as quality and price (Deloitte Insides, 2023).

In the section B of the analysis, "quality and durability" is the strongest attribute (Mean = 4.47, SD = 0.67), followed by "respecting workers' rights, fair pay, health and safety," "sustainable and resilient," and environmental outcomes such as biodiversity protection and low climate impact (Means ≈ 4.19–4.21). These results suggest that, for consumers, sustainability must coexist with high product performance and demonstrable environmental benefit. This echoes recent multi-country evidence that quality, price, and convenience dominate primary purchase drivers while environmental impact matters

when communicated with clarity and tied to value—especially durability and safety (McKinsey & Company (2025).

Respondents value “transparent and traceable” supply chains and “eco-certified” products (Means ≈ 4.06 and 3.95), as well as a clear logo to identify sustainable products (Mean = 3.80). In the second and third tables, trust statements show low general distrust (Mean = 2.10) and above-midpoint agreement that certifications and assurance matter. This is consistent with large-scale consumer studies reporting high confidence in independent certification and a preference for labelled products (e.g., FSC, PEFC), as well as the broader finding that third-party eco-labels reduce information asymmetry around credence attributes and nudge willingness to pay (WTP) when the process is perceived as legitimate and transparent (PEFC, 2014. Mogyoros, 2023).

Across Sections B and C, “locally produced,” “available near me,” support for small forestry businesses, and recognition that local sourcing reduces transport/packaging costs are all positively rated (Means ≈ 3.95–4.13). Consumers indicate willingness to pay slightly more for locally sourced wood (Mean = 3.75). Such findings align with choice-experiment and survey evidence that local origin signals freshness, trust, and community benefit, translating into measurable WTP premiums, albeit with heterogeneity across product types and channels (Hasanzade et al., 2024)

Consumers acknowledge that sustainable products may cost more (Means ≈ 3.53–3.70) yet express conditional purchase intent (“If the price is reasonable, I buy sustainable products,” Mean = 4.19; “Even if slightly higher,” Mean = 3.64). Section D then quantifies category-specific WTP on a 0–5 scale (0 = 0% premium; 5 = >50% premium): overall mean ≈ 1.89, with significant differentiation (Friedman $\chi^2(25) = 314.512$, $p < 0.001$). Premium acceptance is highest for honey (Mean = 2.39) and wood furniture (2.36), moderate for wood flooring, wild berries, natural cosmetics (~2.13–2.15), and lowest for commoditized or low-involvement items such as paper packaging (1.47) and fuelwood/charcoal/pellets (1.51). This selective premium tolerance resonates with meta-analytic evidence that WTP for sustainable food averages ~30% in percentage terms but varies strongly by attribute, category, and method; and with reviews showing certified wood WTP spans ~1–39% (higher for lower base-price goods), underlining that premiums are context-dependent and subject to hypothetical bias in stated preference studies (Li & Kallas, 2021)

Statements rejecting “no difference by origin” for pellets and flooring fall below neutrality (Means ≈ 2.63–2.72), indicating perceived differentiation, while parity claims on durability/functionality hover near the midpoint (Means ≈ 3.16–3.21), suggesting ambivalence. Prior work on certified wood and decking materials likewise finds that material, price, origin, and certification interact, with some segments prioritizing domestic origin or specific materials over certifications per se. Targeted communication that ties sustainability to tangible performance (e.g., durability, emissions, chemical profile) can reduce ambiguity (poratelli, et al., 2022).

Respondents value “minimal packaging” and “reusability/recycling,” with mixed views on strict packaging rules (“no plastic”) and avoiding heavily processed wood. Recent reviews and primary research indicate that minimalist packaging can enhance “green trust,” but consumer priorities around packaging often trail core product attributes (quality, price, safety), and dispersion across items is common - mirroring the higher SDs (≈ 1.0+) observed for packaging and processing statements in this survey (Dink, et all., 2024).

So, on the previous analysis an integrated Bias Map could be created providing information on what nudges adoption—and what holds it back:

1) Pro-sustainability value bias: respondents consistently and strongly prioritize functional quality, environmental impact, and social fairness:

- Quality & durability lead (Mean = 4.47), indicating sustainability must coexist with performance.
- Environmental stewardship is central: ecosystem health, biodiversity protection, low climate impact (Means ≈ 4.00–4.21).
- Social/ethical assurances (workers' rights, fair pay, economic viability) score high (Means ≈ 4.04–4.32).

Thus, consumers show a positive predisposition toward sustainable forestry when it delivers tangible quality, environmental benefit, and ethical production—not a trade-off.

2) Trust & verification bias, which seem to have a moderate to strong effect. Adoption is reinforced by credible signals (certifications, clear labelling, supply-chain transparency). Investments in verification lower perceived risk and nudge preference.

- Assurance, traceability, and labels matter ("Assurance… important," "transparent & traceable," "need for a logo," "eco-certified" ≈ 3.80–4.06; attention to environmental information ≈ 3.67).
- General distrust is low ("I do not trust…" Mean = 2.10).

3) Localism & community bias, which seem to have a strong effect. A pro-local bias links local provenance to freshness, sustainability, and community benefit, boosting adoption and modest WTP

- Locally produced and available near me are valued (≈ 4.13 and 3.99);
- preference to buy local (4.05); support for small local forestry businesses (3.99); recognition of reduced transport/packaging with local choice (3.95);
- willingness to pay slightly more for local (3.75).

4) Conditional price-acceptance bias, which seem to have a moderate effect There is a bias toward adoption at reasonable/slight premiums, contingent on clear, credible value (quality, environmental impact, local benefits). Consumers acknowledge higher prices for sustainable products (≈ 3.53–3.70) but show conditional purchase intent:

- "If the price is reasonable, I buy…" 4.19
- "Even if slightly higher, I buy sustainable products" 3.64
- "I accept their higher price" is only moderate (3.40).

Overall, consumers conceptualize sustainable forestry products through a multidimensional lens that integrates: (i) functional performance (quality/durability), (ii) environmental integrity (ecosystem health, biodiversity, climate), (iii) ethical production (workers' rights, fair pay, economic viability), and (iv) local/community value. Adoption is positively biased when these dimensions are clear, verified, and tied to personal benefits. Price is a conditional gatekeeper: modest premiums are acceptable in categories with salient benefits (health/naturalness in foods/cosmetics; long-lived value in furniture/flooring), but tolerance is lower in commoditized, low-involvement items. This pattern aligns with global evidence that, while consumers report willingness to pay for sustainability, realised premiums depend on transparent value framing, credible assurance, and category-specific drivers—factors that help narrow the attitude–behaviour gap (Dieli et al., 2024).

To wrap up with some practical implementations for promoting sustainable products few points must be stressed; Firstly, performance must be associated with proof: position durability and quality as non-negotiable, pair claims with measurable impacts (GHG reduction, biodiversity) and recognized certifications to reduce credence-attribute uncertainty. Second, credibility should be obvious: front-of-pack eco-labels, traceability cues, and accessible product-level information (e.g., QR-linked audits) are trusted more than self-claims. Third, pricing strategy matters: basic sustainable product options should be offered at affordable prices in categories where people are less willing to pay extra,

and in categories where they are more willing, higher price should be justified by highlighting added value—such as product warranties, care instructions, and stories about where and how the product was made. Fourth, localism should be promoted: short supply chains and community benefits should be emphasized in order to raise trust and WTP. Finally, messaging should be adapted for different customer groups, especially where opinions vary—such as on packaging rules or everyday products—and use clear comparison sheets to show how sustainable options differ from conventional ones. These steps are supported by recent multi-country research showing that certification and transparent sustainability communication build trust and can shift demand, provided the messaging is concrete and value-linked (Nyquist, 2024)

Summary

The survey provides a comprehensive and nuanced picture of consumers' perceptions, attitudes, and behavioural biases toward sustainable forestry products by integrating demographic profiling, multi-item perception and attitude measures, and stated willingness to pay (WTP). Overall, the results depict consumers as broadly supportive of sustainability in forestry, yet selective and conditional in how this support translates into preferences and price acceptance.

Across the three perception-focused multi-item questions, consumers conceptualize sustainable forestry products through a multidimensional framework that combines functional performance, environmental stewardship, ethical production, and economic accessibility. Quality and durability emerge as non-negotiable foundations of sustainability, consistently receiving the highest importance ratings. Environmental outcomes—such as biodiversity protection, ecosystem health, and low climate impact—are also central, while social dimensions (workers' rights, fair pay, and economic viability of forestry communities) play a strong complementary role. Sustainability is therefore not seen as a niche or symbolic attribute, but as something that must coexist with reliability, value, and ethical legitimacy.

Cognitive beliefs and evaluative judgements further reinforce this pattern. Consumers largely associate sustainable forestry products with better forest management, reduced chemical use, higher quality, and greater trustworthiness, while scepticism and disengagement remain limited to a small minority. Importantly, sustainability is perceived as a value-adding differentiator, not as a neutral or irrelevant label: respondents generally reject claims that sustainably sourced products are indistinguishable from conventional ones. However, moderate agreement on some technical statements (e.g. durability equivalence, resource efficiency) points to residual knowledge gaps and segment heterogeneity, highlighting the importance of clear and credible communication.

Attitudinal measures confirm a strong pro-sustainability orientation anchored in conservation, climate mitigation, and local development. Consumers express willingness to support sustainable forestry when prices are reasonable, benefits are visible, and assurance mechanisms are credible. Local provenance consistently strengthens trust, perceived sustainability, and willingness to pay, reflecting a pronounced localism and community-support bias.

WTP results reveal a selective premium bias rather than uniform readiness to pay more. Consumers are most willing to accept price premiums for products where sustainability aligns with personally salient benefits—such as health, naturalness, craftsmanship, or long-term durability (e.g. honey, furniture, flooring, cosmetics). In contrast, everyday and commoditized products (paper goods, pellets, packaging) show limited premium tolerance, suggesting that sustainability is treated as a baseline expectation rather than a differentiating feature in these categories.

Taken together, the findings indicate that consumers are positively predisposed toward sustainable forestry products, but adoption is filtered through clear biases: preference for high quality and durability, reliance on trust and verification, strong localism, and conditional price acceptance. Sustainability nudges purchasing most effectively when it is credible, tangible, locally grounded, and clearly linked to personal and societal value, helping narrow the attitude–behaviour gap that often characterizes sustainable consumption.

Conclusions

The multi-stakeholder survey reveals that the adoption of sustainable practices across agriculture, forestry, and consumption is shaped by a complex interplay of behavioural biases, motivational drivers, and contextual factors rather than by economic considerations alone.

The survey of farmers reveals a nuanced behavioural profile characterized by environmental awareness, pragmatic decision-making, and selective responsiveness to nudges. Farmers exhibit limited optimism bias: most respondents anticipate significant environmental risks such as drought and soil degradation within the next decade and express concern about resource sufficiency, particularly water. This awareness suggests that overconfidence in natural resilience is not a major barrier. However, confirmation bias is evident in the strong preference for evidence-based decisions. Farmers prioritize practical and scientific proof over social endorsement, although trust in familiar sources—such as advisors and peers—remains relevant. Ambiguity aversion is moderate; respondents prefer clarity and predictable outcomes, avoiding practices with uncertain benefits. Risk and loss aversion centres on financial concerns and yield reductions, yet many farmers are willing to adopt new practices when long-term gains are credible, even if short-term sacrifices are required. Status quo bias is present but not dominant: while satisfaction with current methods exists, farmers prioritize long-term soil and water health and show readiness to adopt sustainable practices when economic incentives align.

Cognitive limitations emerged as a significant barrier, underscoring the importance of clear, simple communication. Step-by-step guides, visual aids, and demonstrations substantially increase adoption likelihood, while complexity and time demands deter change. Trust and reciprocity biases emphasize reliance on expert sources; research centres and advisors. and experiential proof; farmers prefer to recommend practices only after personal success. Social comparison biases indicate that community norms and peer behaviour influence confidence, but autonomy remains strong; farmers are willing to act independently despite limited peer adoption. Overall, these findings suggest that farmers are environmentally aware and cautiously progressive, balancing economic viability with sustainability goals.

Nudge effectiveness analysis reinforces these patterns. Practical decision-support tools and clear implementation guidance rank highest, with decision-support systems that quantify costs and benefits (Mean = 3.99) and easy-to-follow guides/toolkits (Mean = 3.93) leading the list. Socially oriented strategies, such as highlighting collective achievements of farmer groups (Mean = 3.90) and showcasing individual success stories (Mean = 3.83), also score highly, reflecting the role of social proof. Media-based nudges, including social media messaging and environmental impact awareness, are moderately effective (Means ≈ 3.59–3.65), while traditional advertising like billboards is considered least impactful (Mean = 3.12). Variability across responses (SD ≈ 1.1–1.48) indicates heterogeneous preferences, and Friedman tests confirm significant differences among nudge types ($\chi^2 = 138.608$, df = 10, $p < 0.001$). Paired-sample comparisons between self and peer perceptions show near parity, suggesting that intervention designs can be largely aligned for both target groups. Overall, farmers favour actionable, benefits-focused, and peer-validated nudges over generic media messaging or negative framing.

Farm advisors display a cautious yet evidence-driven approach to recommending sustainable practices. Confirmation bias is prominent: advisors place high importance on both scientific (Mean = 4.18) and practical, field-based evidence (Mean = 4.36) when endorsing new methods. They actively verify benefits, drawbacks, and prior adopters, reflecting a deliberate evaluation process. Ambiguity aversion and risk/loss aversion are evident, with advisors preferring predictable outcomes and avoiding recommendations if benefits are uncertain. Financial loss and yield reduction concerns persist, but

advisors are willing to promote practices with delayed environmental or productivity benefits (Means ≈ 3.97–3.98), indicating balanced risk-taking for long-term gains. Status quo bias is moderate: advisors express satisfaction with current practices but prioritize long-term environmental impacts over short-term profits. Cognitive limitations are minimal, yet advisors strongly favour clear, structured information—step-by-step guides, visual aids, and demonstrations (Means ≈ 3.97–4.17)—to facilitate adoption. Trust and reciprocity biases highlight reliance on credible sources, especially research institutions and experienced peers, while NGOs and industry actors receive lower trust ratings. Social comparison influences advisory behaviour moderately; advisors value peer input but maintain autonomy.

Nudge effectiveness mirrors these preferences. Decision-support systems (Mean = 4.13), highlighting successful peers (Mean = 4.11), and easy-to-follow guides/toolkits (Mean = 4.09) rank highest, followed by cooperative achievements and consequence framing. Media-based strategies and visual cues are less influential, and billboards remain least effective (Mean = 3.20). Friedman tests confirm significant differences among nudge items ($\chi^2 = 112.201$, $p < 0.001$). Paired comparisons reveal that advisors perceive themselves as more responsive than peers to information-rich, practical, and consequence-focused nudges, reinforcing the need for evidence-based interventions.

Foresters exhibit pragmatic attitudes toward sustainable forestry, balancing environmental stewardship with operational feasibility. Optimism bias is limited; respondents acknowledge future risks and recognize the need for active management. Confirmation bias drives decision-making, with scientific and practical evidence valued more than social endorsement. Ambiguity and risk aversion are moderate, but long-term benefits outweigh short-term concerns. Status quo bias is conditional, as foresters are open to change when gains are credible. Cognitive barriers are minimal, though clear, structured information enhances adoption. Trust centres on institutional expertise and proven peer experience, while social influence plays a supportive but secondary role.

Forestry advisors share similar patterns, emphasizing evidence-based recommendations and practical learning. Economic incentives—subsidies and grants—are rated as the strongest motivators, alongside emotional drivers such as responsibility toward future generations and biodiversity protection. Educational motives prioritize clear financial evidence and hands-on training. Nudges that reduce uncertainty and provide actionable guidance—decision-support tools, guides, and peer success stories—are most effective, while symbolic cues and punitive measures rank lowest. Advisors consistently rate themselves as more receptive to complex, evidence-based approaches than peers, suggesting that interventions should combine financial viability, moral responsibility, and experiential learning.

Consumers exhibit strong sustainability orientation mediated by predictable biases. Positive predispositions—health halo, localism, and ethical values—facilitate adoption when benefits are tangible and credible. However, loss aversion, status quo inertia, present bias, and ambiguity aversion constrain purchase behaviour underprice uncertainty or unclear labelling. Trust and verification emerge as decisive: credible certifications, transparent supply chains, and recognizable eco-labels significantly increase willingness to pay. Local origin acts as a powerful heuristic, linking sustainability to freshness and community benefit. Price acceptance is conditional; modest premiums are tolerated when linked to clear value, but tolerance declines for commoditized products. Nudges should emphasize performance proof, credible labelling, and category-specific benefits, while pricing strategies must balance affordability with value framing. Farmers and foresters demonstrate strong environmental awareness and a willingness to adopt sustainable practices when long-term benefits are credible, and implementation is supported by practical tools. While optimism bias is limited and respondents acknowledge future environmental risks, ambiguity aversion and risk/loss aversion remain influential, particularly where outcomes are uncertain or short-term costs loom large. Status quo bias and present

bias exert moderate effects, reinforcing the need for interventions that make sustainable options easy, salient, and economically viable. Cognitive limitations highlight the importance of clear, step-by-step guidance, visual aids, and demonstrations to reduce complexity and enhance perceived behavioural control.

Across all groups, the most effective nudges are actionable and evidence-based: decision-support tools, clear implementation guides, and peer-validated success stories consistently outperform generic awareness campaigns or symbolic cues. Socially oriented strategies—such as highlighting collective achievements—reinforce adoption when combined with practical benefits, while traditional advertising (e.g., billboards) ranks lowest. These findings converge on a clear principle: interventions should prioritize simplicity, credibility, and tangible benefits, leveraging behavioural insights to align sustainability with economic viability and personal values.

In sum, promoting sustainable practices requires an integrated approach that addresses behavioural biases, strengthens trust, and reduces complexity. Policies and market strategies should combine financial incentives with educational and experiential learning, deploy targeted nudges that make sustainable choices easy and rewarding, and communicate value through transparent, verifiable signals. By embedding behavioural science into design, the transition to sustainable agriculture, forestry, and consumption can move from aspiration to widespread practice.

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Appendix 1A

FARMERS' DATA

Frequencies of Gender

Gender	Counts	% of Total	Cumulative %
Male	109	68.6%	68.6%
Female	50	31.4%	100.0%

Frequencies of the Highest completed level of education

Highest completed level of education	Counts	% of Total	Cumulative %
Bachelor's degree or equivalent level	50	31.6%	31.6%
Master, Postgraduate or doctoral degree	38	24.1%	55.7%
Upper secondary education	36	22.8%	78.5%
Lower secondary/primary education or below	20	12.7%	91.1%
College entrance qualification	14	8.9%	100.0%

Frequencies of Marital Status

Marital Status	Counts	% of Total	Cumulative %
Married	107	68.2%	68.2%
Single	43	27.4%	95.5%
Divorced	7	4.5%	100.0%

Frequencies of No of Children

No of Children	Counts	% of Total	Cumulative %
0	4	4.3%	4.3%
1	18	19.1%	23.4%
2	48	51.1%	74.5%
3	13	13.8%	88.3%
4	8	8.5%	96.8%
5	3	3.2%	100.0%

Frequencies of Country of activity

Country of activity	Counts	% of Total	Cumulative %
Greece	54	34.18%	34.18%
Portugal	31	19.62%	53.80%
Serbia	26	16.46%	70.25%
Tunis	18	11.39%	81.65%
Lithuania	11	6.96%	88.61%
Poland	6	3.80%	92.41%
UK	4	2.53%	94.94%
Slovenia	3	1.90%	96.84%
Spain	3	1.90%	98.73%
Sweden	1	0.63%	99.37%
Romania	1	0.63%	100.00%
	158	100%	

Frequencies of Responsible for decision making about farming practices on your farm

Responsible for decision making	Counts	% of Total	Cumulative %
The respondent	150	94.9%	94.9%
His / Her father	5	3.2%	98.1%
Wife /Husband	2	1.3%	99.4%
Manager	1	0.6%	100.0%

Frequencies of Organic activities

Organic activities	Counts	% of Total	Cumulative %
All activities	31	29.0%	29.0%
Not at all	46	43.0%	72.0%
Partially	30	28.0%	100.0%

Frequencies of Integrated activities

Integrated activities	Counts	% of Total	Cumulative %
All activities	31	29.5%	29.5%
Partially	39	37.1%	66.7%
Not at all	35	33.3%	100.0%

Frequencies of Conventional activities

Conventional activities	Counts	% of Total	Cumulative %
All activities	69	59.0%	59.0%
Partially	30	25.6%	84.6%
Not at all	18	15.4%	100.0%

Frequencies of Do you plan to change your Farm system in the next five years?

	Counts	% of Total	Cumulative %
Under discussion	48	30.8%	30.8%
Possibly	31	19.9%	50.6%
Probably Not	28	17.9%	68.6%
Definitely Yes	23	14.7%	83.3%
Unsure/don't know	16	10.3%	93.6%
Definitely Not	10	6.4%	100.0%

Frequencies of Do you plan to move to a more sustainable farming in the next five years?

	Counts	% of Total	Cumulative %
Definitely Not	38	24.8%	24.8%
Probably Not	38	24.8%	49.7%
Definitely Yes	27	17.6%	67.3%
Under discussion	21	13.7%	81.0%
Possibly	17	11.1%	92.2%
Unsure/don't know	12	7.8%	100.0%

Frequencies of Do you plan to move to organic farming in the next five years?

	Counts	% of Total	Cumulative %
Definitely Not	38	24.8%	24.8%
Probably Not	38	24.8%	49.7%
Definitely Yes	27	17.6%	67.3%
Under discussion	21	13.7%	81.0%
Possibly	17	11.1%	92.2%
Unsure/don't know	12	7.8%	100.0%

Frequencies of livestock (do you plan to introduce any livestock in the next 5 years)

	Counts	% of Total	Cumulative %
No	88	55.7	55.7%
Planning to	12	7.6	63.9%
Yes	57	36.1	100.0%

Descriptives of Sources of Information

Sources of Information	N	Min	Max	Mean	Std. Dev.
Family and friends	154	1	5	3.56	1.204
Business partners (on the farm)	148	1	5	3.38	1.180
Agricultural advisors	153	1	5	3.61	1.136
Environmental advisors	152	1	5	2.59	1.153
Government agencies /services	152	1	5	2.38	1.009
Supplier representatives	154	1	5	2.75	0.986
Buyer representatives	152	1	5	2.61	1.074
Open days, demonstration activities, training	154	1	5	3.05	1.113
Social media, mainstream news media	152	1	5	2.87	1.211
Other farmers	152	1	5	3.49	1.086

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 142 Test Statistic 237.670 Degree of Freedom 9, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*

Frequencies of participation in the following European schemes: Organic agri-environment schemes (AES)

	Counts	% of Total	Cumulative %
I did not participate at all	115	74.7%	74.7%
Previously participated	21	13.6%	88.3%
Recently Participated (up to 3 years)	18	11.7%	100.0%

Frequencies of participation in the following European schemes: Other agri-environment schemes (AES)

	Counts	% of Total	Cumulative %
I did not participate at all	107	70.9%	70.9%
Previously participated	13	8.6%	79.5%
Recently Participated (up to 3 years)	31	20.5%	100.0%

Frequencies of participation in the following European schemes: European Protected Designation of Origin (PDO)

	Counts	% of Total	Cumulative %
I did not participate at all	133	88.1%	88.1%
Previously participated	8	5.3%	93.4%
Recently Participated (up to 3 years)	10	6.6%	100.0%

Frequencies of participation in the following European schemes: European organic certification

	Counts	% of Total	Cumulative %
I did not participate at all	119	79.9%	79.9%
Previously participated	16	10.7%	90.6%
Recently Participated (up to 3 years)	14	9.4%	100.0%

Frequencies of participation in the following European schemes: Young Farmers establishments

	Counts	% of Total	Cumulative %
I did not participate at all	93	61.6%	61.6%
Previously participated	40	26.5%	88.1%
Recently Participated (up to 3 years)	18	11.9%	100.0%

Frequencies of How did you acquire your farm

	Counts	% of Total	Cumulative %
Inheritance	94	66.2%	66.2%
Purchase	25	17.6%	83.8%
Mixed	18	12.7%	96.5%
Rent	4	2.8%	99.3%
Other	1	0.7%	100.0%

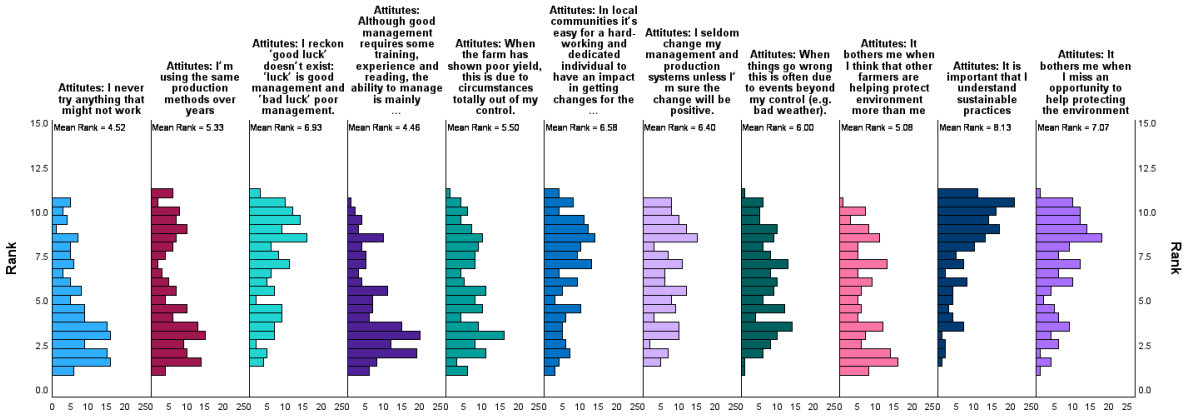
Frequencies of Successor to your forest

Successors	Counts	% of Total	Cumulative %
Transfer to children / descendants	74	52.1%	52.1%
Undecided / Not planned	26	18.3%	70.4%
Transfer to relatives (extended family)	23	16.2%	86.6%
None / Sale planned	12	8.5%	95.1%
Other	7	4.9%	100.0%

Descriptives of Farmers' Attitudes:

Attitudes	N	Min	Max	Mean	Std. Dev.
I never try anything that might not work	156	1	5	2.52	1.297
I'm using the same production methods over years	156	1	5	2.76	1.359
I reckon 'good luck' doesn't exist: 'luck' is good management and 'bad luck' poor management.	156	1	5	3.47	1.155
Although good management requires some training, experience and reading, the ability to manage is mainly determined by genes.	156	1	5	2.56	1.311
When the farm has shown poor yield, this is due to circumstances totally out of my control.	154	1	5	2.88	1.273
In local communities it's easy for a hard-working and dedicated individual to have an impact in getting changes for the better.	155	1	5	3.35	1.160
I seldom change my management and production systems unless I'm sure the change will be positive.	154	1	5	3.27	1.222
When things go wrong this is often due to events beyond my control (e.g. bad weather).	155	1	5	3.11	1.149
It bothers me when I think that other farmers are helping protect the environment more than me	155	1	5	2.72	1.292
It is important that I understand sustainable practices	155	1	5	3.96	1.044
t bothers me when I miss an opportunity to help protecting the environment	156	1	5	3.56	1.219

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 152 Test Statistic 216.895 Degree of Freedom 10, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*

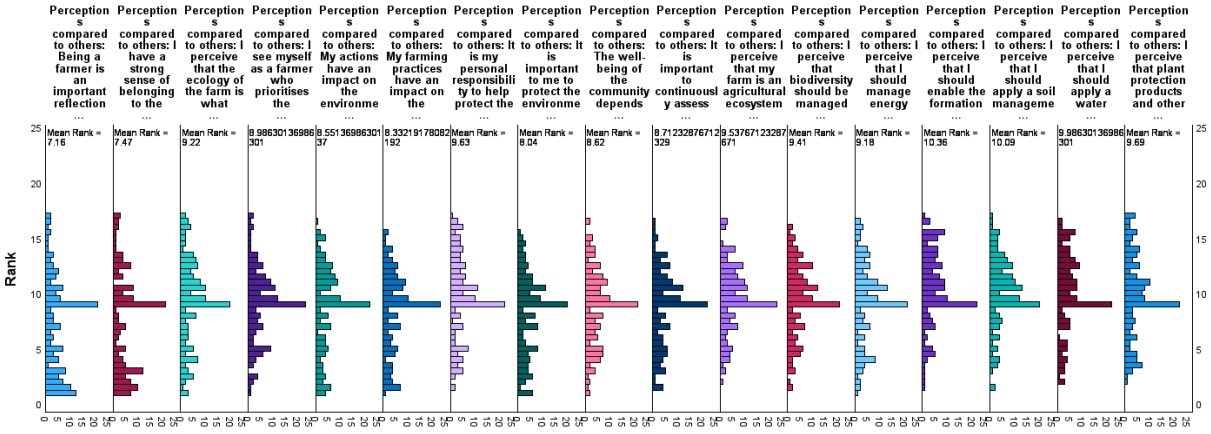

Attitutes: I never try anything that might not work
Mean Rank = 4.52
Attitutes: I´m using the same production methods over years
Mean Rank = 5.33
Attitutes: I reckon 'good luck' doesn´t exist: 'luck' is good management and 'bad luck' poor management.
Mean Rank = 6.93
Attitutes: Although good management requires some training, experience and reading, the ability to manage is mainly ...
Mean Rank = 4.46
Attitutes: When the farm has shown poor yield, this is due to circumstances totally out of my control.
Mean Rank = 5.50
Attitutes: In local communities it´s easy for a hard-working and dedicated individual to have an impact in getting changes for the ...
Mean Rank = 6.58
Attitutes: I seldom change my management and production systems unless I´m sure the change will be positive.
Mean Rank = 6.40
Attitutes: When things go wrong this is often due to events beyond my control (e.g. bad weather).
Mean Rank = 6.00
Attitutes: It bothers me when I think that other farmers are helping protect environment more than me
Mean Rank = 5.08
Attitutes: It is important that I understand sustainable practices
Mean Rank = 8.13
Attitutes: It bothers me when I miss an opportunity to help protecting the environment
Mean Rank = 7.07
Rank
Rank
0.0
2.5
5.0
7.5
10.0
12.5
15.0

Descriptives of Farmers' Perceptions

Perceptions	N	Min	Max	Mean	Std. Dev.
Being a farmer is an important reflection of who I am	157	1	5	3.17	0.999
I have a strong sense of belonging to the farming community	155	1	5	3.26	0.992
I perceive that the ecology of the farm is what farming is about	155	1	5	3.65	1.030
I see myself as a farmer who prioritises the environment	155	1	5	3.58	0.889
My actions have an impact on the environment	154	1	5	3.41	1.147
My farming practices have an impact on the environment	154	1	5	3.42	1.040
It is my personal responsibility to help protect the environment.	155	1	5	3.71	0.967
It is important to me to protect the environment even if it slows down economic growth of my farming activities.	155	1	5	3.45	0.995
The well-being of the community depends on the preservation of the environment	155	1	5	3.54	0.941
It is important to continuously assess the environmental and social impact of my farm	155	1	5	3.56	0.981
I perceive that my farm is an agricultural ecosystem that interacts with neighbouring landscapes.	155	1	5	3.68	0.897
I perceive that biodiversity should be managed to enable its protection and enhancement	155	1	5	3.67	0.941
I perceive that I should manage energy consumption of my farming activities	154	1	5	3.63	0.956
I perceive that I should enable the formation of organic carbon in soils and in biomass	152	1	5	3.82	0.950
I perceive that I should apply a soil management plan to improve and optimize soil health	155	1	5	3.78	0.885
I perceive that I should apply a water management plan to improve and optimize water use and quality	153	1	5	3.72	0.928
I perceive that plant protection products and other treatments should be applied appropriately and as recommended.	156	1	5	3.71	1.005

Note*: Answers range from Much less than the farmers that know to Much more than the farmers that I know*

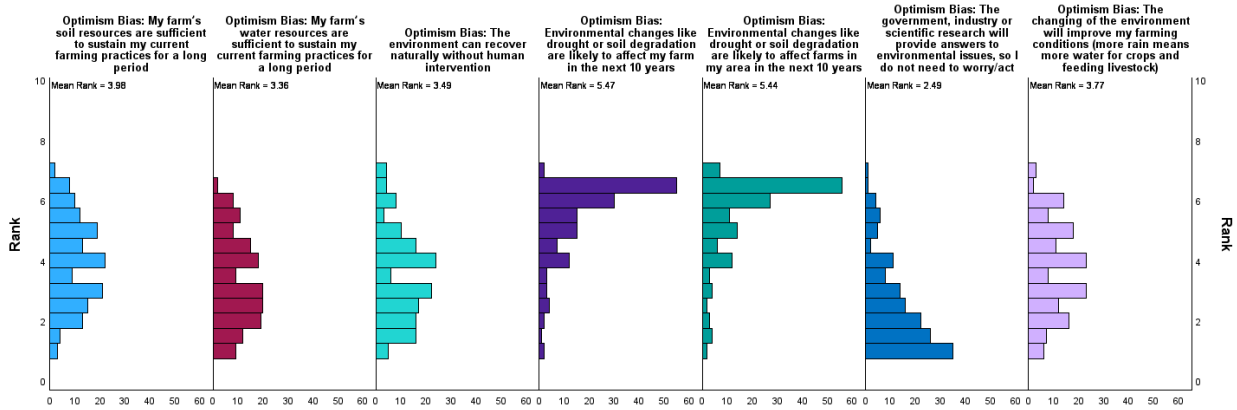
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 146 Test Statistic 126.174 Degree of Freedom 16, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*



Descriptives of Optimism Bias:

Optimism Bias	N	Min	Max	Mean	Std. Dev.
My farm's soil resources are sufficient to sustain my current farming practices for a long period	156	1	5	3.09	1.155
My farm's water resources are sufficient to sustain my current farming practices for a long period	155	1	5	2.77	1.225
The environment can recover naturally without human intervention	155	1	5	2.79	1.199
Environmental changes like drought or soil degradation are likely to affect my farm in the next 10 years	154	2	5	4.15	.854
Environmental changes like drought or soil degradation are likely to affect farms in my area in the next 10 years	157	1	5	4.13	.979

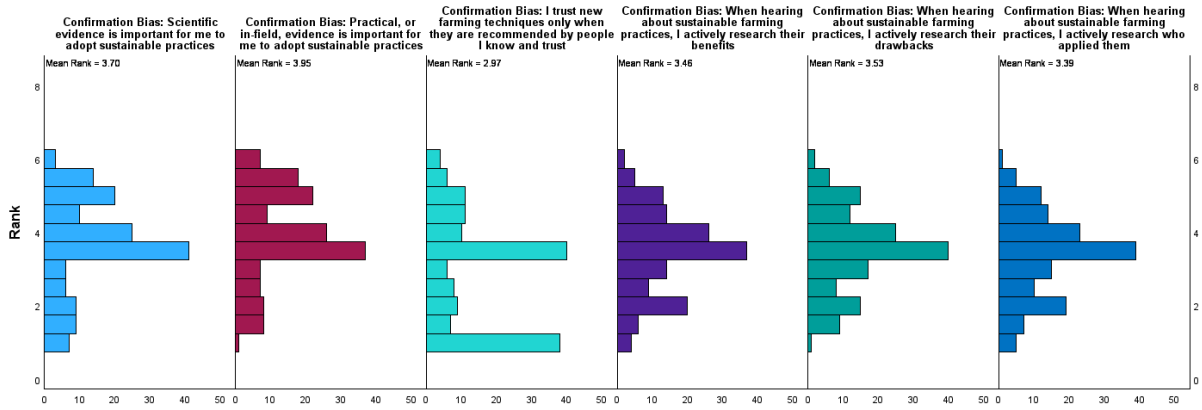
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 151 Test Statistic 299.538 Degree of Freedom 6, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Confirmation Bias:

Confirmation Bias	N	Min	Max	Mean	Std. Dev.
Scientific evidence is important for me to adopt sustainable practices	154	1	5	3.88	0.959
Practical, or in-field, evidence is important for me to adopt sustainable practices	154	1	5	3.98	0.925
I trust new farming techniques only when they are recommended by people I know and trust	156	1	5	3.47	1.031
When hearing about sustainable farming practices, I actively research their benefits	155	1	5	3.80	0.929
When hearing about sustainable farming practices, I actively research their drawbacks	155	1	5	3.81	0.912
When hearing about sustainable farming practices, I actively research who applied them	155	1	5	3.73	0.935

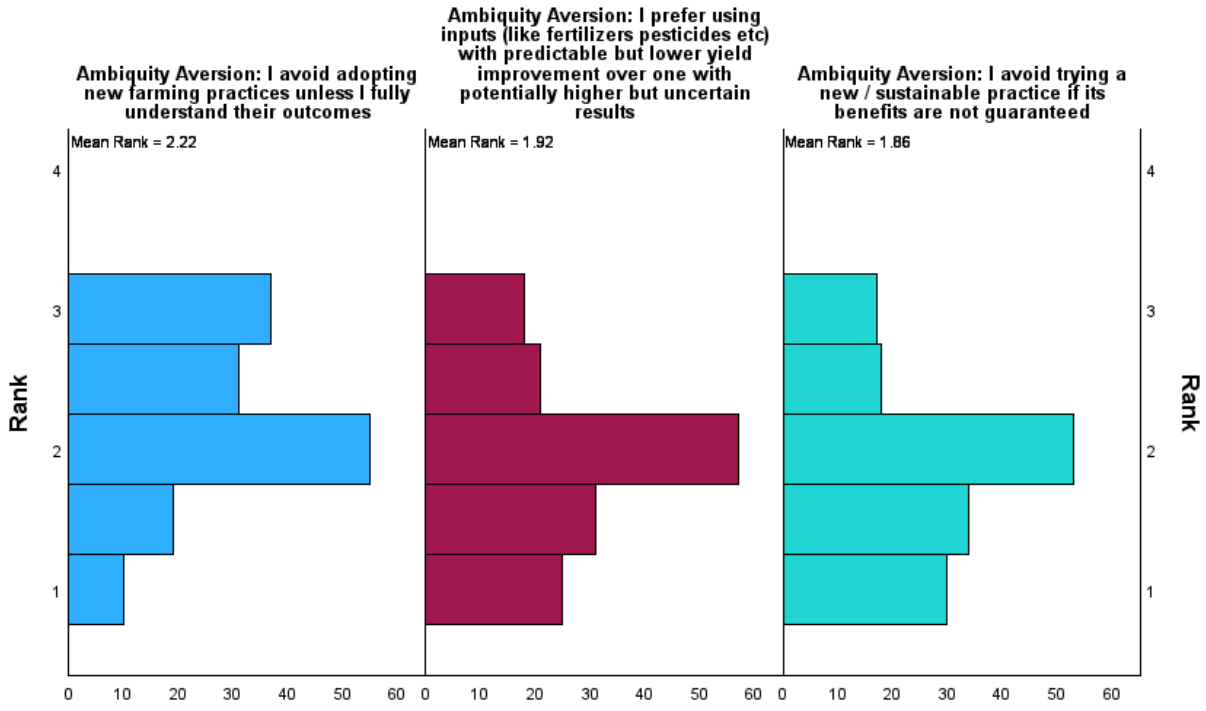
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 150 Test Statistic 42.188 Degree of Freedom 5, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Ambiguity Aversion:

Ambiguity Aversion	N	Min	Max	Mean	Std. Dev.
I avoid adopting new farming practices unless I fully understand their outcomes	154	1	5	3.62	1.024
I prefer using inputs (like fertilizers pesticides etc) with predictable but lower yield improvement over one with potentially higher but uncertain results	154	1	5	3.28	1.146
I avoid trying a new / sustainable practice if its benefits are not guaranteed	154	1	5	3.24	1.103

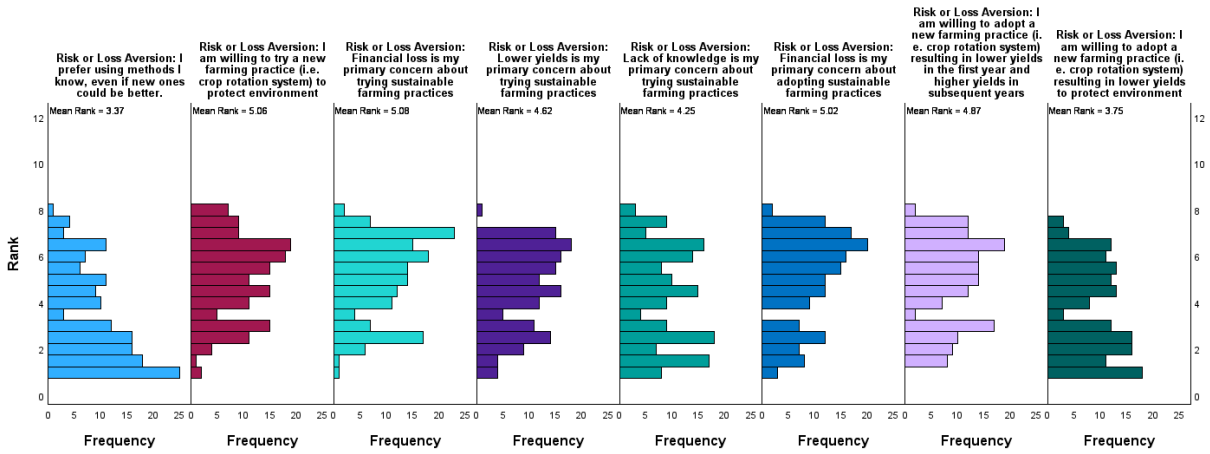
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 152 Test Statistic 19.077 Degree of Freedom 2, Asymptotic Sig.(2-sided test) <0.01 (there is evidence of statistically significant differences among these biases)*



Descriptives of Risk or Loss Aversion:

Risk or Loss Aversion	N	Min	Max	Mean	Std. Dev.
I prefer using methods I know, even if new ones could be better.	156	1	5	2.88	1.092
I am willing to try a new farming practice (i.e. crop rotation system) to protect environment	156	1	5	3.74	0.943
Financial loss is my primary concern about trying sustainable farming practices	155	1	5	3.73	1.053
Lower yields is my primary concern about trying sustainable farming practices	155	1	5	3.54	1.059
Lack of knowledge is my primary concern about trying sustainable farming practices	155	1	5	3.30	1.163
Financial loss is my primary concern about adopting sustainable farming practices	153	1	5	3.68	1.098
I am willing to adopt a new farming practice (i.e. crop rotation system) resulting in lower yields in the first year and higher yields in subsequent years	154	1	5	3.74	0.854
I am willing to adopt a new farming practice (i.e. crop rotation system) resulting in lower yields to protect environment	153	1	5	3.16	1.052

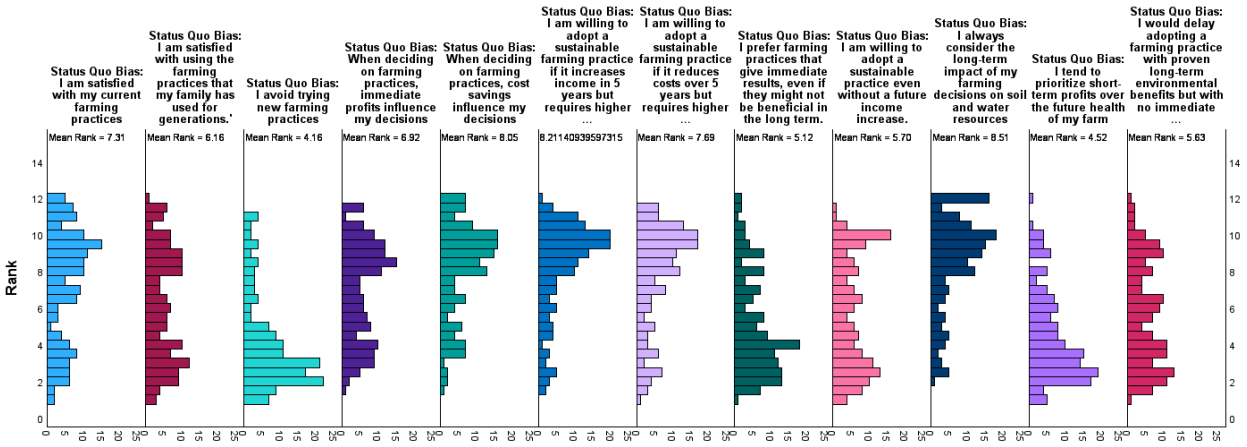
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 152 Test Statistic 102.692 Degree of Freedom 7, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Status Quo Biases:

Status Quo Biases	N	Min	Max	Mean	Std. Dev.
I am satisfied with my current farming practices	156	1	5	3.45	1.091
I am satisfied with using the farming practices that my family has used for generations.	155	1	5	3.05	1.205
I avoid trying new farming practices	155	1	5	2.43	1.007
When deciding on farming practices, immediate profits influence my decisions	155	1	5	3.34	1.022
When deciding on farming practices, cost savings influence my decisions	154	1	5	3.73	0.909
I am willing to adopt a sustainable farming practice if it increases income in 5 years but requires higher initial expenses now	155	1	5	3.72	0.931
I am willing to adopt a sustainable farming practice if it reduces costs over 5 years but requires higher initial expenses now	154	1	5	3.60	0.974
I prefer farming practices that give immediate results, even if they might not be beneficial in the long term.	154	1	5	2.72	1.094
I am willing to adopt a sustainable practice even without a future income increase.	154	1	5	2.95	1.101
I always consider the long-term impact of my farming decisions on soil and water resources	154	1	5	3.88	0.903
I tend to prioritize short-term profits over the future health of my farm	153	1	5	2.56	1.075
I would delay adopting a farming practice with proven long-term environmental benefits but with no immediate financial gain.	151	1	5	2.93	1.046

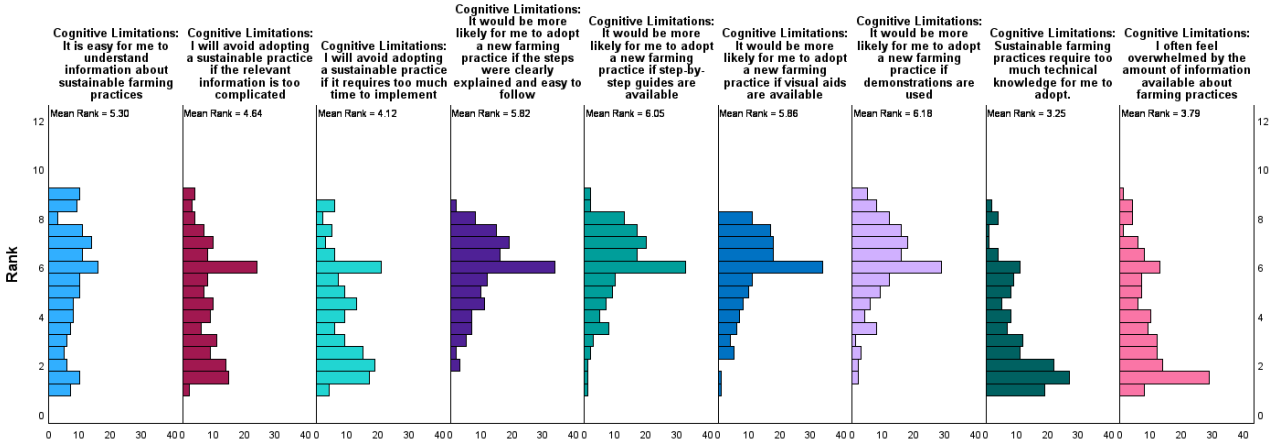
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 149 Test Statistic 342.744 Degree of Freedom 11, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Cognitive Limitations:

Cognitive Limitations:	N	Min	Max	Mean	Std. Dev.
It is easy for me to understand information about sustainable farming practices	153	1	5	3.61	1.083
I will avoid adopting a sustainable practice if the relevant information is too complicated	153	1	5	3.31	1.150
I will avoid adopting a sustainable practice if it requires too much time to implement	154	1	5	3.11	1.186
It would be more likely for me to adopt a new farming practice if the steps were clearly explained and easy to follow	154	1	5	3.85	.927
It would be more likely for me to adopt a new farming practice if step-by-step guides are available	152	1	5	3.99	.853
It would be more likely for me to adopt a new farming practice if visual aids are available	152	1	5	3.93	.835
It would be more likely for me to adopt a new farming practice if demonstrations are used	151	2	5	4.04	.840
Sustainable farming practices require too much technical knowledge for me to adopt.	152	1	5	2.72	1.123
I often feel overwhelmed by the amount of information available about farming practices	152	1	5	2.95	1.144

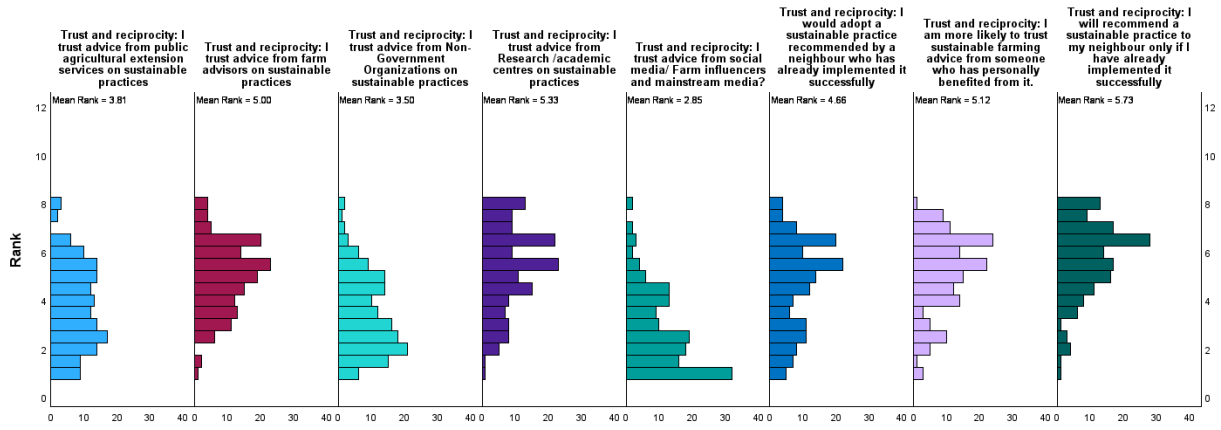
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 151 Test Statistic 270.681 Degree of Freedom 8, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Trust/ Reciprocity biases:

Trust/Reciprocity biases:	N	Min	Max	Mean	Std. Dev.
I trust advice from public agricultural extension services on sustainable practices	154	1	5	3.23	1.020
I trust advice from farm advisors on sustainable practices	154	1	5	3.67	0.864
I trust advice from Non-Government Organizations on sustainable practices	154	1	5	3.08	0.996
I trust advice from Research /academic centres on sustainable practices	152	1	5	3.82	0.864
I trust advice from social media/ Farm influencers and mainstream media?	150	1	5	2.73	1.072
I would adopt a sustainable practice recommended by a neighbour who has already implemented it successfully	153	1	5	3.52	0.953
I am more likely to trust sustainable farming advice from someone who has personally benefited from it.	152	1	5	3.72	0.878
I will recommend a sustainable practice to my neighbour only if I have already implemented it successfully	152	1	5	3.98	0.767

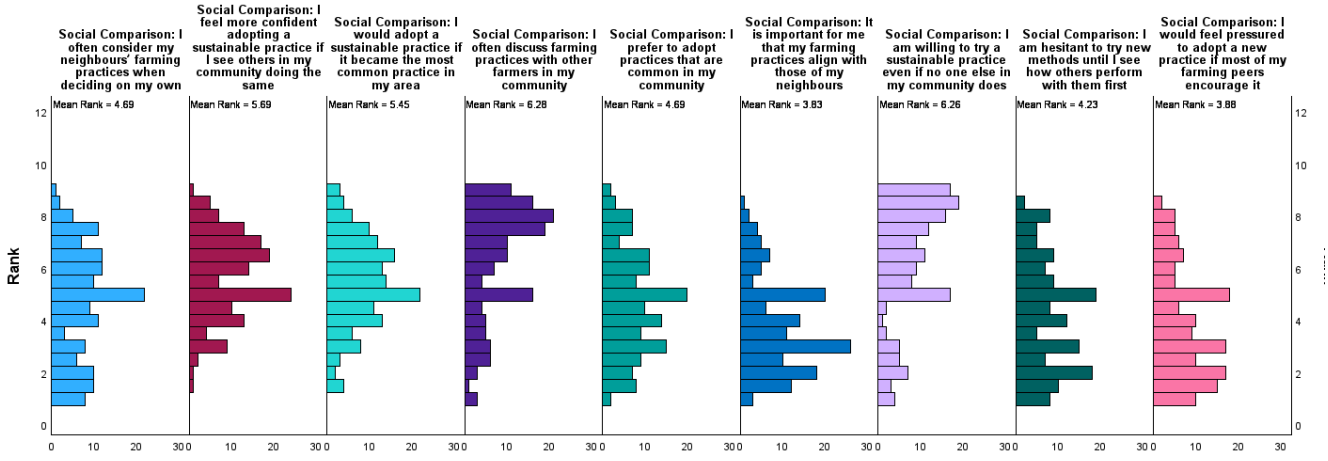
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 149 Test Statistic 254.144 Degree of Freedom 7, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Social Comparison biases:

Social Comparison biases:	N	Min	Max	Mean	Std. Dev.
I often consider my neighbours' farming practices when deciding on my own	153	1	5	3.07	1.098
I feel more confident adopting a sustainable practice if I see others in my community doing the same	152	1	5	3.49	0.956
I would adopt a sustainable practice if it became the most common practice in my area	153	1	5	3.35	0.990
I often discuss farming practices with other farmers in my community	150	1	5	3.72	1.004
I prefer to adopt practices that are common in my community	153	1	5	3.07	1.068
It is important for me that my farming practices align with those of my neighbours	153	1	5	2.76	0.974
I am willing to try a sustainable practice even if no one else in my community does	153	1	5	3.79	0.893
I am hesitant to try new methods until I see how others perform with them first	153	1	5	2.90	1.095
I would feel pressured to adopt a new practice if most of my farming peers encourage it	153	1	5	2.75	1.034

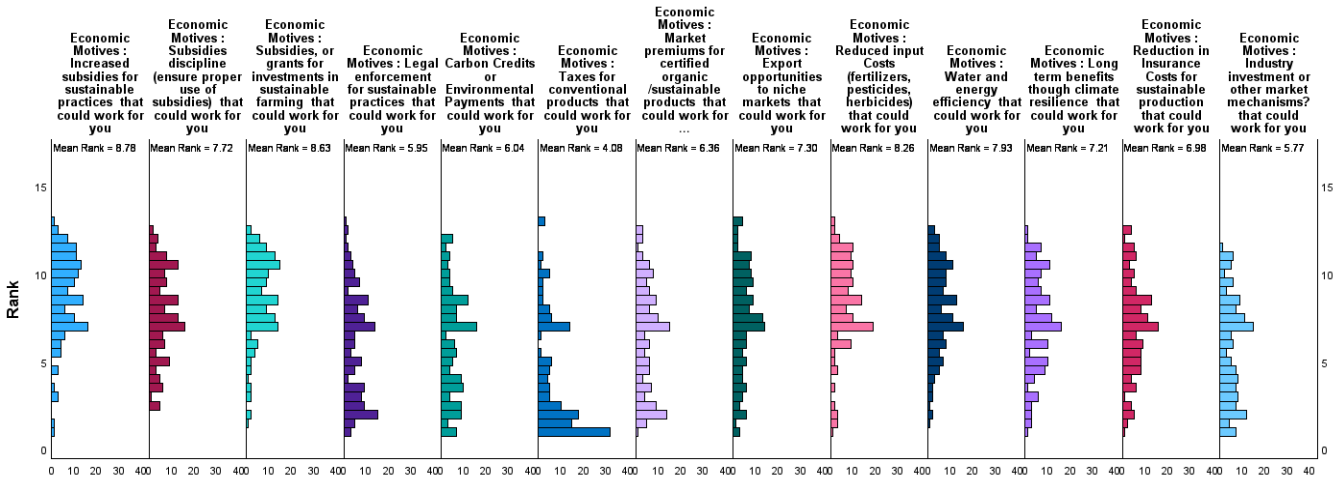
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N147 Test Statistic 202.346 Degree of Freedom 8, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Economics Benefits - Motives **that could work for the respondent**:

Economics Benefits - Motives:	N	Min	Max	Mean	Std. Dev.
Increased subsidies for sustainable practices	154	1	5	4.41	0.968
Subsidies discipline (ensure proper use of subsidies)	151	1	5	4.16	1.090
Subsidies, or grants for investments in sustainable farming	151	1	5	4.38	1.082
Legal enforcement for sustainable practices	152	1	5	3.51	1.405
Carbon Credits or Environmental Payments	150	1	5	3.46	1.364
Taxes for conventional products	149	1	5	2.69	1.542
Market premiums for certified organic /sustainable products	152	1	5	3.60	1.411
Export opportunities to niche markets	152	1	5	3.90	1.341
Reduced input Costs (fertilizers, pesticides, herbicides)	151	1	5	4.19	1.145
Water and energy efficiency	150	1	5	4.13	1.131
Long term benefits though climate resilience	150	1	5	3.93	1.311
Reduction in Insurance Costs for sustainable production	150	1	5	3.85	1.271
Industry investment or other market mechanisms	150	1	5	3.41	1.352

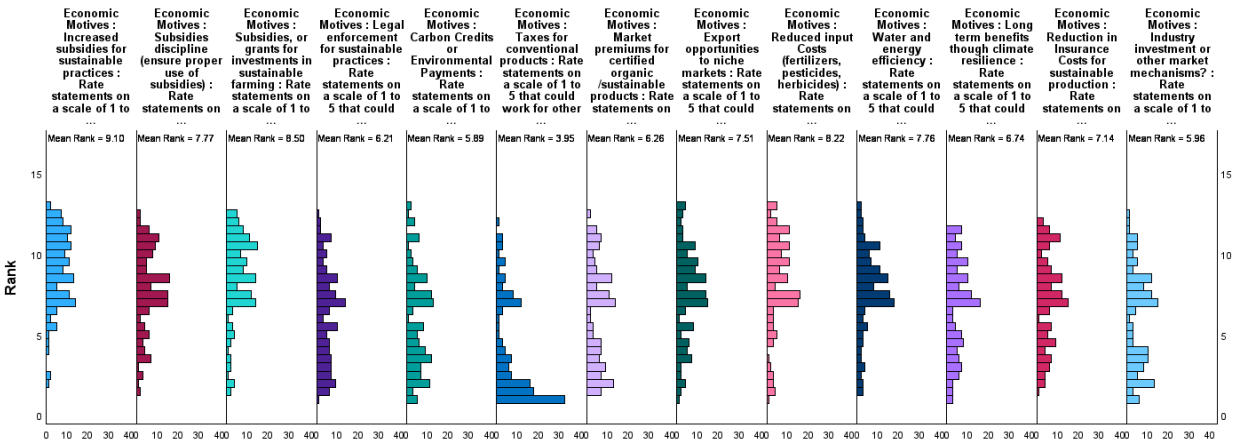
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 144 Test Statistic 300.600 Degree of Freedom 12, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



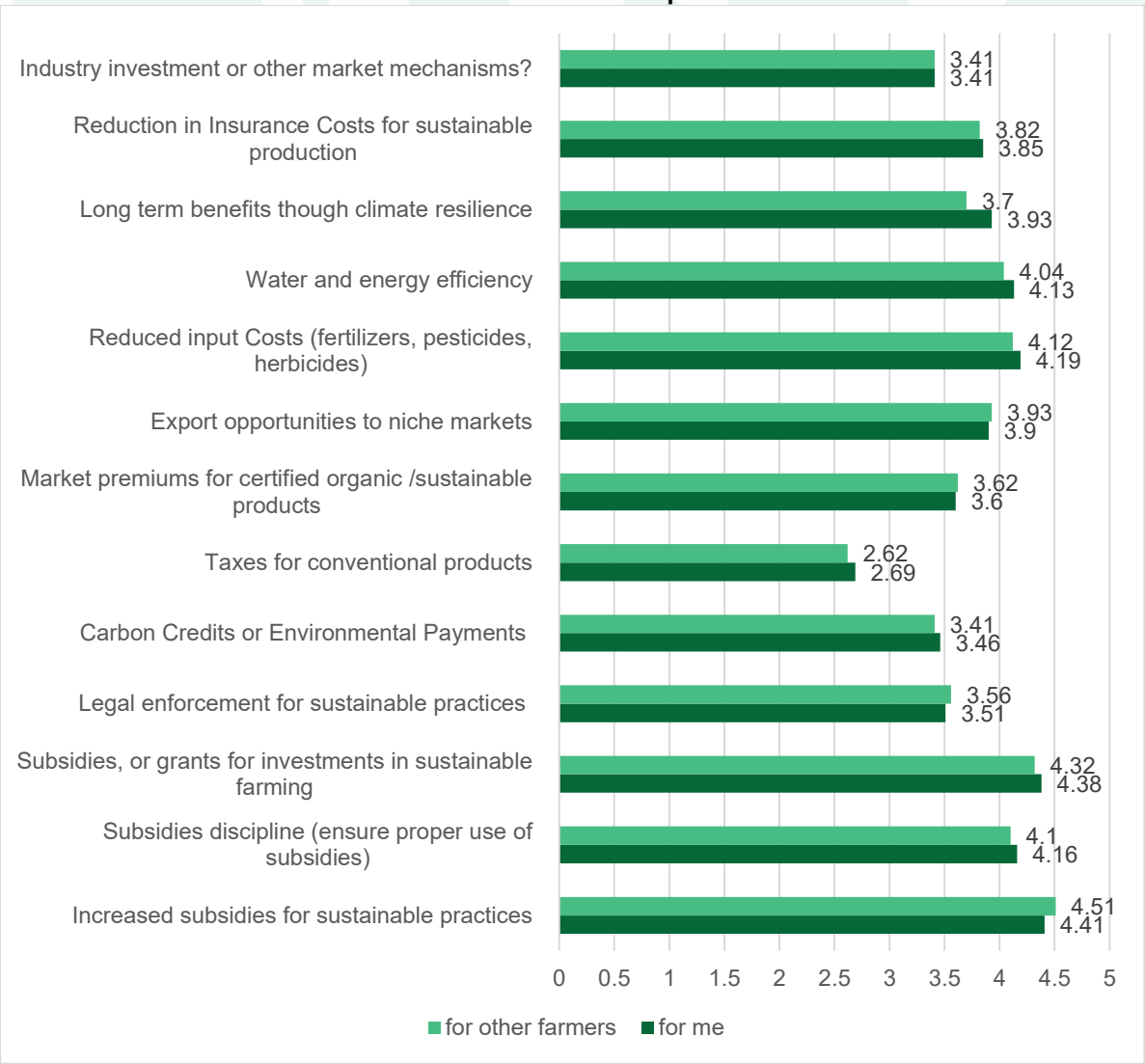
Descriptives of Economics Benefits - Motives **that could work for OTHER FARMERS**:

Economics Benefits - Motives:	N	Min	Max	Mean	Std. Dev.
Increased subsidies for sustainable practices	147	2	5	4.51	.753
Subsidies discipline (ensure proper use of subsidies)	146	1	5	4.10	1.059
Subsidies, or grants for investments in sustainable farming	147	1	5	4.32	1.014
Legal enforcement for sustainable practices	147	1	5	3.56	1.314
Carbon Credits or Environmental Payments	145	1	5	3.41	1.326
Taxes for conventional products	146	1	5	2.62	1.463
Market premiums for certified organic /sustainable products	147	1	5	3.62	1.310
Export opportunities to niche markets	147	1	5	3.93	1.168
Reduced input Costs (fertilizers, pesticides, herbicides)	148	1	5	4.12	1.148
Water and energy efficiency	145	1	5	4.04	1.047
Long term benefits though climate resilience	146	1	5	3.70	1.289
Reduction in Insurance Costs for sustainable production	146	1	5	3.82	1.258
Industry investment or other market mechanisms	147	1	5	3.41	1.308

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 140 Test Statistic 295.446 Degree of Freedom 12, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Economics Benefits - Motives **that could work for the respondent / for other farmers**



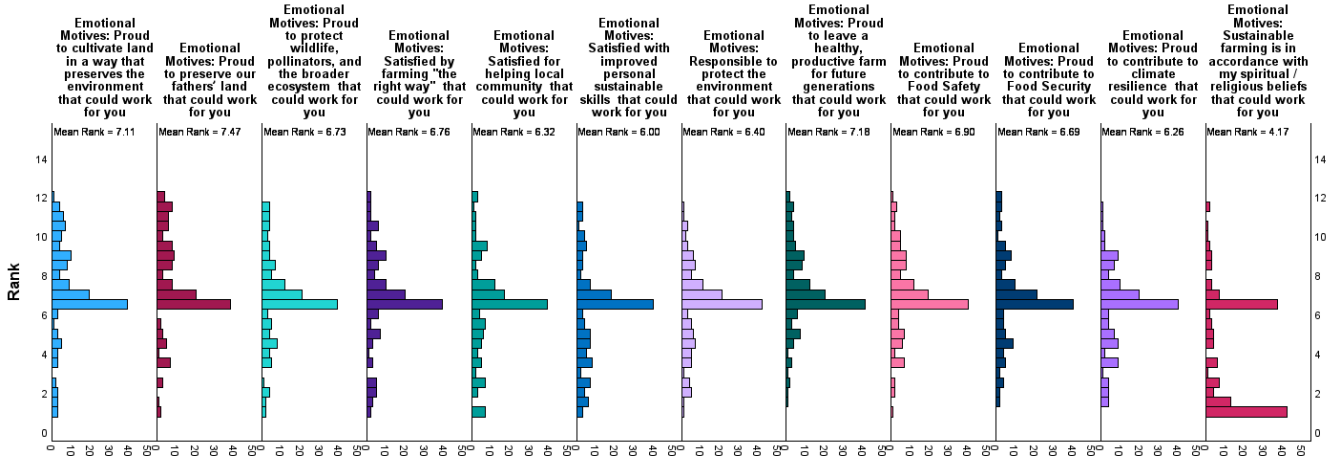
Paired Samples Statistics for Economics Benefits - Motives

Paired Differences (Me− Other farmers)	Mean	Std. Deviation	t	df	Two-Sided p (sig)
Pair 1: Increased subsidies for sustainable practices	-0.082	0.840	-1.178	146	0.241
Pair 2: Subsidies discipline (ensure proper use of subsidies)	0.083	1.077	0.925	144	0.356
Pair 3: Subsidies, or grants for investments in sustainable farming	0.096	1.026	1.129	145	0.261
Pair 4: Legal enforcement for sustainable practices	-0.048	0.924	-0.625	146	0.533
Pair 5: Carbon Credits or Environmental Payments	0.062	0.922	0.811	144	0.419
Pair 6: Taxes for conventional products	0.090	0.881	1.225	144	0.223
Pair 7: Market premiums for certified organic /sustainable products	-0.014	0.936	-0.176	146	0.860
Pair 8: Export opportunities to niche markets	0.000	0.958	0.000	146	1.000
Pair 9: Reduced input Costs (fertilizers, pesticides, herbicides)	0.095	0.917	1.260	146	0.210
Pair 10: Water and energy efficiency	0.110	0.929	1.431	144	0.155
Pair 11: Long term benefits though climate resilience	0.228	1.052	2.604	144	0.010
Pair 12: Reduction in Insurance Costs for sustainable production	0.069	0.962	0.863	144	0.390
Pair 13: Industry investment or other market mechanisms	0.000	0.830	0.000	145	1.000

Descriptives of Emotional Motives **that could work for the respondent**:

Emotional Motives:	N	Min	Max	Mean	Std. Dev.
Proud to cultivate land in a way that preserves the environment	153	1	5	4.24	1.128
Proud to preserve our fathers' land	150	1	5	4.32	1.064
Proud to protect wildlife, pollinators, and the broader ecosystem	151	1	5	4.20	0.973
Satisfied by farming "the right way"	150	1	5	4.15	1.085
Satisfied for helping local community	151	1	5	4.02	1.104
Satisfied with improved personal sustainable skills	151	1	5	3.99	1.083
Responsible to protect the environment	151	1	5	4.10	1.044
Proud to leave a healthy, productive farm for future generations	151	1	5	4.30	0.978
Proud to contribute to Food Safety	148	1	5	4.22	1.000
Proud to contribute to Food Security	149	1	5	4.17	1.055
Proud to contribute to climate resilience	149	1	5	3.97	1.249
Sustainable farming is in accordance with my spiritual / religious beliefs	152	1	5	3.22	1.549

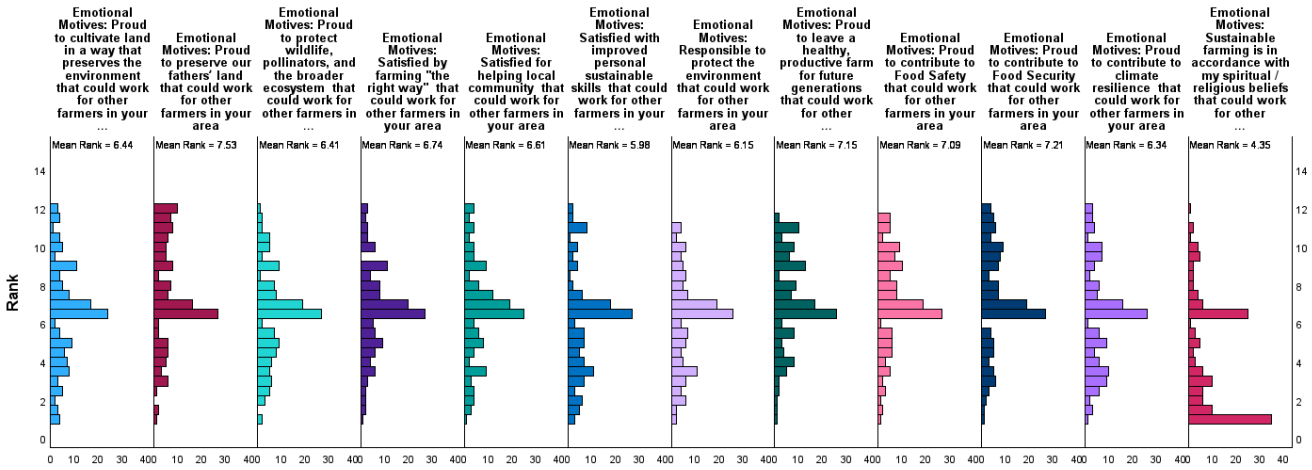
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 145 Test Statistic 175.323 df 11, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



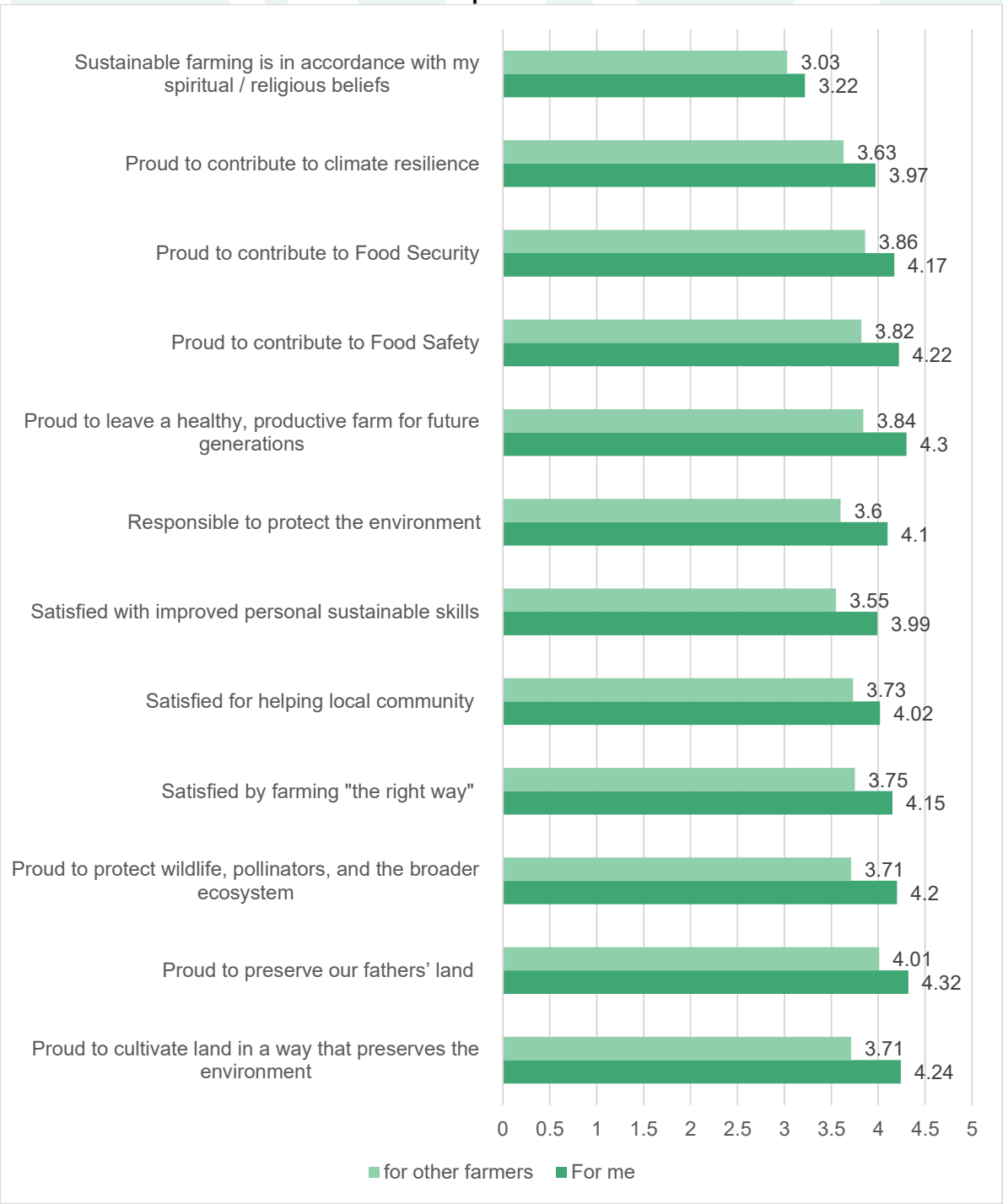
Descriptives of Emotional Motives **that could work for OTHER FARMERS**:

Emotional Motives	N	Min	Max	Mean	Std. Dev.
Proud to cultivate land in a way that preserves the environment	146	1	5	3.71	1.187
Proud to preserve our fathers' land	148	1	5	4.01	1.122
Proud to protect wildlife, pollinators, and the broader ecosystem	146	1	5	3.71	1.077
Satisfied by farming "the right way"	148	1	5	3.75	1.100
Satisfied for helping local community	146	1	5	3.73	1.116
Satisfied with improved personal sustainable skills	147	1	5	3.55	1.087
Responsible to protect the environment	147	1	5	3.60	1.168
Proud to leave a healthy, productive farm for future generations	146	1	5	3.84	1.106
Proud to contribute to Food Safety	146	1	5	3.82	1.155
Proud to contribute to Food Security	145	1	5	3.86	1.188
Proud to contribute to climate resilience	147	1	5	3.63	1.283
Sustainable farming is in accordance with my spiritual / religious beliefs	147	1	5	3.03	1.355

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 141 Test Statistic 134.148, Degree of Freedom 11, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Emotional Motives **that could work for the respondent / for other farmers**



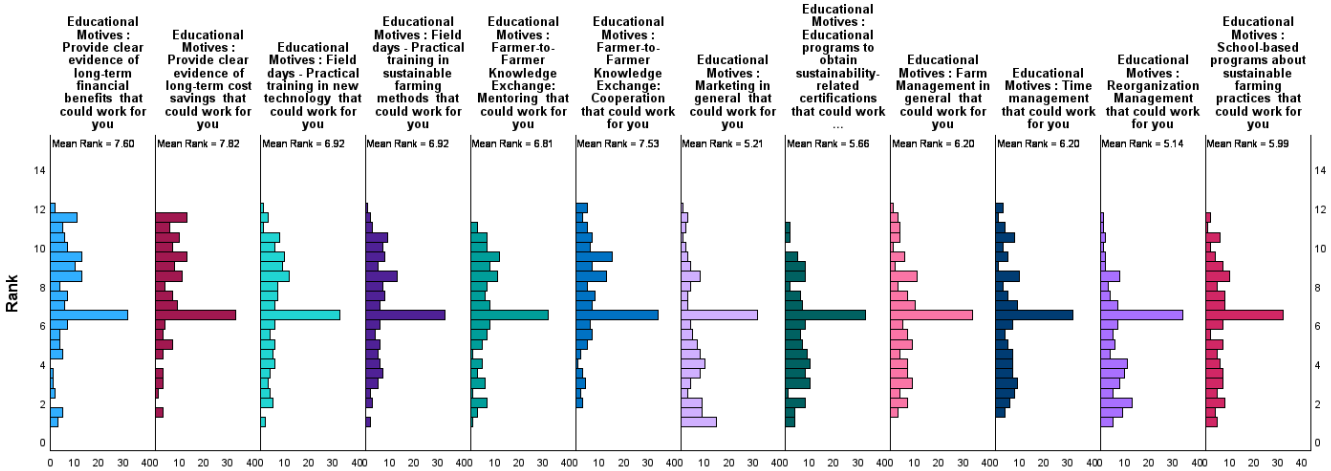
Paired Samples Statistics for Emotional Motives

Paired Differences (Me− Other foresters)	Mean	Std. Deviation	t	df	Two-Sided p (sig)
Pair 1: Proud to cultivate land in a way that preserves the environment	0.541	1.151	5.678	145	0.000
Pair 2: Proud to preserve our fathers' land	0.336	1.122	3.614	145	0.000
Pair 3: Proud to protect wildlife, pollinators, and the broader ecosystem	0.514	1.140	5.444	145	0.000
Pair 4: Satisfied by farming "the right way"	0.432	0.946	5.510	145	0.000
Pair 5: Satisfied for helping local community	0.315	0.995	3.827	145	0.000
Pair 6: Satisfied with improved personal sustainable skills	0.449	0.987	5.513	146	0.000
Pair 7: Responsible to protect the environment	0.517	1.094	5.730	146	0.000
Pair 8: Proud to leave a healthy, productive farm for future generations	0.466	0.970	5.804	145	0.000
Pair 9: Proud to contribute to Food Safety	0.421	0.991	5.113	144	0.000
Pair 10: Proud to contribute to Food Security	0.324	0.971	4.020	144	0.000
Pair 11: Proud to contribute to climate resilience	0.349	1.021	4.134	145	0.000
Pair 12: Sustainable farming is in accordance with my spiritual / religious beliefs	0.197	1.102	2.171	146	0.032

Descriptives of Educational Motives **that could work for the respondent**:

Educational Motives:	N	Min	Max	Mean	Std. Dev.
Provide clear evidence of long-term financial benefits	153	1	5	4.37	0.909
Provide clear evidence of long-term cost savings	151	1	5	4.40	0.925
Field days - Practical training in new technology	150	1	5	4.13	1.014
Field days - Practical training in sustainable farming methods	151	1	5	4.17	1.029
Farmer-to-Farmer Knowledge Exchange: Mentoring	152	1	5	4.09	1.023
Farmer-to-Farmer Knowledge Exchange: Cooperation	152	1	5	4.25	1.050
Marketing in general	149	1	5	3.58	1.274
Educational programs to obtain sustainability-related certifications	150	1	5	3.71	1.288
Farm Management in general	151	1	5	3.84	1.201
Time management	150	1	5	3.81	1.255
Reorganization Management	151	1	5	3.52	1.306
School-based programs about sustainable farming practices	152	1	5	3.73	1.347

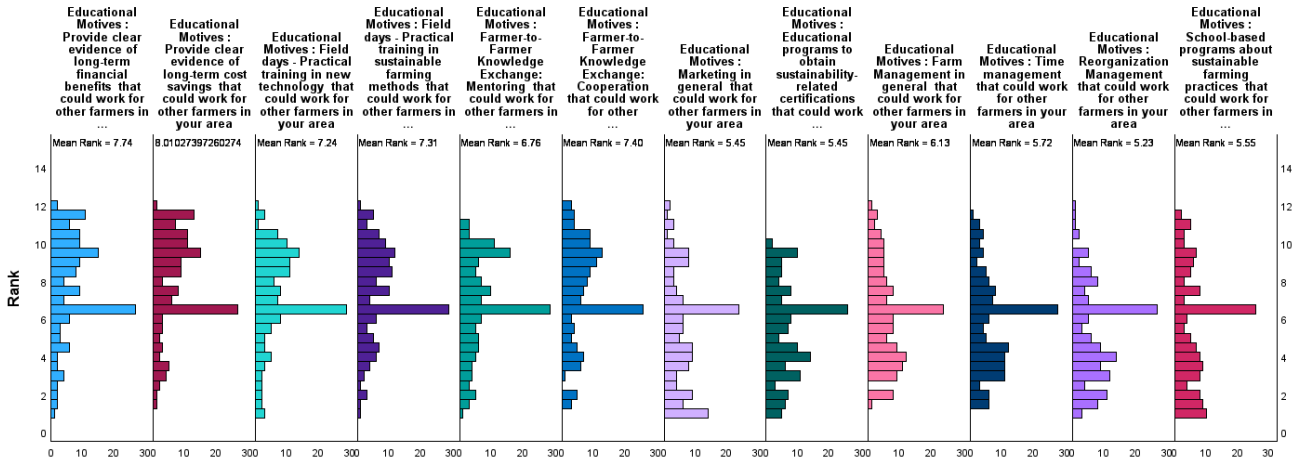
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 148 Test Statistic 174.976 df 11, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



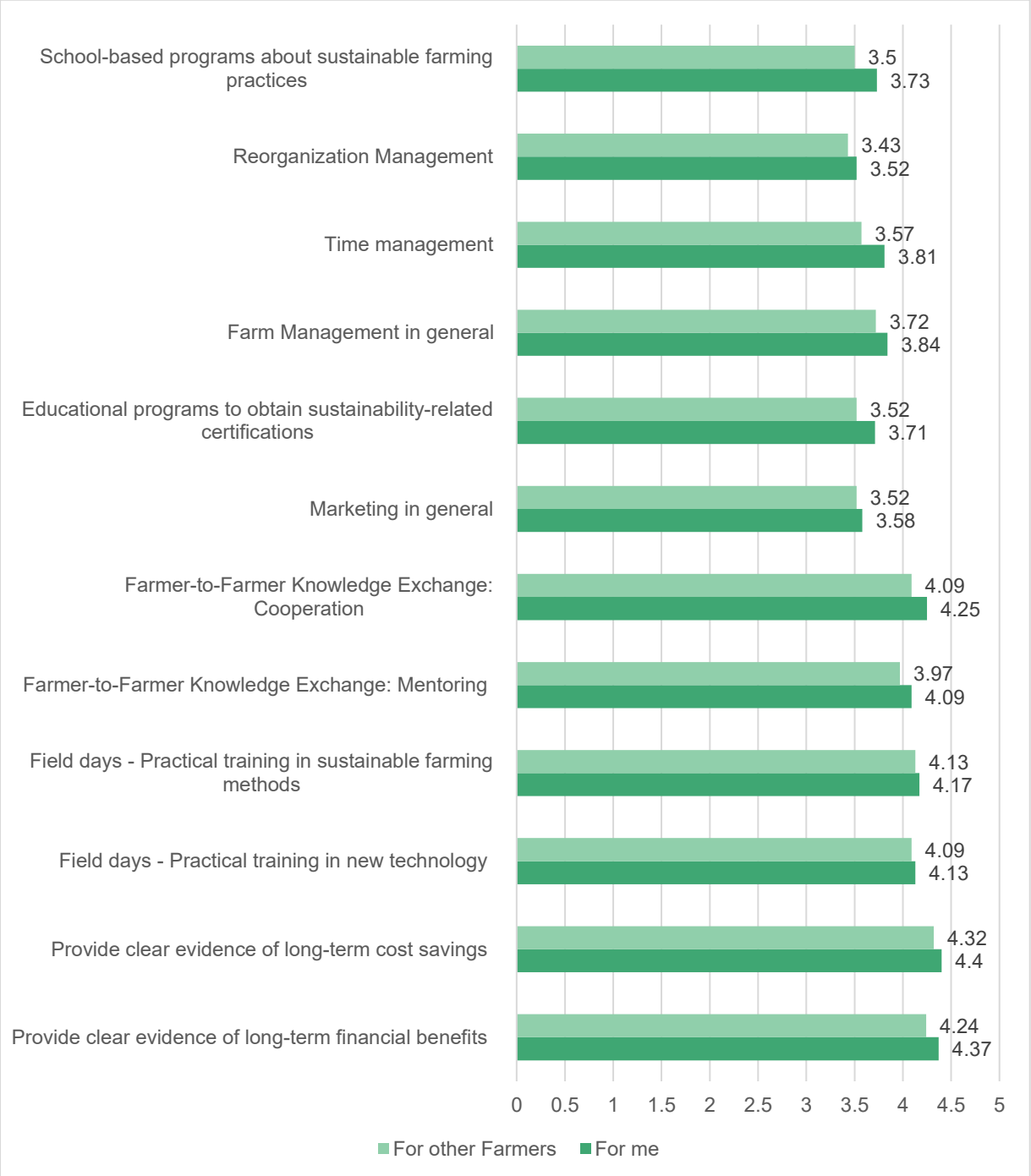
Descriptives of Educational Motives **that could work OTHER Farmers**:

Educational Motives:	N	Min	Max	Mean	Std. Dev.
Provide clear evidence of long-term financial benefits	147	1	5	4.24	0.969
Provide clear evidence of long-term cost savings	147	1	5	4.32	0.921
Field days - Practical training in new technology	148	1	5	4.09	0.947
Field days - Practical training in sustainable farming methods	147	1	5	4.13	0.981
Farmer-to-Farmer Knowledge Exchange: Mentoring	147	1	5	3.97	0.961
Farmer-to-Farmer Knowledge Exchange: Cooperation	147	1	5	4.09	1.040
Marketing in general	147	1	5	3.52	1.190
Educational programs to obtain sustainability-related certifications	147	1	5	3.52	1.190
Farm Management in general	147	1	5	3.72	1.103
Time management	148	1	5	3.57	1.167
Reorganization Management	147	1	5	3.43	1.244
School-based programs about sustainable farming practices	147	1	5	3.50	1.357

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 146 Test Statistic 201.871 df 11, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Educational Motives **that could work for the respondent / for other farmers**



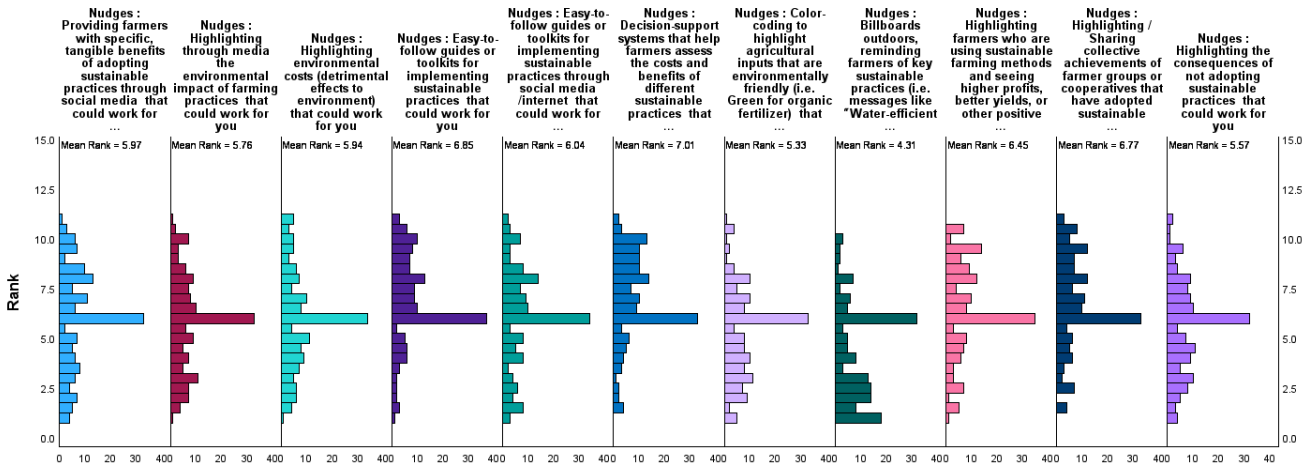
Paired Samples Statistics for Educational Motives

Paired Differences (Me− Other famers)	Mean	Std. Deviation	t	df	Two-Sided p (sig)
Pair 1: Provide clear evidence of long-term financial benefits	0.136	0.865	1.907	146	0.059
Pair 2: Provide clear evidence of long-term cost savings	0.116	0.824	1.702	146	0.091
Pair 3: Field days - Practical training in new technology	0.075	0.732	1.240	146	0.217
Pair 4: Field days - Practical training in sustainable farming methods	0.068	0.816	1.010	146	0.314
Pair 5: Farmer-to-Farmer Knowledge Exchange: Mentoring	0.143	0.785	2.206	146	0.029
Pair 6: Farmer-to-Farmer Knowledge Exchange: Cooperation	0.184	0.740	3.008	146	0.003
Pair 7: Marketing in general	0.082	0.914	1.087	145	0.279
Pair 8: Educational programs to obtain sustainability-related certifications	0.192	0.782	2.964	145	0.004
Pair 9: Farm Management in general	0.136	0.718	2.297	146	0.023
Pair 10: Time management	0.252	0.810	3.770	146	0.000
Pair 11: Reorganization Management	0.102	0.765	1.617	146	0.108
Pair 12: School-based programs about sustainable farming practices	0.224	0.738	3.686	146	0.000

Descriptives of Nudges **that could work for the respondent**:

Nudges:	N	Min	Max	Mean	Std. Dev.
Providing farmers with specific, tangible benefits of adopting sustainable practices through social media	153	1	5	3.65	1.275
Highlighting through media the environmental impact of farming practices	152	1	5	3.59	1.304
Highlighting environmental costs (detrimental effects to environment)	151	1	5	3.62	1.326
Easy-to-follow guides or toolkits for implementing sustainable practices	152	1	5	3.93	1.120
Easy-to-follow guides or toolkits for implementing sustainable practices through social media /internet	152	1	5	3.64	1.236
Decision-support systems that help farmers assess the costs and benefits of different sustainable practices	151	1	5	3.99	1.107
Color-coding to highlight agricultural inputs that are environmentally friendly (i.e. Green for organic fertilizer)	152	1	5	3.48	1.332
Billboards outdoors, reminding farmers of key sustainable practices (i.e. messages like “Water-efficient practices will save you 30% on irrigation costs”)	151	1	5	3.12	1.483
Highlighting farmers who are using sustainable farming methods and seeing higher profits, better yields, or other positive outcomes	152	1	5	3.83	1.249
Highlighting / Sharing collective achievements of farmer groups or cooperatives that have adopted sustainable practices	152	1	5	3.90	1.233
Highlighting the consequences of not adopting sustainable practices	151	1	5	3.52	1.361

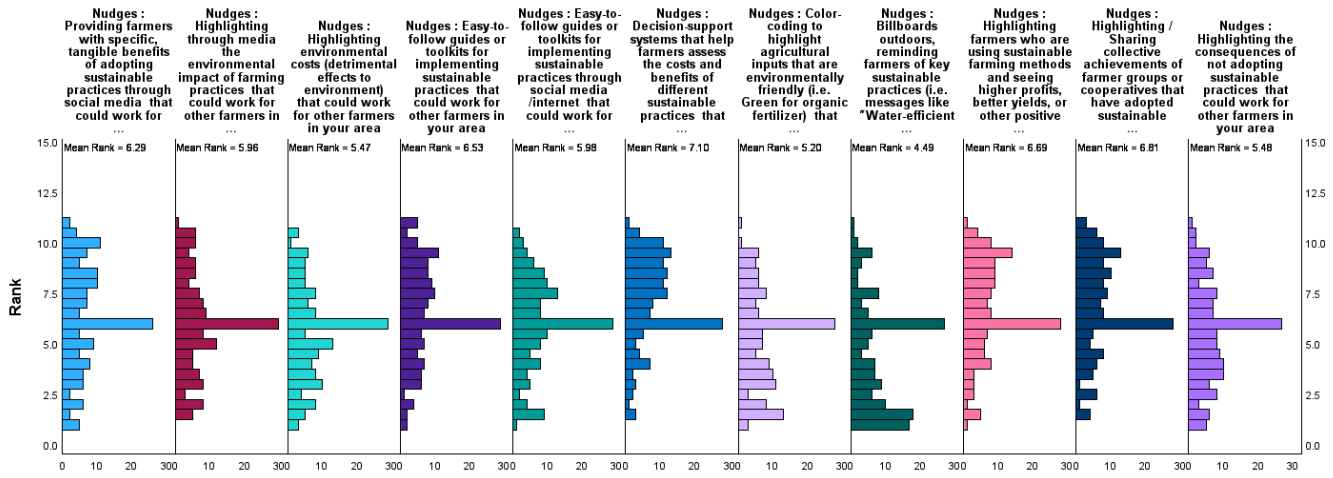
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 151 Test Statistic 138.608 df 10, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



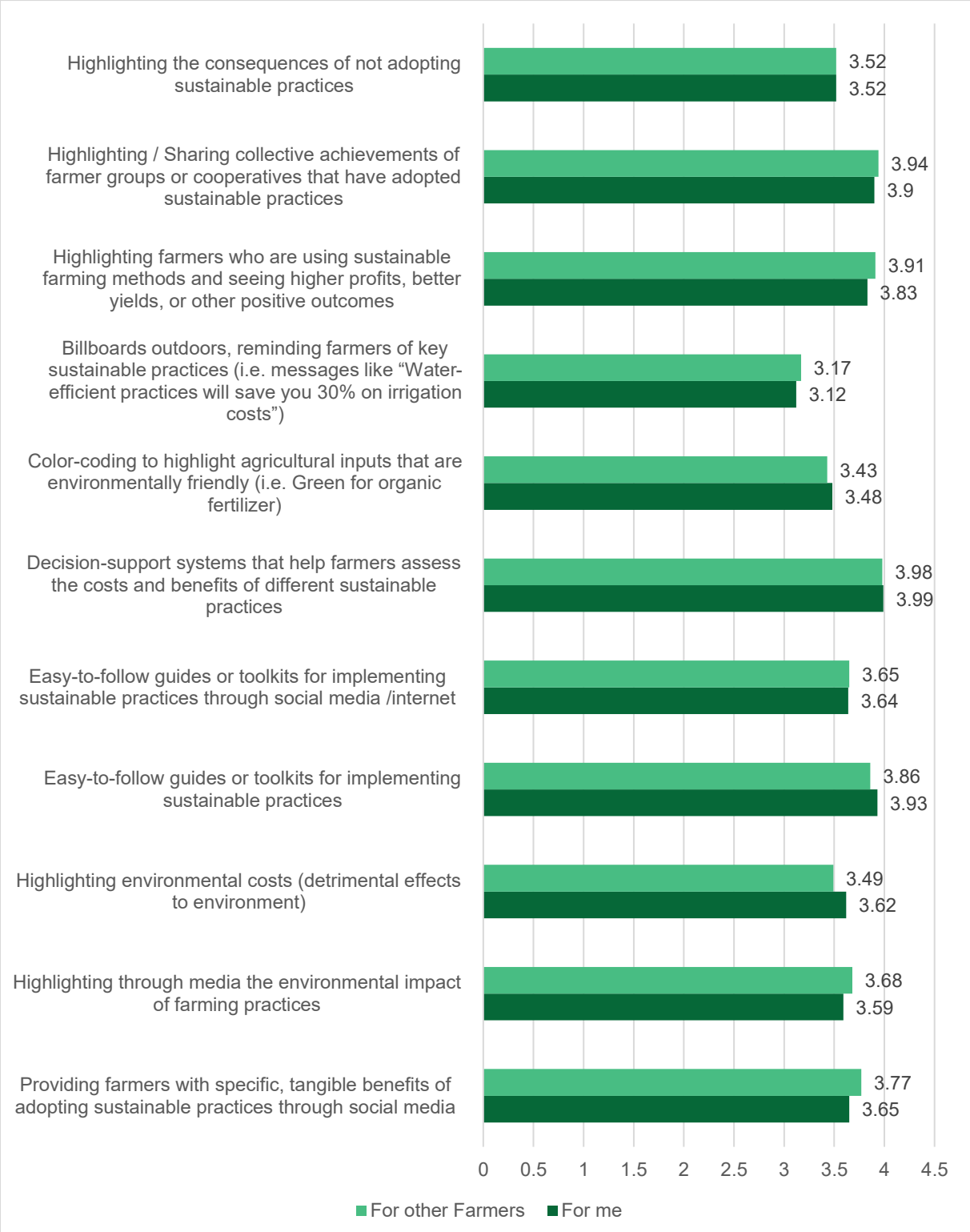
Descriptives of Nudges **that could work OTHER FARMERS**:

Nudges:	N	Min	Max	Mean	Std. Dev.
Providing farmers with specific, tangible benefits of adopting sustainable practices through social media	148	1	5	3.77	1.076
Highlighting through media the environmental impact of farming practices	148	1	5	3.68	1.207
Highlighting environmental costs (detrimental effects to environment)	149	1	5	3.49	1.261
Easy-to-follow guides or toolkits for implementing sustainable practices	148	1	5	3.86	1.073
Easy-to-follow guides or toolkits for implementing sustainable practices through social media /internet	148	1	5	3.65	1.112
Decision-support systems that help farmers assess the costs and benefits of different sustainable practices	149	1	5	3.98	1.093
Color-coding to highlight agricultural inputs that are environmentally friendly (i.e. Green for organic fertilizer)	148	1	5	3.43	1.315
Billboards outdoors, reminding farmers of key sustainable practices (i.e. messages like “Water-efficient practices will save you 30% on irrigation costs”)	149	1	5	3.17	1.492
Highlighting farmers who are using sustainable farming methods and seeing higher profits, better yields, or other positive outcomes	148	1	5	3.91	1.148
Highlighting / Sharing collective achievements of farmer groups or cooperatives that have adopted sustainable practices	148	1	5	3.94	1.174
Highlighting the consequences of not adopting sustainable practices	149	1	5	3.52	1.323

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 148 Test Statistic 132.092 df 10, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Nudges **that could work for the respondent / for other farmers**



Paired Samples Statistics for Nudges

Paired Differences (Me− Other farmers)	Mean	Std. Deviation	t	df	Two-Sided p (sig)
Pair 1: Providing farmers with specific, tangible benefits of adopting sustainable practices through social media	-0.081	0.944	-1.045	147	0.298
Pair 2: Highlighting through media the environmental impact of farming practices	-0.068	0.805	-1.021	147	0.309
Pair 3: Highlighting environmental costs (detrimental effects to environment)	0.155	0.831	2.276	147	0.024
Pair 4: Easy-to-follow guides or toolkits for implementing sustainable practices	0.088	0.737	1.450	147	0.149
Pair 5: Easy-to-follow guides or toolkits for implementing sustainable practices through social media /internet	0.027	0.857	0.384	147	0.702
Pair 6: Decision-support systems that help farmers assess the costs and benefits of different sustainable practices	0.027	0.659	0.499	147	0.619
Pair 7: Color-coding to highlight agricultural inputs that are environmentally friendly (i.e. Green for organic fertilizer)	0.054	0.789	0.833	147	0.406
Pair 8: Billboards outdoors, reminding farmers of key sustainable practices (i.e. messages like “Water-efficient practices will save you 30% on irrigation costs”)	-0.034	0.694	-0.592	147	0.555
Pair 9: Highlighting farmers who are using sustainable farming methods and seeing higher profits, better yields, or other positive outcomes	-0.068	0.814	-1.010	147	0.314
Pair 10: Highlighting / Sharing collective achievements of farmer groups or cooperatives that have adopted sustainable practices	-0.020	0.714	-0.345	147	0.730
Pair 11: Highlighting the consequences of not adopting sustainable practices	0.020	0.733	0.337	147	0.737

Appendix 1B

FARMERS' ADVISORS' DATA

Frequencies of Gender

Gender	Counts	% of Total	Cumulative %
Male	71	53.6%	53.8%
Female	59	44.7%	98.5%

Frequencies of the Highest completed level of education

Highest completed level of education	Counts	% of Total	Cumulative %
Master, Postgraduate or doctoral degree	85	64.4%	64.4%
Bachelor's degree or equivalent level	40	30.3%	94.7%
College entrance qualification	3	2.3%	97.0%
Upper secondary education	4	3.0%	100.00%

Frequencies of Marital Status

Marital Status	Counts	% of Total	Cumulative %
Married	76	57.6%	57.6%
Single	44	33.3%	90.9%
Divorced	10	7.6%	98.5%

Frequencies of Country of activity

Country of activity	Counts	% of Total	Cumulative %
Greece	37	28.0	28.0
Portugal	30	22.7	50.8
Lithuania	19	14.4	65.2
Poland	11	8.3	73.5
Serbia	10	7.6	81.1
SPAIN	10	7.6	88.6
UK	9	6.8	95.5
Slovenija	3	2.3	97.7
Austria	1	0.8	98.5
Bulgaria	1	0.8	99.2
Sweden	1	0.8	100.0
	132	100.0	

Frequencies of advisors' activities

Activities	Counts	% of Total	Cumulative %
Farm Management, Business & Funding	41	31.1%	31.06%
Agronomy & Crop Production	29	22.0%	53.03%
Soil, Nutrition & Crop Protection	20	15.2%	68.18%
Sustainability & Environmental Advisory	12	9.1%	77.27%
Research, Innovation & Training	6	4.5%	81.82%
Agricultural Extension	2	1.5%	83.33%
Livestock & Animal Production	2	1.5%	84.85%
N/A	20	15.2%	100.00%

Descriptives of Advisors' activities

Advisors' activities	N	Min	Max	Mean	Std. Dev.
Managing subsidies (direct payments)	124	1	5	2.90	1.384
Organic agri-environment schemes (AES)	123	1	5	2.76	1.268
Other Agri-environment schemes	122	1	5	2.97	1.178
European Protected Designation of Origin (PDO)	122	1	5	1.93	1.046
European organic certification	119	1	5	2.10	1.238
Young Farmers establishments	123	1	5	2.89	1.256
Marketing Products	121	1	5	2.69	1.309
New technologies (i.e. Precision agriculture)	122	1	5	3.28	1.047
Well-being activities	118	1	5	2.55	1.224

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 103 Test Statistic 115.245 Degree of Freedom 8, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*

Frequencies of Managing subsidies (direct payments)

	Counts	% of Total	Cumulative %
Never	30	24.2%	24.2%
Rarely	18	14.5%	38.7%
Sometimes	28	22.6%	61.3%
Often	31	25.0%	86.3%
Always	17	13.7%	100.0%

Frequencies of Organic agri-environment schemes (AES)

	Counts	% of Total	Cumulative %
Never	25	20.3%	20.3%
Rarely	28	22.8%	43.1%
Sometimes	34	27.6%	70.7%
Often	23	18.7%	89.4%
Always	13	10.6%	100.0%

Frequencies of Other Agri-environment schemes

	Counts	% of Total	Cumulative %
Never	15	12.3%	12.3%
Rarely	27	22.1%	34.4%
Sometimes	41	33.6%	68.0%
Often	25	20.5%	88.5%
Always	14	11.5%	100.0%

Frequencies of European Protected Designation of Origin (PDO)

	Counts	% of Total	Cumulative %
Never	58	47.5%	47.5%
Rarely	26	21.3%	68.9%
Sometimes	29	23.8%	92.6%
Often	7	5.7%	98.4%
Always	2	1.6%	100.0%

Frequencies of European organic certification

	Counts	% of Total	Cumulative %
Never	52	43.7%	43.7%
Rarely	28	23.5%	67.2%

Sometimes	22	18.5%	85.7%
Often	9	7.6%	93.3%
Always	8	6.7%	100.0%

Frequencies of Young Farmers establishments

	Counts	% of Total	Cumulative %
Never	22	17.9%	17.9%
Rarely	25	20.3%	38.2%
Sometimes	34	27.6%	65.9%
Often	29	23.6%	89.4%
Always	13	10.6%	100.0%

Frequencies of Marketing Products

	Counts	% of Total	Cumulative %
Never	29	24.0%	24.0%
Rarely	28	23.1%	47.1%
Sometimes	27	22.3%	69.4%
Often	25	20.7%	90.1%
Always	12	9.9%	100.0%

Frequencies of New technologies (i.e. Precision agriculture)

	Counts	% of Total	Cumulative %
Never	9	7.4%	7.4%
Rarely	14	11.5%	18.9%
Sometimes	46	37.7%	56.6%
Often	40	32.8%	89.3%
Always	13	10.7%	100.0%

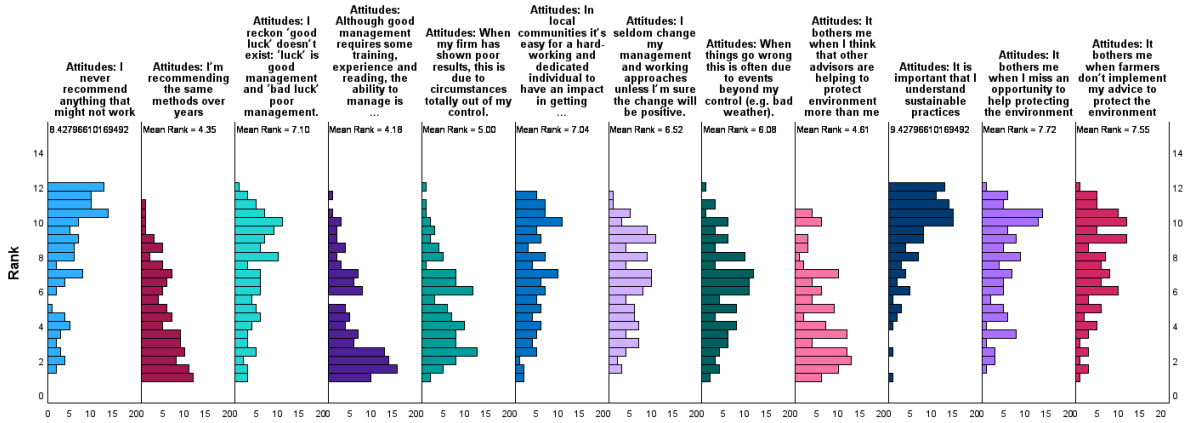
Frequencies of Well-being activities

	Counts	% of Total	Cumulative %
Never	29	24.6%	24.6%
Rarely	31	26.3%	50.8%
Sometimes	30	25.4%	76.3%
Often	20	16.9%	93.2%
Always	8	6.8%	100.0%

Descriptives of Farmers' Attitudes:

Attitudes	N	Min	Max	Mean	Std. Dev.
I never recommend anything that might not work	130	1	5	3.80	1.308
I'm recommending the same methods over years	124	1	5	2.31	1.053
I reckon 'good luck' doesn't exist: 'luck' is good management and 'bad luck' poor management.	130	1	5	3.42	1.206
Although good management requires some training, experience and reading, the ability to manage is mainly determined by genes.	131	1	5	2.31	1.150
When my firm has shown poor results, this is due to circumstances totally out of my control.	131	1	5	2.65	1.143
In local communities it's easy for a hard-working and dedicated individual to have an impact in getting changes for the better.	130	1	5	3.43	1.011
I seldom change my management and working approaches unless I'm sure the change will be positive.	130	1	5	3.15	1.100
When things go wrong this is often due to events beyond my control (e.g. bad weather).	130	1	5	3.02	1.134
It bothers me when I think that other advisors are helping to protect environment more than me	131	1	5	2.37	1.197
It is important that I understand sustainable practices	128	1	5	4.24	.937
It bothers me when I miss an opportunity to help protecting the environment	130	1	5	3.68	1.094

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 118 Test Statistic 345.631 Degree of Freedom 11, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*

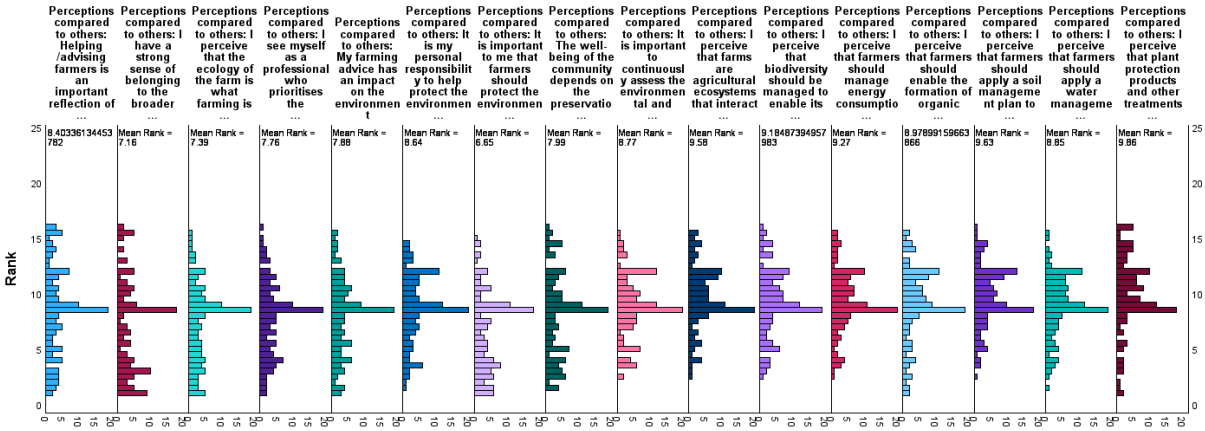


Descriptives of Farmers' advisors' Perceptions

Perceptions	N	Min	Max	Mean	Std. Dev.
Helping /advising farmers is an important reflection of who I am	129	2	5	3.59	0.767
I have a strong sense of belonging to the broader farming community	129	1	5	3.36	0.959
I perceive that the ecology of the farm is what farming is about	129	1	5	3.38	0.877
I see myself as a professional who prioritises the environment	128	1	5	3.49	0.803
My farming advice has an impact on the environment	129	1	5	3.46	0.857
It is my personal responsibility to help protect the environment.	128	1	5	3.61	0.825
It is important to me that farmers should protect the environment even if it slows down economic growth of their farming activities.	127	1	5	3.28	0.844
The well-being of the community depends on the preservation of the environment	129	1	5	3.59	0.880
It is important to continuously assess the environmental and social impact of farming activities	128	1	5	3.67	0.833
I perceive that farms are agricultural ecosystems that interact with neighbouring landscapes.	129	2	5	3.79	0.845
I perceive that biodiversity should be managed to enable its protection and enhancement	128	2	5	3.77	0.846
I perceive that farmers should manage energy consumption of their farming activities	129	2	5	3.77	0.815
I perceive that farmers should enable the formation of organic carbon in soils and in biomass	129	1	5	3.71	0.877
I perceive that farmers should apply a soil management plan to improve and optimize soil health	129	2	5	3.82	0.805
I perceive that farmers should apply a water management plan to improve and optimize water use and quality	128	2	5	3.69	0.811
I perceive that plant protection products and other treatments should be applied appropriately and as recommended.	125	2	5	3.84	0.865

Note*: Answers range from Much less than the advisors that know to Much more than the advisors that I know*

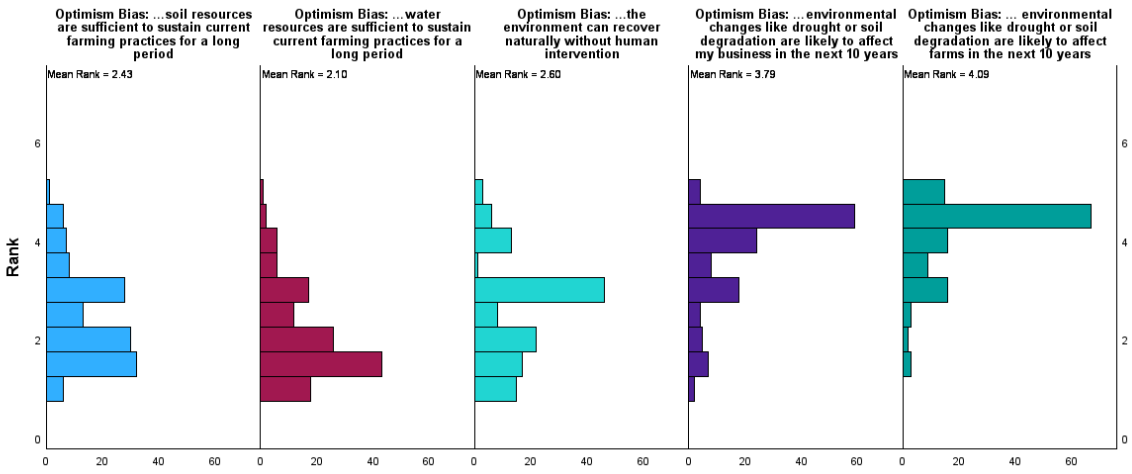
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 119 Test Statistic 126.952 Degree of Freedom 15, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*



Descriptives of Optimism Bias:

Optimism Bias	N	Min	Max	Mean	Std. Dev.
…soil resources are sufficient to sustain current farming practices for a long period	131	1	5	2.48	1.159
…water resources are sufficient to sustain current farming practices for a long period	132	1	5	2.21	1.139
…the environment can recover naturally without human intervention	131	1	5	2.74	1.141
…environmental changes like drought or soil degradation are likely to affect my business in the next 10 years	132	1	5	4.01	1.066
… environmental changes like drought or soil degradation are likely to affect farms in the next 10 years	132	1	5	4.24	0.966

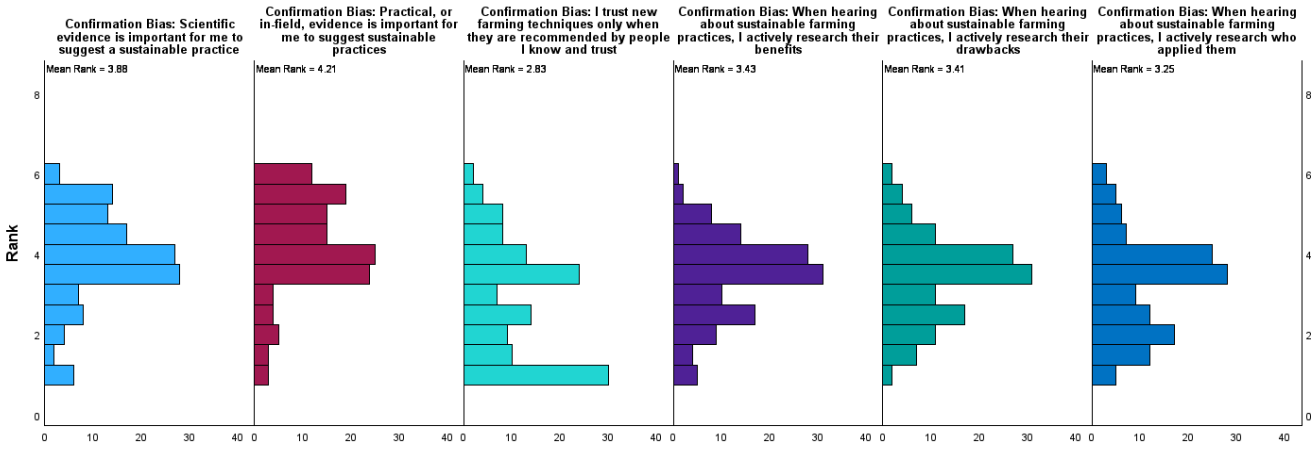
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 131 Test Statistic 219.659 Degree of Freedom 4, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Confirmation Bias:

Confirmation Bias	N	Min	Max	Mean	Std. Dev.
Scientific evidence is important for me to suggest a sustainable practice	131	1	5	4.18	0.811
Practical, or in-field, evidence is important for me to suggest sustainable practices	131	2	5	4.36	0.657
I trust new farming techniques only when they are recommended by people I know and trust	132	1	5	3.70	0.854
When hearing about sustainable farming practices, I actively research their benefits	131	1	5	3.99	0.846
When hearing about sustainable farming practices, I actively research their drawbacks	132	1	5	3.98	0.842
When hearing about sustainable farming practices, I actively research who applied them	132	1	5	3.86	0 .917

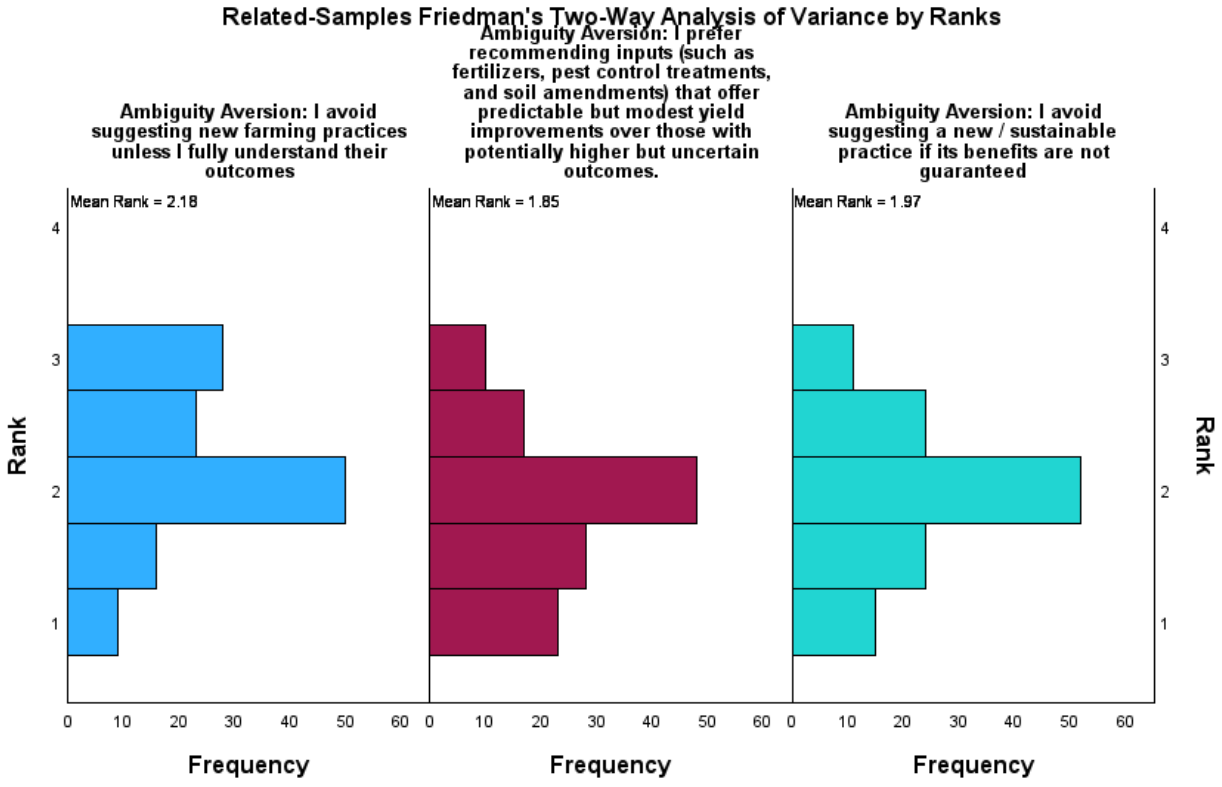
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 129 Test Statistic 77.865 Degree of Freedom 5, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Ambiguity Aversion:

Ambiguity Aversion	N	Min	Max	Mean	Std. Dev.
I avoid suggesting new farming practices unless I fully understand their outcomes	129	1	5	3.88	0.893
I prefer recommending inputs (such as fertilizers, pest control treatments, and soil amendments) that offer predictable but modest yield improvements over those with potentially higher but uncertain outcomes.	130	1	5	3.52	0.900
I avoid suggesting a new / sustainable practice if its benefits are not guaranteed	127	1	5	3.65	0.971

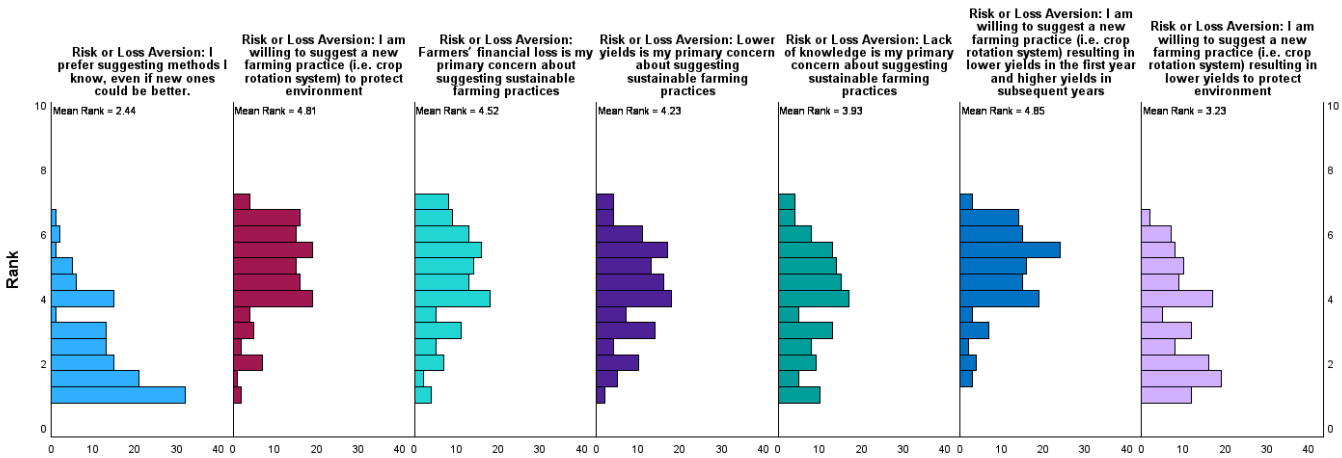
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 126 Test Statistic 13.403 Degree of Freedom 2, Asymptotic Sig.(2-sided test) <0.01 (there is evidence of statistically significant differences among these biases)*



Descriptives of Risk or Loss Aversion:

Risk or Loss Aversion	N	Min	Max	Mean	Std. Dev.
I prefer suggesting methods I know, even if new ones could be better.	131	1	5	2.73	0.920
I am willing to suggest a new farming practice (i.e. crop rotation system) to protect environment	130	2	5	3.98	0.787
Farmers' financial loss is my primary concern about suggesting sustainable farming practices	131	1	5	3.82	0.973
Lower yields is my primary concern about suggesting sustainable farming practices	130	1	5	3.66	0.953
Lack of knowledge is my primary concern about suggesting sustainable farming practices	130	1	5	3.46	1.115
I am willing to suggest a new farming practice (i.e. crop rotation system) resulting in lower yields in the first year and higher yields in subsequent years	131	2	5	3.97	0.850
I am willing to suggest a new farming practice (i.e. crop rotation system) resulting in lower yields to protect environment	128	1	5	3.21	0.961

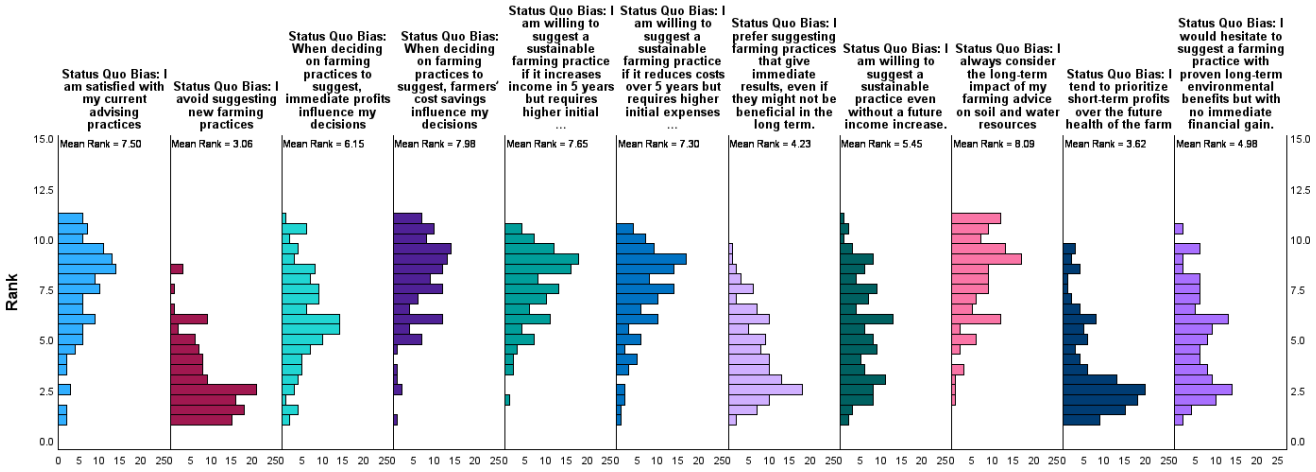
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 125 Test Statistic 178.745 Degree of Freedom 6, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Status Quo Biases:

Status Quo Biases	N	Min	Max	Mean	Std. Dev.
I am satisfied with my current advising practices	131	1	5	3.71	0.818
I avoid suggesting new farming practices	131	1	4	2.15	0.707
When deciding on farming practices to suggest, immediate profits influence my decisions	130	1	5	3.26	0.928
When deciding on farming practices to suggest, farmers' cost savings influence my decisions	131	2	5	3.88	0.702
I am willing to suggest a sustainable farming practice if it increases income in 5 years but requires higher initial expenses now	130	1	5	3.80	0.761
I am willing to suggest a sustainable farming practice if it reduces costs over 5 years but requires higher initial expenses now	131	1	5	3.69	0.851
I prefer suggesting farming practices that give immediate results, even if they might not be beneficial in the long term.	130	1	5	2.59	0.912
I am willing to suggest a sustainable practice even without a future income increase.	130	1	5	3.04	0.960
I always consider the long-term impact of my farming advice on soil and water resources	130	1	5	3.92	0.859
I tend to prioritize short-term profits over the future health of the farm	130	1	5	2.33	0.960
I would hesitate to suggest a farming practice with proven long-term environmental benefits but with no immediate financial gain.	130	1	5	2.78	1.006

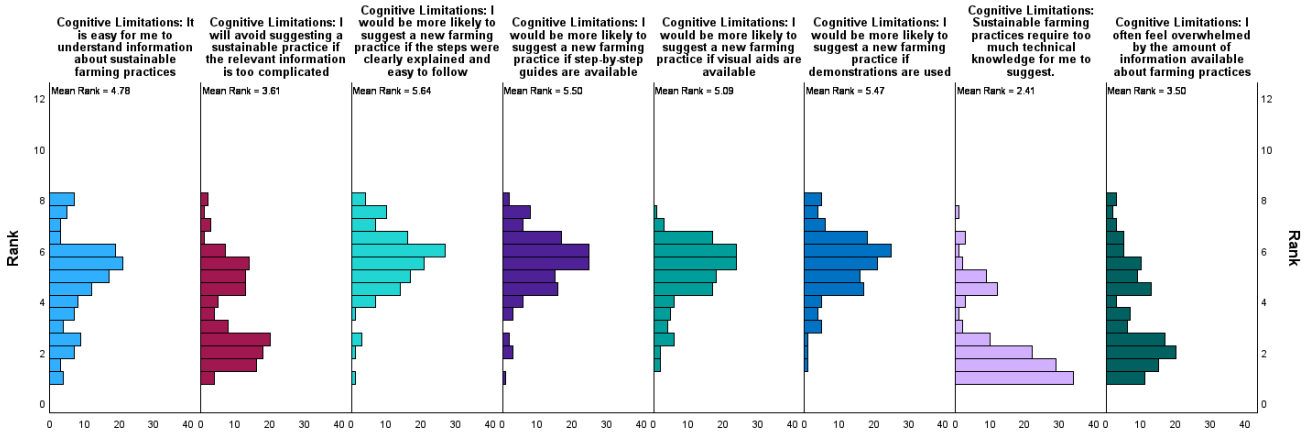
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 124 Test Statistic 493.786 Degree of Freedom 10, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Cognitive Limitations:

Cognitive Limitations:	N	Min	Max	Mean	Std. Dev.
It is easy for me to understand information about sustainable farming practices	131	1	5	3.88	0.877
I will avoid suggesting a sustainable practice if the relevant information is too complicated	131	1	5	3.27	0.999
I would be more likely to suggest a new farming practice if the steps were clearly explained and easy to follow	131	2	5	4.17	0.735
I would be more likely to suggest a new farming practice if step-by-step guides are available	131	2	5	4.08	0.814
I would be more likely to suggest a new farming practice if visual aids are available	131	2	5	3.97	0.794
I would be more likely to suggest a new farming practice if demonstrations are used	130	2	5	4.11	0.729
Sustainable farming practices require too much technical knowledge for me to suggest.	130	1	5	2.61	0.976
I often feel overwhelmed by the amount of information available about farming practices	130	1	5	3.19	1.050

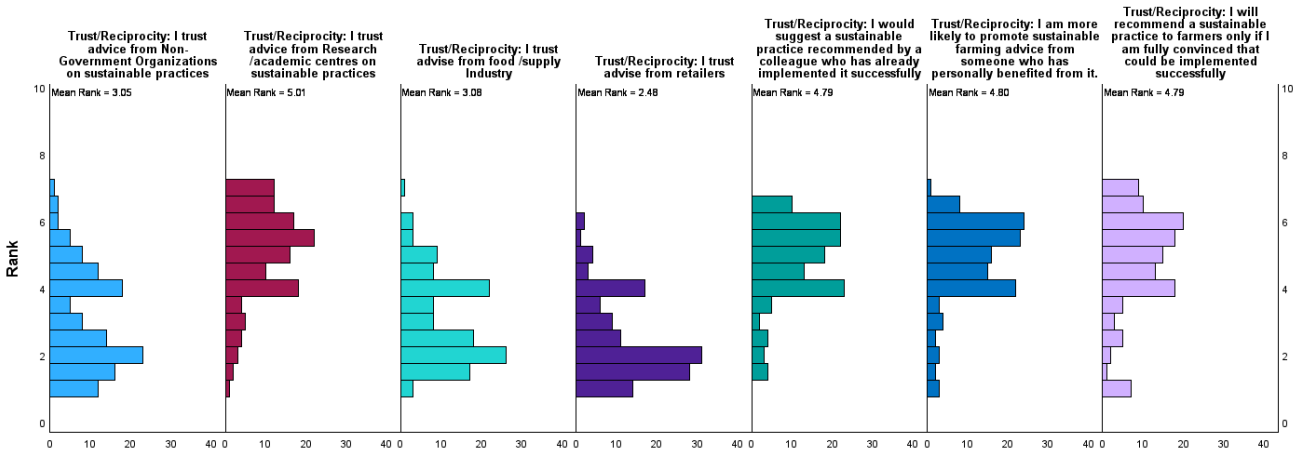
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 129 Test Statistic 312.956 Degree of Freedom 7, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Trust/ Reciprocity biases:

Trust/Reciprocity biases:	N	Min	Max	Mean	Std. Dev.
I trust advice from Non-Government Organizations on sustainable practices	128	1	5	3.01	0.883
I trust advice from Research /academic centres on sustainable practices	130	1	5	3.89	0.828
I trust advice from food /supply Industry	130	1	5	3.02	0.910
I trust advice from retailers	130	1	5	2.75	0.856
I would suggest a sustainable practice recommended by a colleague who has already implemented it successfully	129	1	5	3.83	0.811
I am more likely to promote sustainable farming advice from someone who has personally benefited from it.	129	1	5	3.78	0.927
I will recommend a sustainable practice to farmers only if I am fully convinced that could be implemented successfully	130	1	5	3.82	0.930

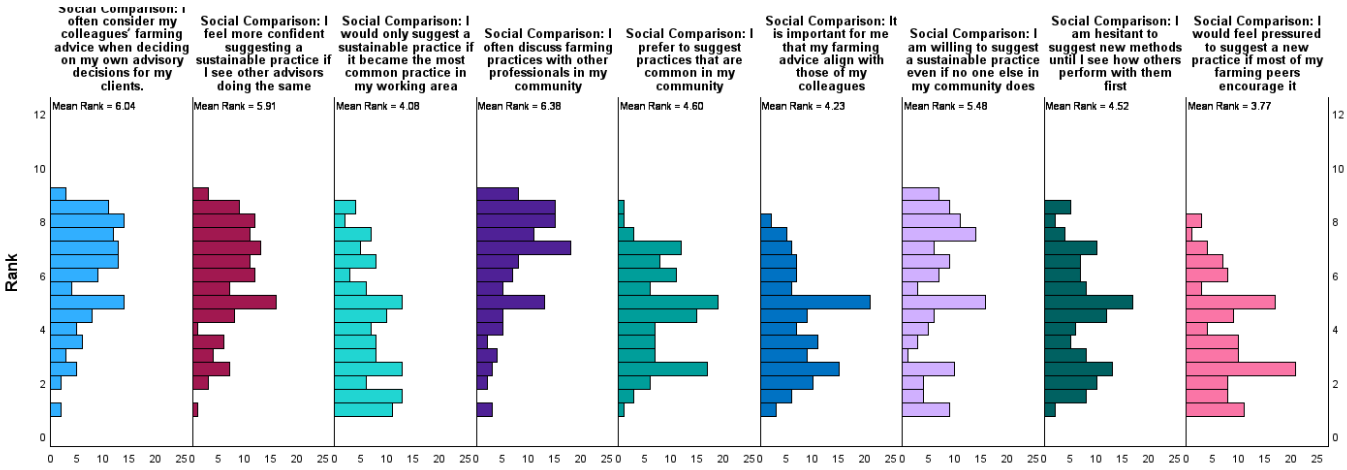
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 126 Test Statistic 266.404 Degree of Freedom 7, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Social Comparison biases:

Social Comparison biases:	N	Min	Max	Mean	Std. Dev.
I often consider my colleagues' farming advice when deciding on my own advisory decisions for my clients.	131	1	5	3.63	0.871
I feel more confident suggesting a sustainable practice if I see other advisors doing the same	131	1	5	3.50	0.906
I would only suggest a sustainable practice if it became the most common practice in my working area	131	1	5	2.91	0.907
I often discuss farming practices with other professionals in my community	131	1	5	3.79	0.794
I prefer to suggest practices that are common in my community	131	1	5	3.11	0.862
It is important for me that my farming advice align with those of my colleagues	130	1	5	2.95	0.901
I am willing to suggest a sustainable practice even if no one else in my community does	129	1	5	3.46	0.944
I am hesitant to suggest new methods until I see how others perform with them first	130	1	5	3.08	0.881
I would feel pressured to suggest a new practice if most of my farming peers encourage it	131	1	5	2.73	0.903

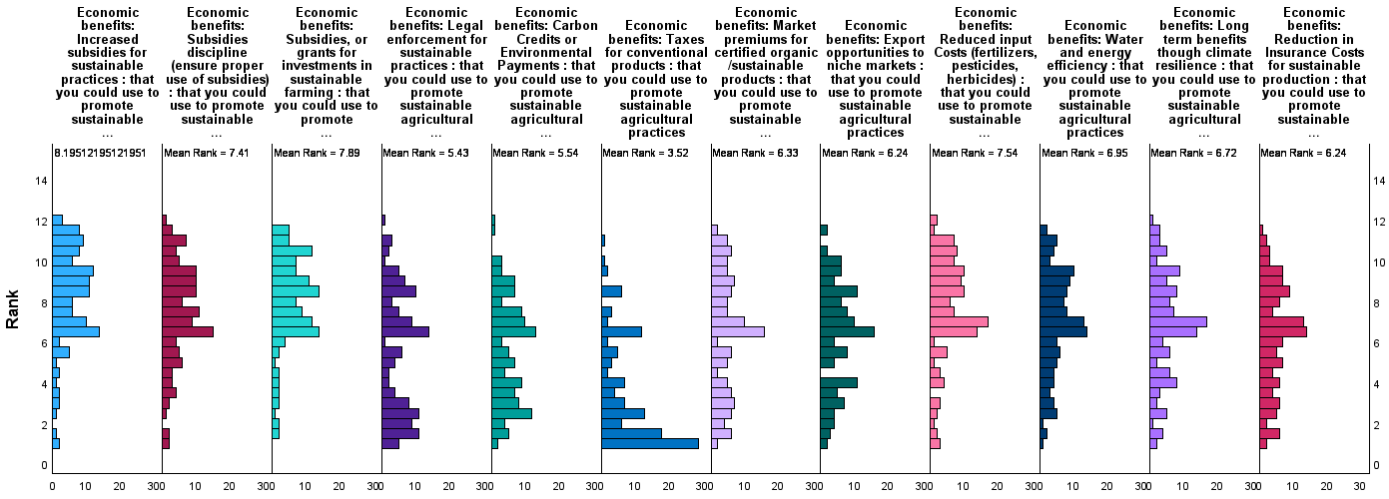
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N124 Test Statistic 170.626 Degree of Freedom 8, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Economics Benefits - Motives **that could work for the respondent**:

Economics Benefits - Motives:	N	Min	Max	Mean	Std. Dev.
Increased subsidies for sustainable practices	130	1	5	4.25	1.116
Subsidies discipline (ensure proper use of subsidies)	128	1	5	3.98	1.210
Subsidies, or grants for investments in sustainable farming	126	1	5	4.26	0.956
Legal enforcement for sustainable practices	127	1	5	3.28	1.419
Carbon Credits or Environmental Payments	127	1	5	3.41	1.230
Taxes for conventional products	127	1	5	2.54	1.320
Market premiums for certified organic /sustainable products	126	1	5	3.63	1.243
Export opportunities to niche markets	126	1	5	3.65	1.235
Reduced input Costs (fertilizers, pesticides, herbicides)	125	1	5	4.02	1.251
Water and energy efficiency	125	1	5	3.90	1.174
Long term benefits though climate resilience	126	1	5	3.87	1.152
Reduction in Insurance Costs for sustainable production	126	1	5	3.67	1.166

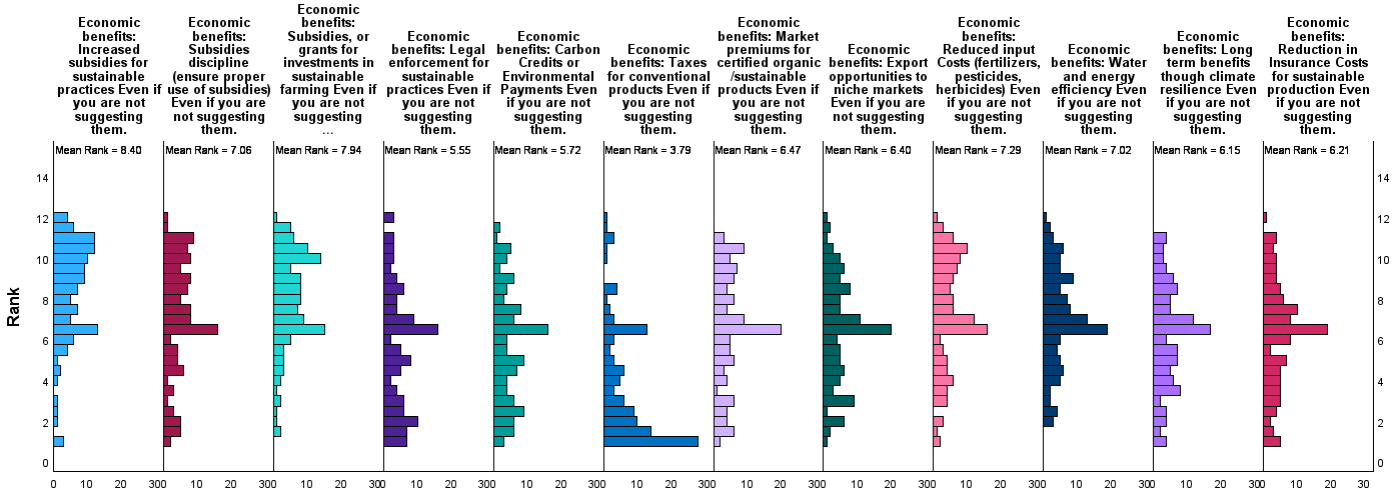
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 123 Test Statistic 249.771 Degree of Freedom 11, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Economics Benefits - Motives **that could work for OTHER farmers' advisors**:

Economics Benefits - Motives:	N	Min	Max	Mean	Std. Dev.
Increased subsidies for sustainable practices	127	1	5	4.21	1.088
Subsidies discipline (ensure proper use of subsidies)	125	1	5	3.76	1.247
Subsidies, or grants for investments in sustainable farming	123	2	5	4.15	0.967
Legal enforcement for sustainable practices	124	1	5	3.26	1.436
Carbon Credits or Environmental Payments	124	1	5	3.34	1.331
Taxes for conventional products	124	1	5	2.60	1.378
Market premiums for certified organic /sustainable products	122	1	5	3.62	1.215
Export opportunities to niche markets	123	1	5	3.63	1.217
Reduced input Costs (fertilizers, pesticides, herbicides)	122	1	5	3.93	1.234
Water and energy efficiency	122	1	5	3.80	1.147
Long term benefits though climate resilience	123	1	5	3.54	1.236
Reduction in Insurance Costs for sustainable production	123	1	5	3.59	1.193

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 119 Test Statistic 207.528 Degree of Freedom 11, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Economics Benefits - Motives **that could work for the respondent / for other farmers' advisors**

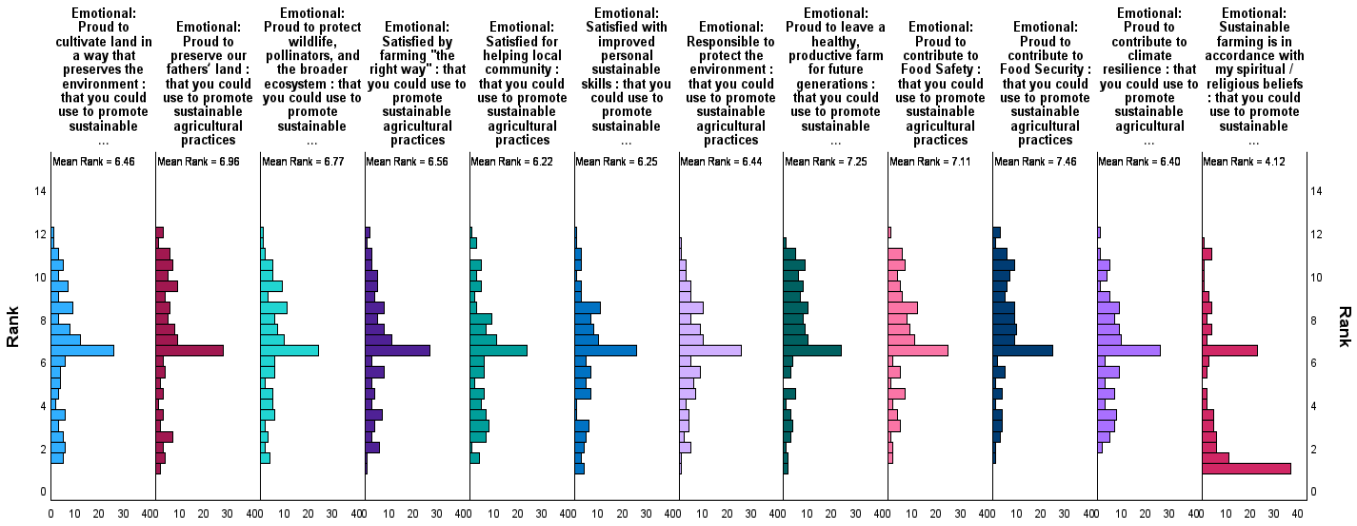
Paired Samples Statistics for Economics Benefits - Motives

Paired Differences (Me− Other farmers' advisors)	Mean	Std. Deviation	t	df	Two-Sided p (sig)
Pair 1: Increased subsidies for sustainable practices	0.031	0.899	0.395	126	0.694
Pair 2: Subsidies discipline (ensure proper use of subsidies)	0.232	0.834	3.110	124	0.002
Pair 3: Subsidies, or grants for investments in sustainable farming	0.122	0.795	1.701	122	0.092
Pair 4: Legal enforcement for sustainable practices	0.032	0.901	0.399	123	0.691
Pair 5: Carbon Credits or Environmental Payments	0.065	0.843	0.852	123	0.396
Pair 6: Taxes for conventional products	-0.048	0.909	-0.593	123	0.555
Pair 7: Market premiums for certified organic /sustainable products	0.049	0.748	0.726	121	0.469
Pair 8: Export opportunities to niche markets	0.049	0.700	0.773	122	0.441
Pair 9: Reduced input Costs (fertilizers, pesticides, herbicides)	0.123	0.799	1.701	121	0.092
Pair 10: Water and energy efficiency	0.115	0.695	1.825	121	0.071
Pair 11: Long term benefits though climate resilience	0.325	0.971	3.715	122	0.000
Pair 12: Reduction in Insurance Costs for sustainable production	0.089	0.830	1.195	122	0.234

Descriptives of Emotional Motives **that could work for the respondent**:

Emotional Motives:	N	Min	Max	Mean	Std. Dev.
Proud to cultivate land in a way that preserves the environment	127	1	5	3.83	1.162
Proud to preserve our fathers' land	127	1	5	3.95	1.140
Proud to protect wildlife, pollinators, and the broader ecosystem	126	1	5	3.93	1.044
Satisfied by farming "the right way"	126	1	5	3.84	1.084
Satisfied for helping local community	126	1	5	3.78	1.087
Satisfied with improved personal sustainable skills	126	1	5	3.78	1.072
Responsible to protect the environment	126	1	5	3.79	1.085
Proud to leave a healthy, productive farm for future generations	126	1	5	4.00	1.095
Proud to contribute to Food Safety	126	1	5	3.94	1.161
Proud to contribute to Food Security	126	1	5	4.07	1.052
Proud to contribute to climate resilience	127	1	5	3.82	1.087
Sustainable farming is in accordance with my spiritual / religious beliefs	127	1	5	2.84	1.514

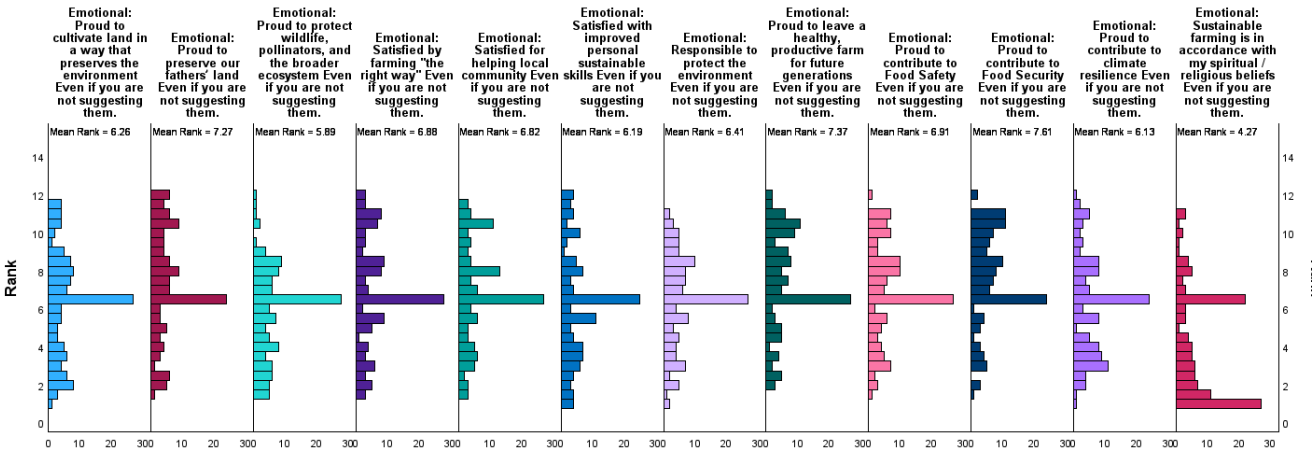
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 125 Test Statistic 131.622 df 11, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



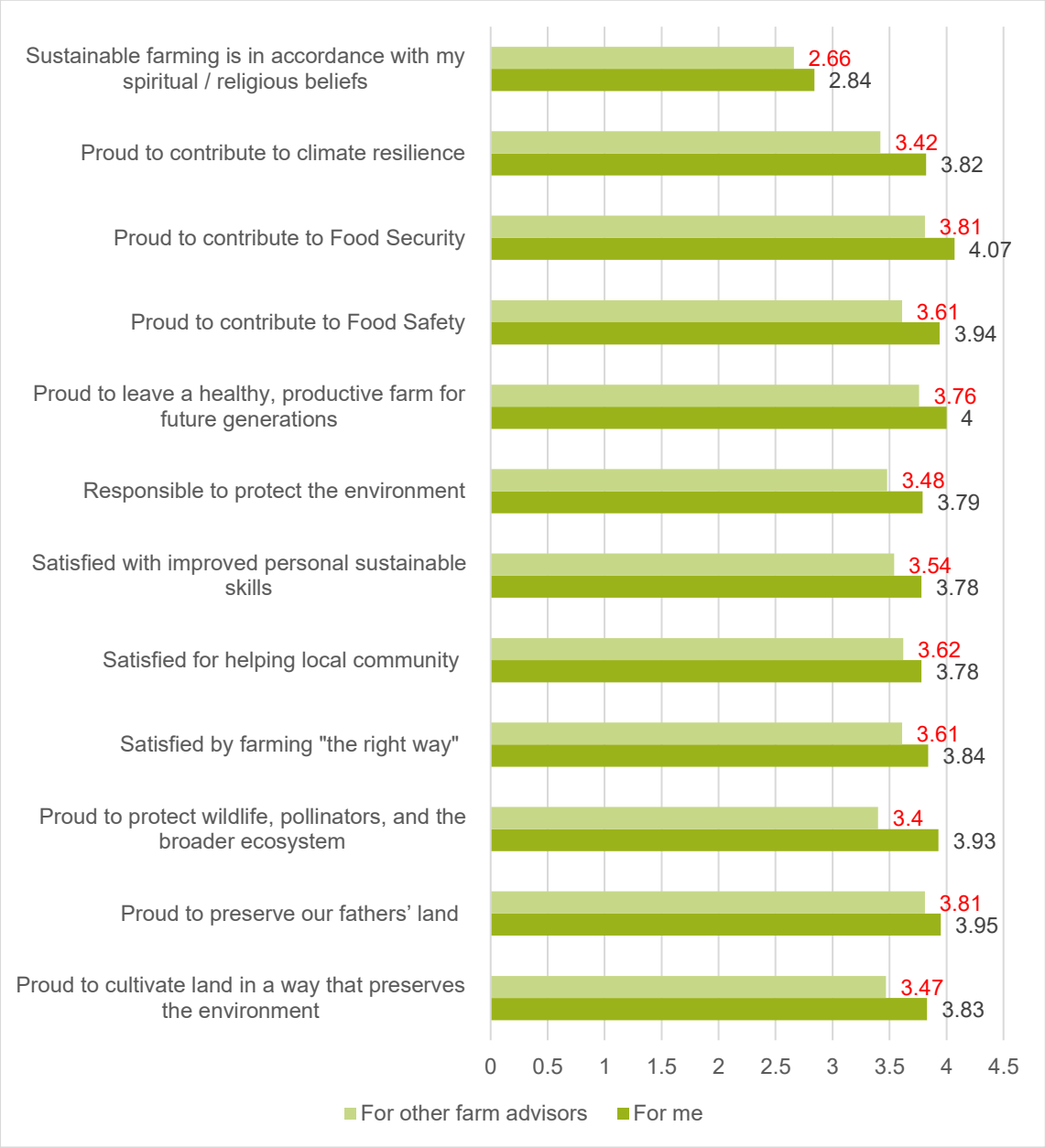
Descriptives of Emotional Motives **that could work for OTHER FARMERS**:

Emotional Motives	N	Min	Max	Mean	Std. Dev.
Proud to cultivate land in a way that preserves the environment	124	1	5	3.47	1.265
Proud to preserve our fathers' land	125	1	5	3.81	1.229
Proud to protect wildlife, pollinators, and the broader ecosystem	125	1	5	3.40	1.212
Satisfied by farming "the right way"	124	1	5	3.61	1.214
Satisfied for helping local community	124	1	5	3.62	1.130
Satisfied with improved personal sustainable skills	123	1	5	3.54	1.089
Responsible to protect the environment	124	1	5	3.48	1.137
Proud to leave a healthy, productive farm for future generations	123	1	5	3.76	1.222
Proud to contribute to Food Safety	124	1	5	3.61	1.241
Proud to contribute to Food Security	125	1	5	3.81	1.255
Proud to contribute to climate resilience	125	1	5	3.42	1.206
Sustainable farming is in accordance with my spiritual / religious beliefs	124	1	5	2.66	1.453

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 122 Test Statistic 127.257, Degree of Freedom 11, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Emotional Motives **that could work for the respondent / for other farmers' advisors**



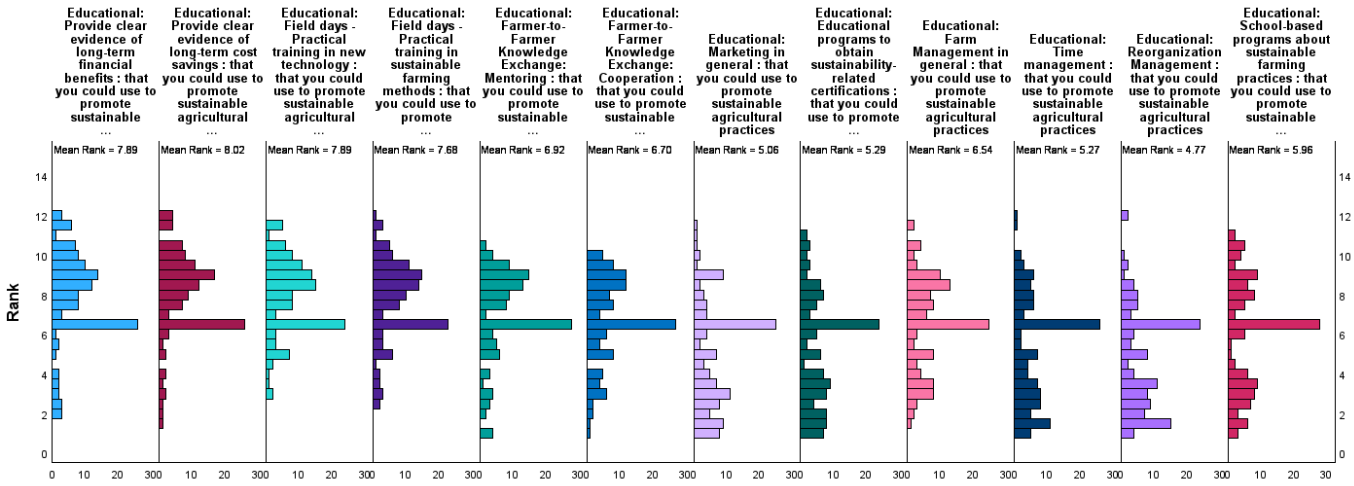
Paired Samples Statistics for Emotional Motives

Paired Differences (Me− Other farmers' advisors)	Mean	Std. Deviation	t	df	Two-Sided p (sig)
Pair 1: Proud to cultivate land in a way that preserves the environment	0.379	0.968	4.362	123	0.000
Pair 2: Proud to preserve our fathers' land	0.160	1.035	1.729	124	0.086
Pair 3: Proud to protect wildlife, pollinators, and the broader ecosystem	0.540	1.062	5.664	123	0.000
Pair 4: Satisfied by farming "the right way"	0.242	0.932	2.892	123	0.005
Pair 5: Satisfied for helping local community	0.177	0.846	2.334	123	0.021
Pair 6: Satisfied with improved personal sustainable skills	0.252	0.795	3.514	122	0.001
Pair 7: Responsible to protect the environment	0.315	0.896	3.909	123	0.000
Pair 8: Proud to leave a healthy, productive farm for future generations	0.268	1.017	2.926	122	0.004
Pair 9: Proud to contribute to Food Safety	0.339	0.873	4.320	123	0.000
Pair 10: Proud to contribute to Food Security	0.250	0.925	3.009	123	0.003
Pair 11: Proud to contribute to climate resilience	0.416	1.001	4.644	124	0.000
Pair 12: Sustainable farming is in accordance with my spiritual / religious beliefs	0.210	1.077	2.169	123	0.032

Descriptives of Educational Motives **that could work for the respondent**:

Educational Motives:	N	Min	Max	Mean	Std. Dev.
Provide clear evidence of long-term financial benefits	126	1	5	4.40	0.869
Provide clear evidence of long-term cost savings	127	1	5	4.43	0.878
Field days - Practical training in new technology	125	1	5	4.38	0.831
Field days - Practical training in sustainable farming methods	126	1	5	4.33	0.884
Farmer-to-Farmer Knowledge Exchange: Mentoring	127	1	5	4.09	1.084
Farmer-to-Farmer Knowledge Exchange: Cooperation	126	1	5	4.07	1.052
Marketing in general	126	1	5	3.56	1.230
Educational programs to obtain sustainability-related certifications	126	1	5	3.56	1.223
Farm Management in general	125	1	5	4.01	1.051
Time management	125	1	5	3.62	1.223
Reorganization Management	125	1	5	3.47	1.188
School-based programs about sustainable farming practices	126	1	5	3.83	1.132

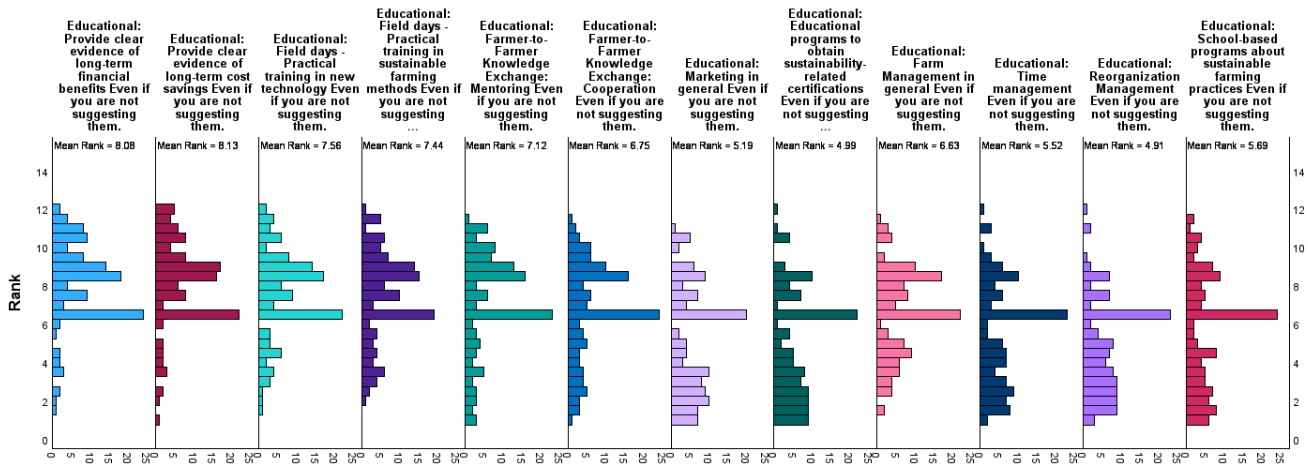
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 122 Test Statistic 256.217df 11, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



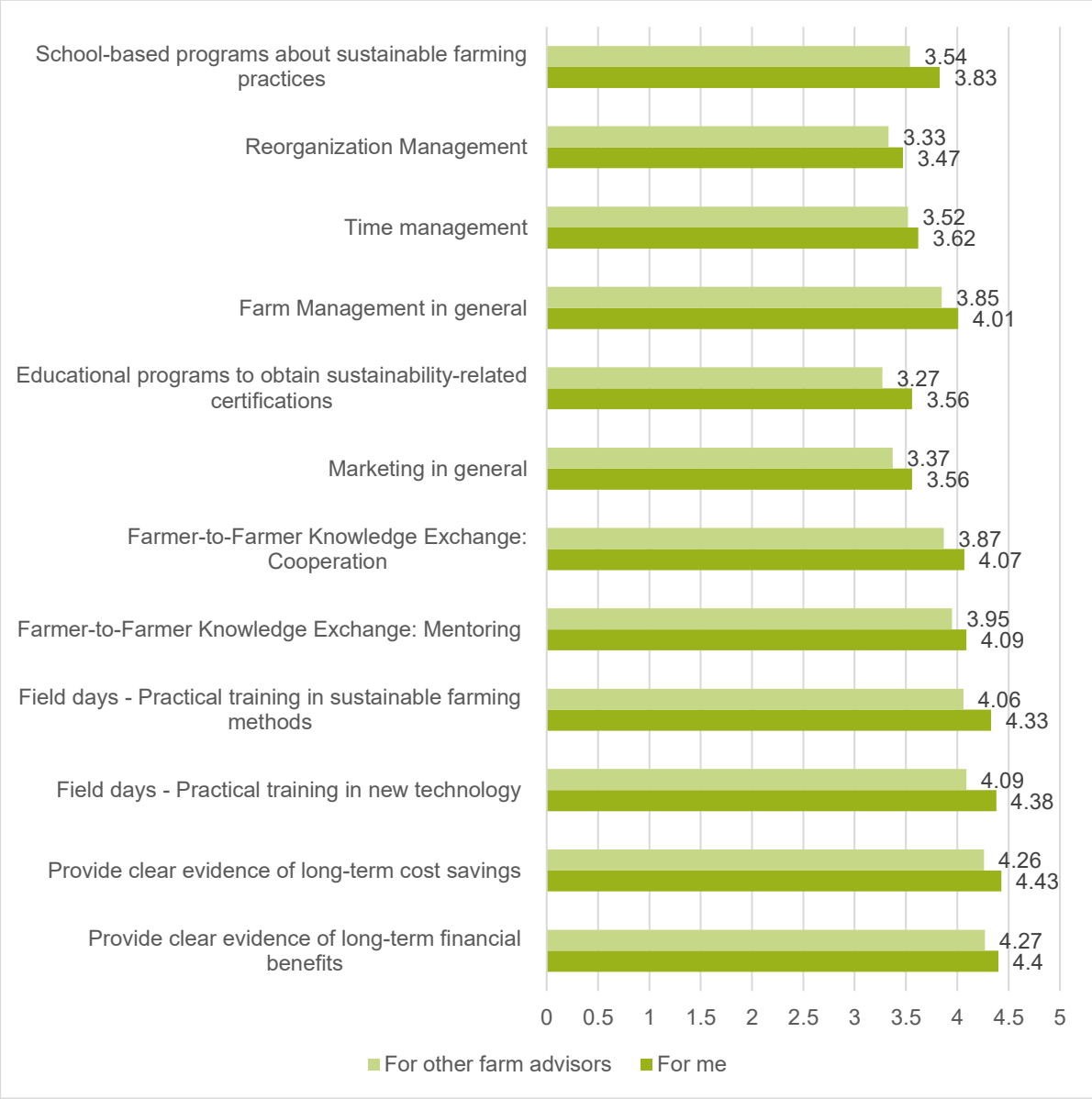
Descriptives of Educational Motives **that could work OTHER farmers' advisors**:

Educational Motives:	N	Min	Max	Mean	Std. Dev.
Provide clear evidence of long-term financial benefits	124	1	5	4.27	1.021
Provide clear evidence of long-term cost savings	125	1	5	4.26	1.071
Field days - Practical training in new technology	125	1	5	4.09	1.078
Field days - Practical training in sustainable farming methods	124	1	5	4.06	1.065
Farmer-to-Farmer Knowledge Exchange: Mentoring	125	1	5	3.95	1.106
Farmer-to-Farmer Knowledge Exchange: Cooperation	125	1	5	3.87	1.129
Marketing in general	123	1	5	3.37	1.288
Educational programs to obtain sustainability-related certifications	124	1	5	3.27	1.309
Farm Management in general	123	1	5	3.85	1.038
Time management	123	1	5	3.52	1.203
Reorganization Management	123	1	5	3.33	1.075
School-based programs about sustainable farming practices	124	1	5	3.54	1.212

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 121 Test Statistic 226.969 df 11, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Educational Motives **that could work for the respondent / for other farmers' advisors**



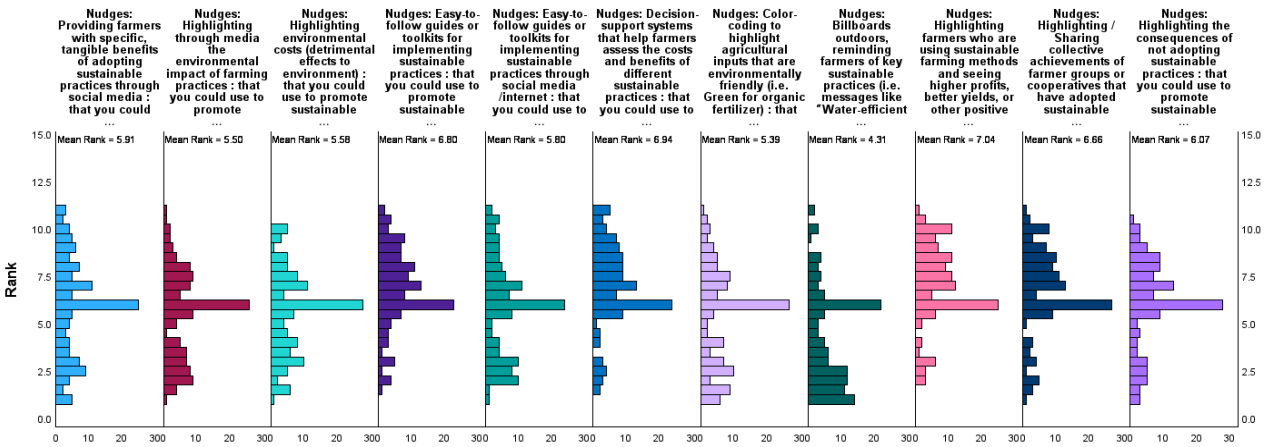
Paired Samples Statistics for Educational Motives

Paired Differences (Me− Other farmers' advisors)	Mean	Std. Deviation	t	df	Two-Sided p (sig)
Pair 1: Provide clear evidence of long-term financial benefits	0.145	0.751	2.152	123	0.017
Pair 2: Provide clear evidence of long-term cost savings	0.160	0.712	2.514	124	0.007
Pair 3: Field days - Practical training in new technology	0.276	0.823	3.726	122	0.000
Pair 4: Field days - Practical training in sustainable farming methods	0.244	0.728	3.715	122	0.000
Pair 5: Farmer-to-Farmer Knowledge Exchange: Mentoring	0.128	0.684	2.093	124	0.019
Pair 6: Farmer-to-Farmer Knowledge Exchange: Cooperation	0.210	0.839	2.783	123	0.003
Pair 7: Marketing in general	0.211	0.889	2.636	122	0.005
Pair 8: Educational programs to obtain sustainability-related certifications	0.290	0.863	3.747	123	0.000
Pair 9: Farm Management in general	0.179	0.958	2.070	122	0.020
Pair 10: Time management	0.106	0.857	1.368	122	0.087
Pair 11: Reorganization Management	0.154	0.906	1.892	122	0.030
Pair 12: School-based programs about sustainable farming practices	0.306	0.778	4.389	123	0.000

Descriptives of Nudges **that could work for the respondent**:

Nudges:	N	Min	Max	Mean	Std. Dev.
Providing farmers with specific, tangible benefits of adopting sustainable practices through social media	127	1	5	3.76	1.166
Highlighting through media the environmental impact of farming practices	126	1	5	3.63	1.230
Highlighting environmental costs (detrimental effects to environment)	127	1	5	3.70	1.122
Easy-to-follow guides or toolkits for implementing sustainable practices	127	1	5	4.09	1.031
Easy-to-follow guides or toolkits for implementing sustainable practices through social media /internet	127	1	5	3.81	1.067
Decision-support systems that help farmers assess the costs and benefits of different sustainable practices	127	1	5	4.13	1.019
Color-coding to highlight agricultural inputs that are environmentally friendly (i.e. Green for organic fertilizer)	127	1	5	3.60	1.210
Billboards outdoors, reminding farmers of key sustainable practices (i.e. messages like “Water-efficient practices will save you 30% on irrigation costs”)	127	1	5	3.20	1.323
Highlighting farmers who are using sustainable farming methods and seeing higher profits, better yields, or other positive outcomes	125	1	5	4.11	1.072
Highlighting / Sharing collective achievements of farmer groups or cooperatives that have adopted sustainable practices	126	1	5	3.97	1.124
Highlighting the consequences of not adopting sustainable practices	125	1	5	3.82	1.221

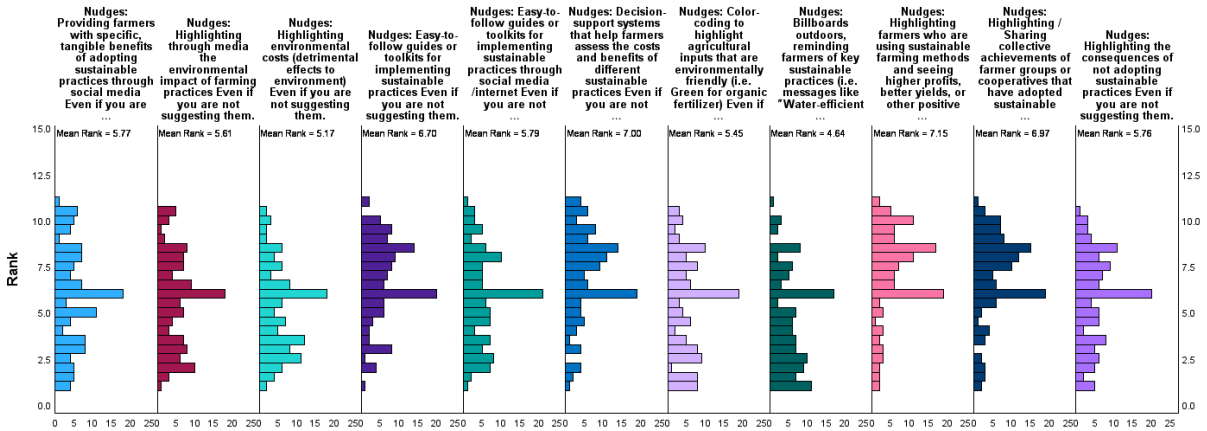
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 124 Test Statistic 112.201 df 10, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



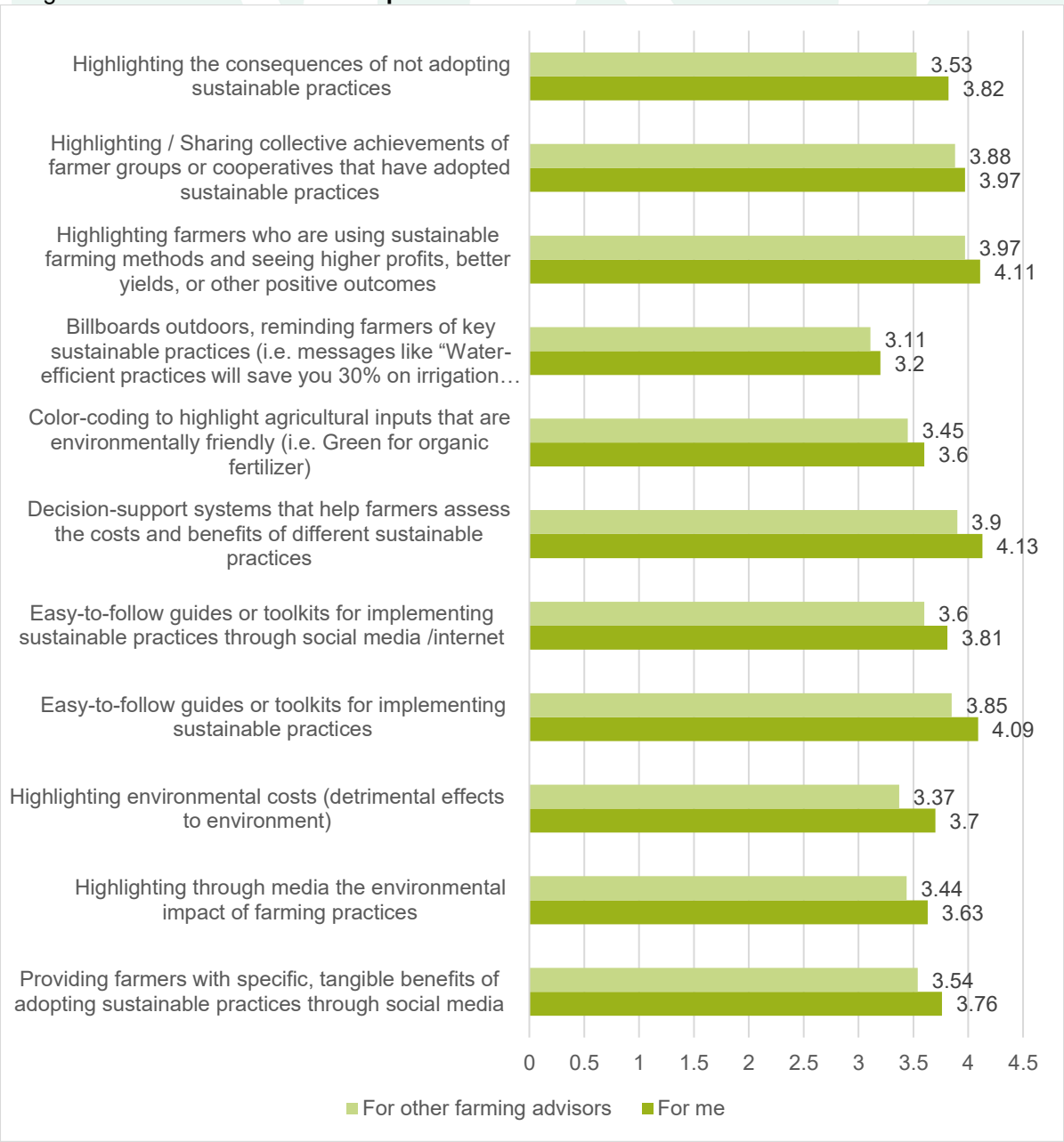
Descriptives of Nudges **that could work OTHER farmers' advisors**:

Nudges:	N	Min	Max	Mean	Std. Dev.
Providing farmers with specific, tangible benefits of adopting sustainable practices through social media	123	1	5	3.54	1.133
Highlighting through media the environmental impact of farming practices	124	1	5	3.44	1.225
Highlighting environmental costs (detrimental effects to environment)	123	1	5	3.37	1.125
Easy-to-follow guides or toolkits for implementing sustainable practices	124	1	5	3.85	1.112
Easy-to-follow guides or toolkits for implementing sustainable practices through social media /internet	122	1	5	3.60	1.081
Decision-support systems that help farmers assess the costs and benefits of different sustainable practices	123	1	5	3.90	1.082
Color-coding to highlight agricultural inputs that are environmentally friendly (i.e. Green for organic fertilizer)	124	1	5	3.45	1.277
Billboards outdoors, reminding farmers of key sustainable practices (i.e. messages like "Water-efficient practices will save you 30% on irrigation costs")	123	1	5	3.11	1.326
Highlighting farmers who are using sustainable farming methods and seeing higher profits, better yields, or other positive outcomes	123	1	5	3.97	1.166
Highlighting / Sharing collective achievements of farmer groups or cooperatives that have adopted sustainable practices	123	1	5	3.88	1.164
Highlighting the consequences of not adopting sustainable practices	123	1	5	3.53	1.270

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 119 Test Statistic 132.092 df 10, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Nudges **that could work for the respondent / for other farmers' advisors**



Paired Samples Statistics for Nudges

Paired Differences (Me− Other farmers' advisors)	Mean	Std. Deviation	t	df	Two-Sided p (sig)
Pair 1: Providing farmers with specific, tangible benefits of adopting sustainable practices through social media	0.252	0.785	3.561	122	0.001
Pair 2: Highlighting through media the environmental impact of farming practices	0.195	0.826	2.619	122	0.010
Pair 3: Highlighting environmental costs (detrimental effects to environment)	0.333	0.920	4.017	122	0.000
Pair 4: Easy-to-follow guides or toolkits for implementing sustainable practices	0.226	0.661	3.806	123	0.000
Pair 5: Easy-to-follow guides or toolkits for implementing sustainable practices through social media /internet	0.197	0.809	2.684	121	0.008
Pair 6: Decision-support systems that help farmers assess the costs and benefits of different sustainable practices	0.236	0.790	3.309	122	0.001
Pair 7: Color-coding to highlight agricultural inputs that are environmentally friendly (i.e. Green for organic fertilizer)	0.137	0.849	1.798	123	0.075
Pair 8: Billboards outdoors, reminding farmers of key sustainable practices (i.e. messages like "Water-efficient practices will save you 30% on irrigation costs")	0.098	0.773	1.400	122	0.164
Pair 9: Highlighting farmers who are using sustainable farming methods and seeing higher profits, better yields, or other positive outcomes	0.156	0.668	2.574	121	0.011
Pair 10: Highlighting / Sharing collective achievements of farmer groups or cooperatives that have adopted sustainable practices	0.098	0.549	1.969	122	0.051
Pair 11: Highlighting the consequences of not adopting sustainable practices	0.287	0.828	3.827	121	0.000

Appendix 2A

FORESTERS' DATA

Frequencies of Gender

Gender	Counts	% of Total	Cumulative %
Male	53	70.7%	70.7%
Female	22	29.3%	100.0%

Frequencies of the Highest completed level of education

Highest completed level of education	Counts	% of Total	Cumulative %
Bachelor's degree or equivalent level	23	30.7%	30.7%
College entrance qualification	2	2.7%	33.3%
Master, Postgraduate or doctoral degree	48	64.0%	97.3%
Upper secondary education	2	2.7%	100.0%

Frequencies of Marital Status

Marital Status	Counts	% of Total	Cumulative %
Divorced	8	11.1%	11.1%
Married	50	69.4%	80.6%
Single	14	19.4%	100.0%

Frequencies of No of Children

No of Children	Counts	% of Total	Cumulative %
0	7	13.7%	13.7%
1	10	19.6%	33.3%
2	18	35.3%	68.6%
3	11	21.6%	90.2%
4	5	9.8%	100.0%

Frequencies of Country of activity

Country of activity	Counts	% of Total	Cumulative %
Lithuania	31	41.89%	41.89%
Finland	12	16.22%	58.11%
UK	12	16.22%	74.32%
Sweden	9	12.16%	86.49%
Portugal	8	10.81%	97.30%
Greece	2	2.70%	100.00%

Frequencies of sustainability, conservation, or economic priorities

Priority of forest management	Counts	% of Total	Cumulative %
No answer	1	1.6%	1.6%
Conservation	9	14.1%	15.6%
Economic priorities	19	29.7%	45.3%
Sustainability	35	54.7%	100.0%

Frequencies of Forest management orientation

Forest management orientation	Counts	% of Total	Cumulative %
Certification	27	40.9%	40.9%
Grants / Subsidies	11	16.7%	57.6%
No certification / No support	25	37.9%	95.5%
Other / Mixed / Unclear	2	3.0%	98.5%
Regulatory compliance only	1	1.5%	100.0%

Frequencies of Forest activities

Forestry activities	Counts	% of Total	Cumulative %
Conservation, recreation & ecosystem services	9	13.6%	13.6%
Forest management & silviculture	20	30.3%	43.9%
No activity / not applicable	1	1.5%	45.5%
Non-timber products & services	2	3.0%	48.5%
Timber production & harvesting	34	51.5%	100.0%

Frequencies of Forest activity would be characterized as:

Forestry activities	Counts	% of Total	Cumulative %
Sustainable productive forestry	38	50.67%	50.67%
Sustainable Agroforestry	12	16.00%	66.67%
Conventional forestry	25	33.33%	100.00%

Descriptives of Sources of Information

Sources of Information	Counts	Mean	Std. Deviation
Other forest owners	69	3.09	0.853
Family and friends	67	2.96	1.211
Business partners (within forestry)	69	2.77	1.25
Other forest managers	66	2.65	1.102
Forestry advisors	68	2.63	1.035
Buyer representatives	62	2.29	0.982
Open days, demonstration activities, training	65	2.29	0.931
Environmental advisors	64	2.13	0.968
Supplier representatives	62	1.94	0.921
Other…	20	2.3	1.593

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary Total N 17 Test Statistic 13.096 Df 9 Asymptotic Sig.(2-sided test) .158, (there is NO evidence of statistically significant differences among the 10 information sources)*

Frequencies of Is your forest managed sustainably?

	Counts	% of Total	Cumulative %
Definitely Yes	40	53.3%	53.3%
Possibly	20	26.7%	80.0%
Probably Not	6	8.0%	88.0%
Under discussion	7	9.3%	97.3%
Unsure/don't know	2	2.7%	100.0%

Frequencies of Do you plan to change your forestry system in the next five years?

	Counts	% of Total	Cumulative %
Probably Not	37	49.3%	49.3%
Definitely Not	19	25.3%	74.6%
Possibly	6	8.0%	82.6%
Under discussion	5	6.7%	89.3%
Definitely Yes	4	5.3%	94.6%
Unsure/don't know	4	5.3%	100.0%

Frequencies of Do you plan to move to a more sustainable forestry in the next five years?

	Counts	% of Total	Cumulative %
Definitely Not	8	11.3%	11.3%
Definitely Yes	6	8.5%	19.7%
Possibly	17	23.9%	43.7%
Probably Not	13	18.3%	62.0%
Under discussion	15	21.1%	83.1%
Unsure/don't know	12	16.9%	100.0%

Frequencies of Do you plan to move to certified sustainable forestry practices in the next five years?

	Counts	% of Total	Cumulative %
Definitely Not	10	14.3%	14.3%
Definitely Yes	13	18.6%	32.9%
Possibly	4	5.7%	38.6%
Probably Not	14	20.0%	58.6%
Under discussion	15	21.4%	80.0%
Unsure/don't know	14	20.0%	100.0%

Frequencies of participation in the following European schemes: Forest Stewardship Council (FSC) Certification or (UK Forestry Standard)

	Counts	% of Total	Cumulative %
Never	42	57.5%	57.5%
In the past (>3 years)	20	27.4%	84.9%
Recently (<3 years)	11	15.1%	100.0%

Frequencies of participation in the following European schemes: Programme for the Endorsement of Forest Certification (PEFC)

	Counts	% of Total	Cumulative %
Never	46	66.7%	66.7%
In the past (>3 years)	14	20.3%	87.0%
Recently (<3 years)	9	13.0%	100.0%

Frequencies of participation in the following European schemes: Forest protection legal agreements

	Counts	% of Total	Cumulative %
Never	57	83.8%	83.8%
In the past (>3 years)	5	7.4%	91.2%
Recently (<3 years)	6	8.8%	100.0%

Frequencies of participation in the following European schemes: Forest protection initiatives (voluntary, non-legal agreements)

	Counts	% of Total	Cumulative %
Never	50	71.4%	71.4%
In the past (>3 years)	9	12.9%	84.3%
Recently (<3 years)	11	15.7%	100.0%

Frequencies of participation in the following European schemes: National or European forest protection programs (such as Natura 2000, EU rural development programmes etc.)

	Counts	% of Total	Cumulative %
Never	53	73.6%	73.6%
In the past (>3 years)	11	15.3%	88.9%
Recently (<3 years)	8	11.1%	100.0%

Frequencies of participation in the following European schemes: Protected Geographical Indication (PGI) for Forest Products

	Counts	% of Total	Cumulative %
Never	62	91.2%	91.2%
In the past (>3 years)	6	8.8%	100.0%

Frequencies of participation in the following European schemes: European organic certification for forestry

	Counts	% of Total	Cumulative %
Never	64	94.1%	94.1%
In the past (>3 years)	3	4.4%	98.5%
Recently (<3 years)	1	1.5%	100.0%

Frequencies of participation in the following European schemes: **Forestry education and training programs**

	Counts	% of Total	Cumulative %
Never	37	50.7%	50.7%
In the past (>3 years)	23	31.5%	82.2%
Recently (<3 years)	13	17.8%	100.0%

Frequencies of management objectives (1st priority based to respondents' answers)

management objective No1	Counts	% of Total	Cumulative %
Timber production	43	60.56%	60.56%
Conservation & Nature values	10	14.08%	74.65%
Recreation & Leisure	8	11.27%	85.92%
Climate & Carbon	4	5.63%	91.55%
Economic / Productivity focus	2	2.82%	94.37%
Planting / Agroforestry	2	2.82%	97.18%
Sustainability / Economic	1	1.41%	98.59%
Other	1	1.41%	100.00%

Frequencies of management objectives (2st priority based to respondents' answers)

management objective No2	Counts	% of Total	Cumulative %
Conservation & Nature values	28	45.16%	45.16%
Recreation & Leisure	11	17.74%	62.90%
Economic / Productivity focus	8	12.90%	75.81%
Other / Unclear	7	11.29%	87.10%
Timber production	5	8.06%	95.16%
Climate & Carbon	2	3.23%	98.39%
Planting / Agroforestry	1	1.61%	100.00%

Frequencies of How did you acquire your forest

	Counts	% of Total	Cumulative %
Purchased	28	23.94%	23.94%
Inherited	17	39.44%	63.38%
Other	18	25.35%	88.73%
Inherited & Purchased	6	8.45%	97.18%
Managed / Not owner	2	2.82%	100.00%

Frequencies of Successor to your forest

Successors	Counts	% of Total	Cumulative %
Transfer to children / descendants	44	61.11%	61.11%
Undecided / Not planned	13	18.06%	79.17%
Sale planned	6	8.33%	87.50%
Transfer to relatives (extended family)	6	8.33%	95.83%
Other	2	2.78%	98.61%
Other / Project-based succession	1	1.39%	100.00%

Descriptives of Foresters' Attitudes:

Attitudes	N	Min	Max	Mean	Std. Dev.
I avoid trying things unless I'm sure they will work.	75	1	5	2.52	1.223
I'm using the same production methods each year	74	1	5	3.59	1.072
I reckon 'good luck' doesn't exist: 'luck' is good management and 'bad luck' poor management.	75	1	5	3.32	1.221
Although good forest management requires some training, experience and reading, the ability to manage is mainly determined by genes.	74	1	5	2.26	1.335
When the forest has shown poor growth, this is due to circumstances totally out of my control.	75	1	5	2.40	1.174
In local community matters it's easy for a hard-working and dedicated individual to have an impact in getting changes for the better.	73	1	5	3.14	1.122
I seldom change my management and production systems unless I'm sure the change will be positive.	75	1	5	3.33	1.143
When things go wrong this is often due to events beyond my control (e.g. bad weather).	75	1	5	3.19	1.205
Other forest owners/managers are helping protect environment more than me	74	1	5	2.14	1.151
It is important that I understand sustainable practices	75	1	5	4.32	.932
It bothers me when I miss an opportunity to help protect the environment	75	1	5	3.31	1.315

Note*: Answers range from Much less than the foresters that know to Much more than the foresters that I know*

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 72Test Statistic 185.185 Degree of Freedom 10, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*

Descriptives of Foresters' Perceptions

Perceptions	N	Min	Max	Mean	Std. Dev.
I recognize that my forest is a forest ecosystem that interacts with neighbouring landscapes.	73	2	5	3.81	0.967
I recognize that plant protection products and other treatments should be applied appropriately and as recommended.	72	3	5	3.75	0.801
I recognize that biodiversity should be managed to enable its protection and enhancement	71	1	5	3.73	0.910
I understand that the ecology of the forest is what forestry is about	72	2	5	3.72	0.859
I see myself as a forest owner/manager who prioritises the environment	73	1	5	3.70	0.996
It is my personal responsibility to help protect the environment.	72	2	5	3.65	0.825
My actions have an impact on the environment	73	1	5	3.62	0.860
My forestry practices have an impact on the environment	74	1	5	3.62	0.753
The well-being of the community depends on the preservation of the environment	73	1	5	3.55	1.106
I recognize that I should enable the formation of organic carbon in soils and in biomass	71	1	5	3.52	0.984
I recognize that I should manage energy consumption of my forestry activities	72	1	5	3.46	1.034
It is important to me to protect the environment even if it slows down economic growth of my forestry activities.	72	1	5	3.43	1.072
Being a forest owner is an important reflection of who I am	72	2	5	3.42	0.801
It is important to continuously assess the environmental and social impact of my forestry activities	73	1	5	3.38	0.937
I have a strong sense of belonging to the forestry community	73	1	5	3.21	0.957
I recognize that I should apply a soil management plan to improve and optimize soil health	71	1	5	3.10	0.928
I recognize that I should apply a water management plan to improve and optimize water use and quality	70	1	5	3.06	1.006

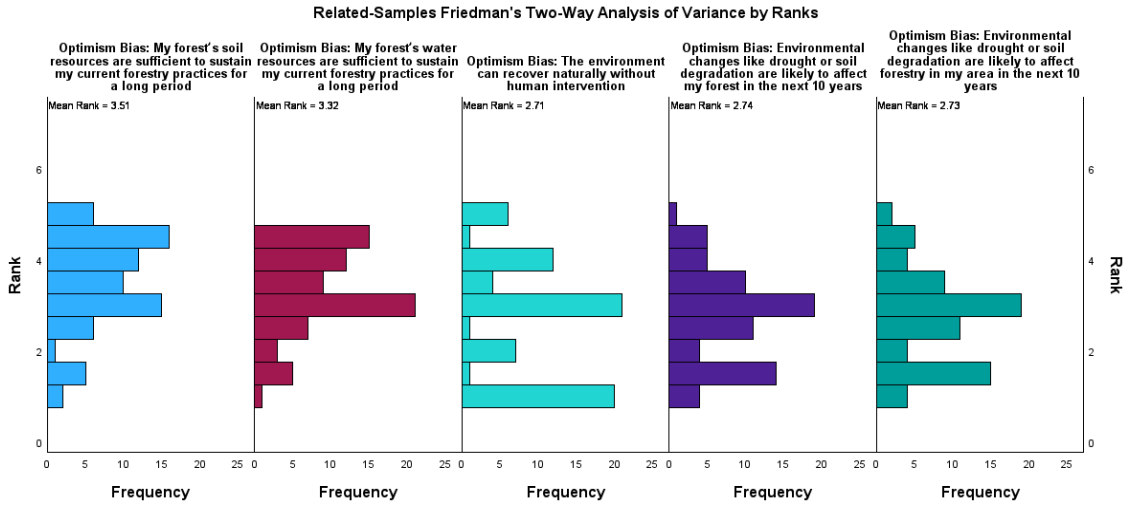
Note*: Answers range from Much less than the foresters that know to Much more than the foresters that I know*

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 63 Test Statistic 101.284 Degree of Freedom 16, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*

Descriptives of Optimism Bias:

Optimism Bias	N	Min	Max	Mean	Std. Dev.
My forest's soil resources are sufficient to sustain my current forestry practices for a long period	75	2	5	4.01	0.937
My forest's water resources are sufficient to sustain my current forestry practices for a long period	73	2	5	3.93	0.903
Environmental changes like drought or soil degradation are likely to affect my forest in the next 10 years	75	1	5	3.45	1.044
Environmental changes like drought or soil degradation are likely to affect forestry in my area in the next 10 years	75	1	5	3.44	1.106
The environment can recover naturally without human intervention	75	1	5	3.28	1.214

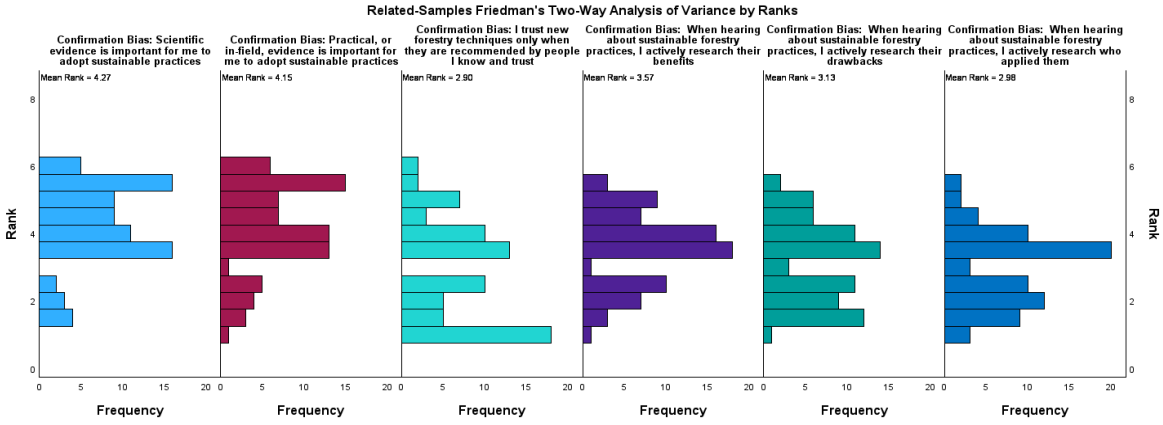
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 75 Test Statistic 61.783 Degree of Freedom 5, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Confirmation Bias:

Confirmation Bias	N	Min	Max	Mean	Std. Dev.
Scientific evidence is important for me to adopt sustainable practices	75	1	5	4.09	0.903
Practical, or in-field, evidence is important for me to adopt sustainable practices	75	2	5	4.04	0.829
When hearing about sustainable forestry practices, I actively research their benefits	75	2	5	3.75	0.824
When hearing about sustainable forestry practices, I actively research their drawbacks	75	1	5	3.52	1.031
When hearing about sustainable forestry practices, I actively research who applied them	75	2	5	3.44	0.858
I trust new forestry techniques only when they are recommended by people I know and trust	75	1	5	3.33	0.920

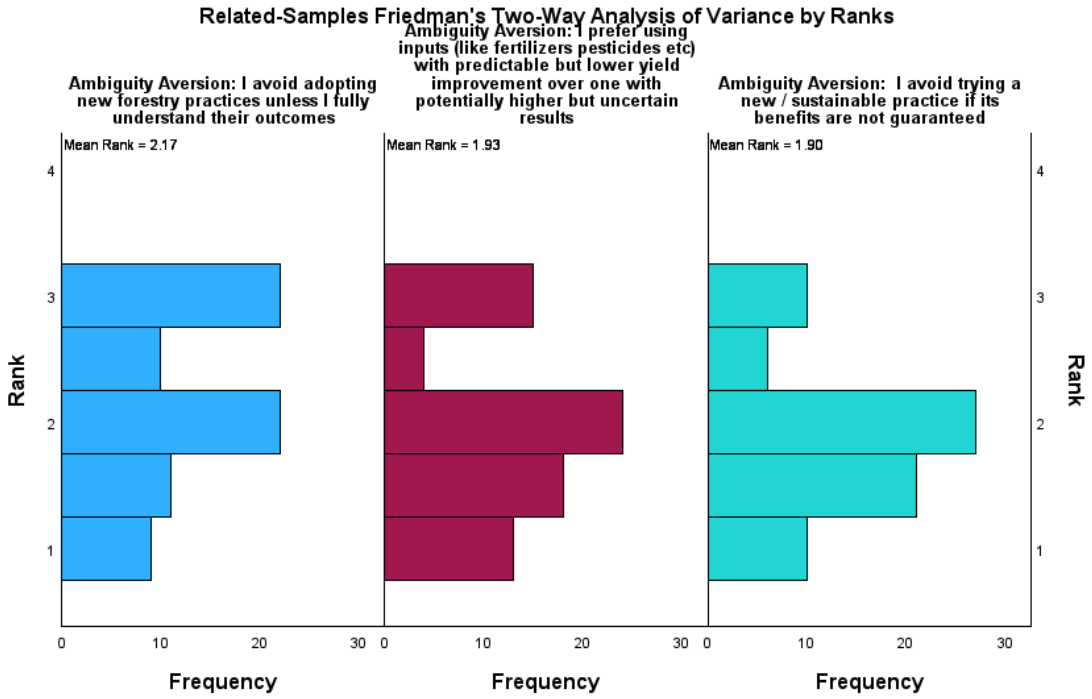
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 75 Test Statistic 61.783 Degree of Freedom 5, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Ambiguity Aversion:

Ambiguity Aversion	N	Min	Max	Mean	Std. Dev.
I avoid adopting new forestry practices unless I fully understand their outcomes	75	1	5	3.40	1.027
I avoid trying a new / sustainable practice if its benefits are not guaranteed	74	1	5	3.12	1.158
I prefer using inputs (like fertilizers pesticides etc) with predictable but lower yield improvement over one with potentially higher but uncertain results	74	1	5	3.11	1.054

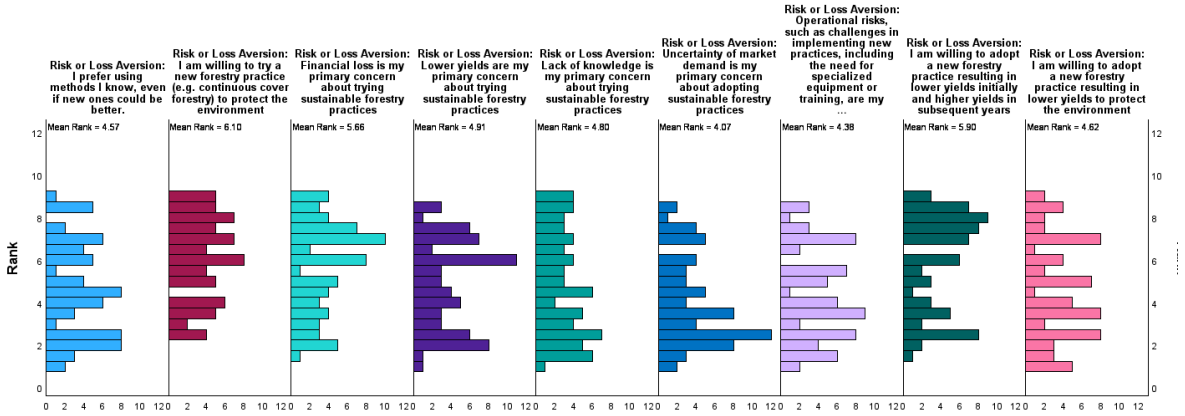
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 74 Test Statistic 4.922 Degree of Freedom 2, Asymptotic Sig.(2-sided test) 0.085, (there is NO evidence of statistically significant differences among these biases)*



Descriptives of Risk or Loss Aversion:

Risk or Loss Aversion	N	Min	Max	Mean	Std. Dev.
I prefer using methods I know, even if new ones could be better.	70	1	5	3.00	1.022
I am willing to try a new forestry practice (e.g. continuous cover forestry) to protect the environment	73	1	5	3.68	0.896
Financial loss is my primary concern about trying sustainable forestry practices	72	1	5	3.39	1.056
Lower yields are my primary concern about trying sustainable forestry practices	73	1	5	3.10	1.030
Lack of knowledge is my primary concern about trying sustainable forestry practices	73	1	5	3.04	1.160
Uncertainty of market demand is my primary concern about adopting sustainable forestry practices	72	1	5	2.79	1.006
Operational risks, such as challenges in implementing new practices, including the need for specialized equipment or training, are my primary concern about trying sustainable forestry practices.	71	1	5	2.97	1.042
I am willing to adopt a new forestry practice resulting in lower yields initially and higher yields in subsequent years	73	1	5	3.63	0.979
I am willing to adopt a new forestry practice resulting in lower yields to protect the environment	71	1	5	3.13	1.081

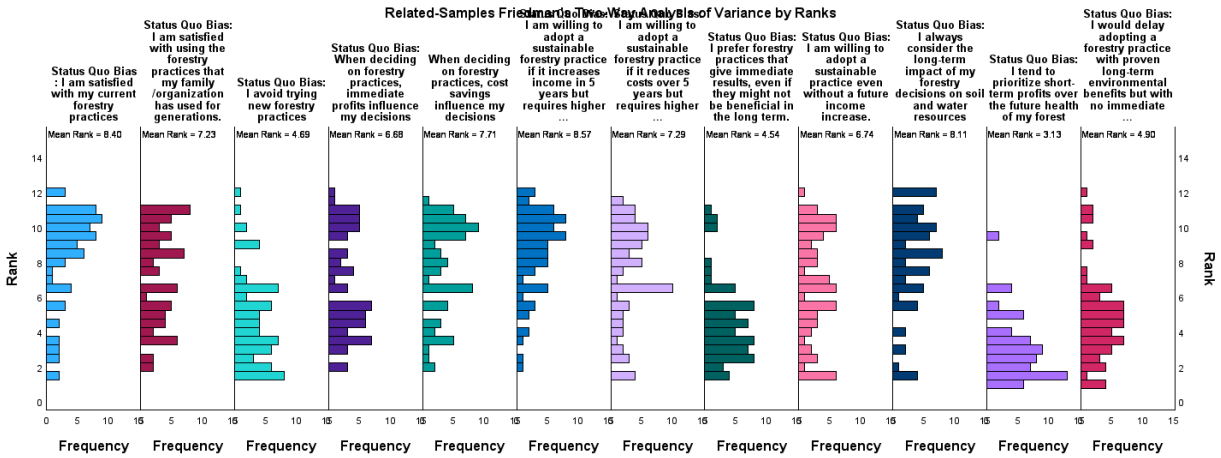
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 67 Test Statistic 46.796 Degree of Freedom 8, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Status Quo Biases:

Status Quo Biases	N	Min	Max	Mean	Std. Dev.
I am satisfied with my current forestry practices	73	2	5	3.67	0.958
I am satisfied with using the forestry practices that my family /organization has used for generations.	70	2	5	3.20	1.016
I avoid trying new forestry practices	73	1	5	2.41	1.012
When deciding on forestry practices, immediate profits influence my decisions	73	1	5	3.00	1.202
When deciding on forestry practices, cost savings influence my decisions	73	1	5	3.26	1.093
I am willing to adopt a sustainable forestry practice if it increases income in 5 years but requires higher initial expenses now	73	2	5	3.70	0.776
I am willing to adopt a sustainable forestry practice if it reduces costs over 5 years but requires higher initial expenses now	73	1	5	3.32	0.956
I prefer forestry practices that give immediate results, even if they might not be beneficial in the long term.	72	1	5	2.36	0.861
I am willing to adopt a sustainable practice even without a future income increase.	73	1	5	3.15	0.877
I always consider the long-term impact of my forestry decisions on soil and water resources	73	2	5	3.64	0.888
I tend to prioritize short-term profits over the future health of my forest	72	1	4	1.90	0.790
I would delay adopting a forestry practice with proven long-term environmental benefits but with no immediate financial gain.	72	1	5	2.47	0.934

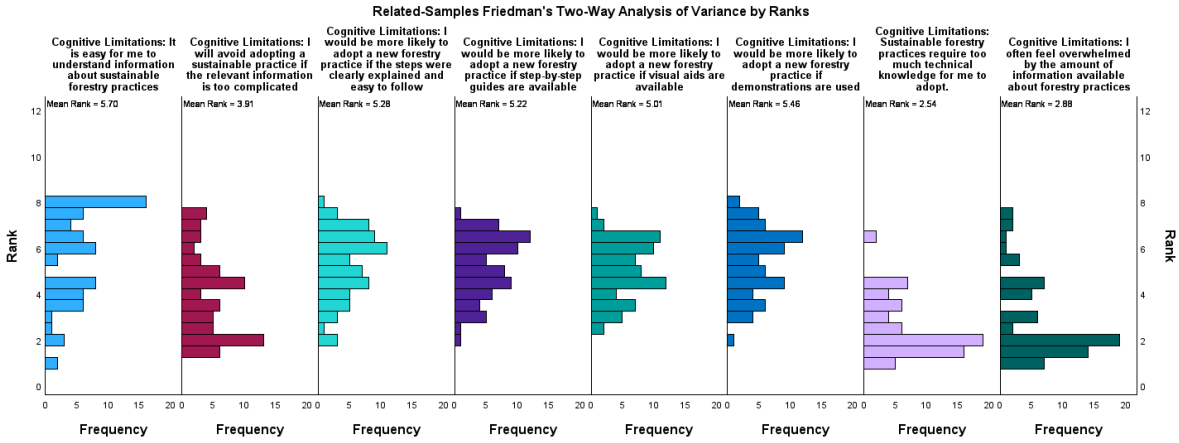
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 68 Test Statistic 219.106 Degree of Freedom 11, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Cognitive Limitations:

Cognitive Limitations:	N	Min	Max	Mean	Std. Dev.
It is easy for me to understand information about sustainable forestry practices	72	1	5	3.85	0.929
I would be more likely to adopt a new forestry practice if demonstrations are used	70	1	5	3.67	0.989
I would be more likely to adopt a new forestry practice if the steps were clearly explained and easy to follow	72	1	5	3.58	1.071
I would be more likely to adopt a new forestry practice if step-by-step guides are available	71	1	5	3.58	1.023
I would be more likely to adopt a new forestry practice if visual aids are available	72	1	5	3.53	0.993
I will avoid adopting a sustainable practice if the relevant information is too complicated	72	1	4	2.85	1.030
I often feel overwhelmed by the amount of information available about forestry practices	72	1	5	2.38	0.879
Sustainable forestry practices require too much technical knowledge for me to adopt.	72	1	4	2.15	0.763

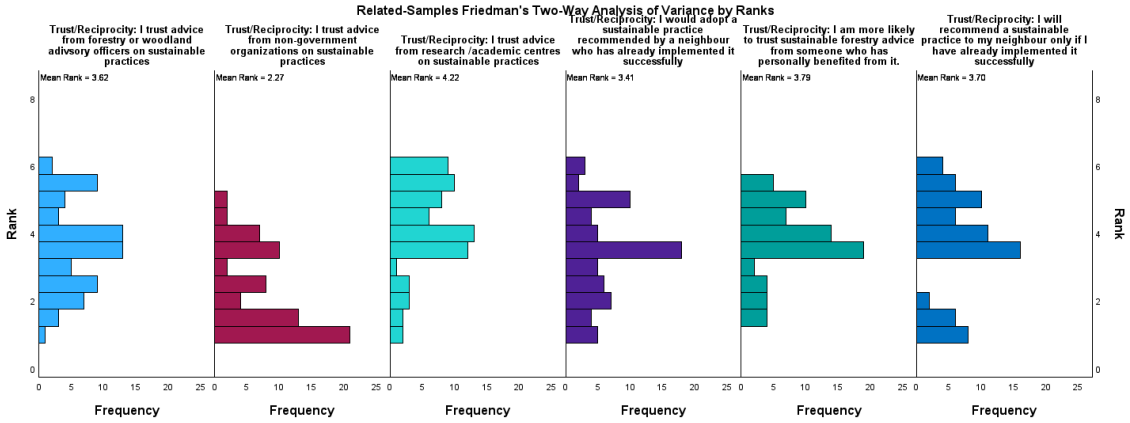
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 69 Test Statistic 170.334 Degree of Freedom 8, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Trust/ Reciprocity biases:

Trust/Reciprocity biases:	N	Min	Max	Mean	Std. Dev.
I trust advice from research /academic centres on sustainable practices	71	1	5	3.83	0.956
I am more likely to trust sustainable forestry advice from someone who has personally benefited from it.	70	1	5	3.57	0.753
I trust advice from forestry or woodland advisory officers on sustainable practices	72	1	5	3.53	0.839
I will recommend a sustainable practice to my neighbour only if I have already implemented it successfully	72	2	5	3.49	0.919
I would adopt a sustainable practice recommended by a neighbour who has already implemented it successfully	72	1	5	3.36	0.810
I trust advice from non-government organizations on sustainable practices	72	1	4	2.62	1.067

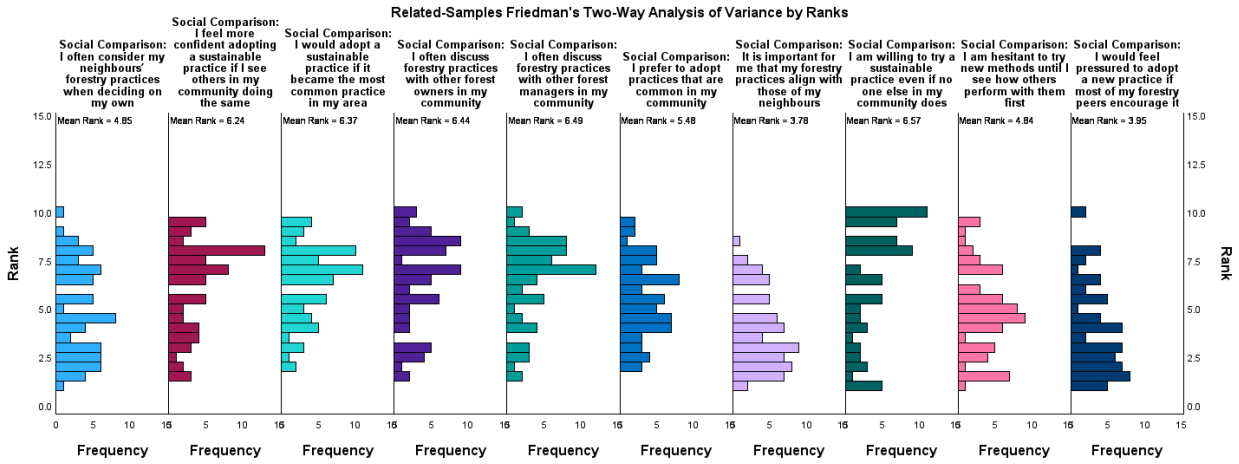
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 69 Test Statistic 62.207 Degree of Freedom 5, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Social Comparison biases:

Social Comparison biases:	N	Min	Max	Mean	Std. Dev.
I am willing to try a sustainable practice even if no one else in my community does	72	1	5	3.56	1.047
I often discuss forestry practices with other forest owners in my community	71	2	5	3.41	0.979
I often discuss forestry practices with other forest managers in my community	70	1	5	3.39	0.906
I feel more confident adopting a sustainable practice if I see others in my community doing the same	72	1	5	3.32	1.032
I would adopt a sustainable practice if it became the most common practice in my area	71	1	5	3.30	0.932
I prefer to adopt practices that are common in my community	70	1	5	3.03	0.916
I often consider my neighbours' forestry practices when deciding on my own	72	1	4	2.81	0.988
I am hesitant to try new methods until I see how others perform with them first	69	1	5	2.70	0.928
I would feel pressured to adopt a new practice if most of my forestry peers encourage it	70	1	5	2.51	1.032
It is important for me that my forestry practices align with those of my neighbours	72	1	4	2.43	0.932

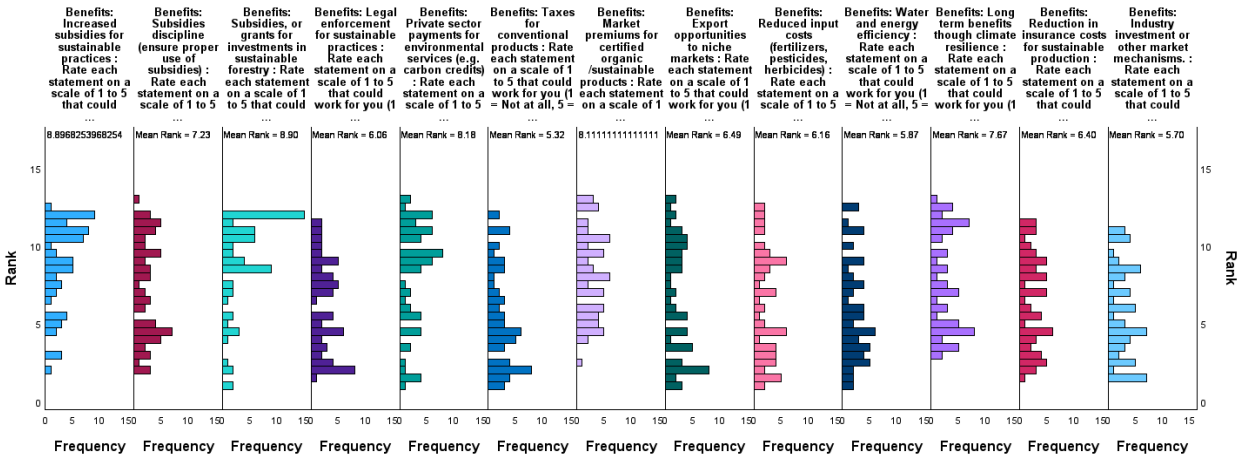
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 69 Test Statistic 103.275 Degree of Freedom 9, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Economics Benefits - Motives **that could work for the respondent**:

Economics Benefits - Motives:	N	Min	Max	Mean	Std. Dev.
Subsidies, or grants for investments in sustainable forestry	71	1	5	4.00	1.414
Increased subsidies for sustainable practices	71	1	5	3.99	1.236
Private sector payments for environmental services (e.g. carbon credits)	70	1	5	3.69	1.490
Market premiums for certified organic /sustainable products	70	1	5	3.57	1.314
Long term benefits though climate resilience	69	1	5	3.48	1.521
Subsidies discipline (ensure proper use of subsidies)	69	1	5	3.33	1.368
Export opportunities to niche markets	71	1	5	3.04	1.429
Reduction in insurance costs for sustainable production	68	1	5	2.99	1.501
Legal enforcement for sustainable practices	70	1	5	2.97	1.513
Industry investment or other market mechanisms	70	1	5	2.89	1.368
Reduced input costs (fertilizers, pesticides, herbicides)	71	1	5	2.83	1.576
Water and energy efficiency	65	1	5	2.82	1.357
Taxes for conventional products	70	1	5	2.63	1.395

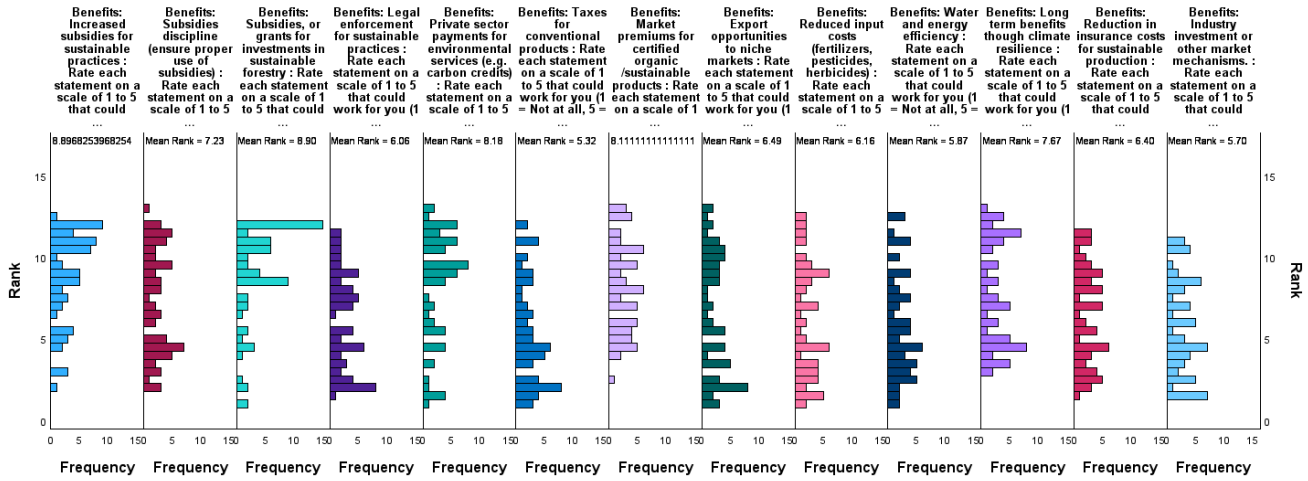
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 63 Test Statistic 95.338 Degree of Freedom 12, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



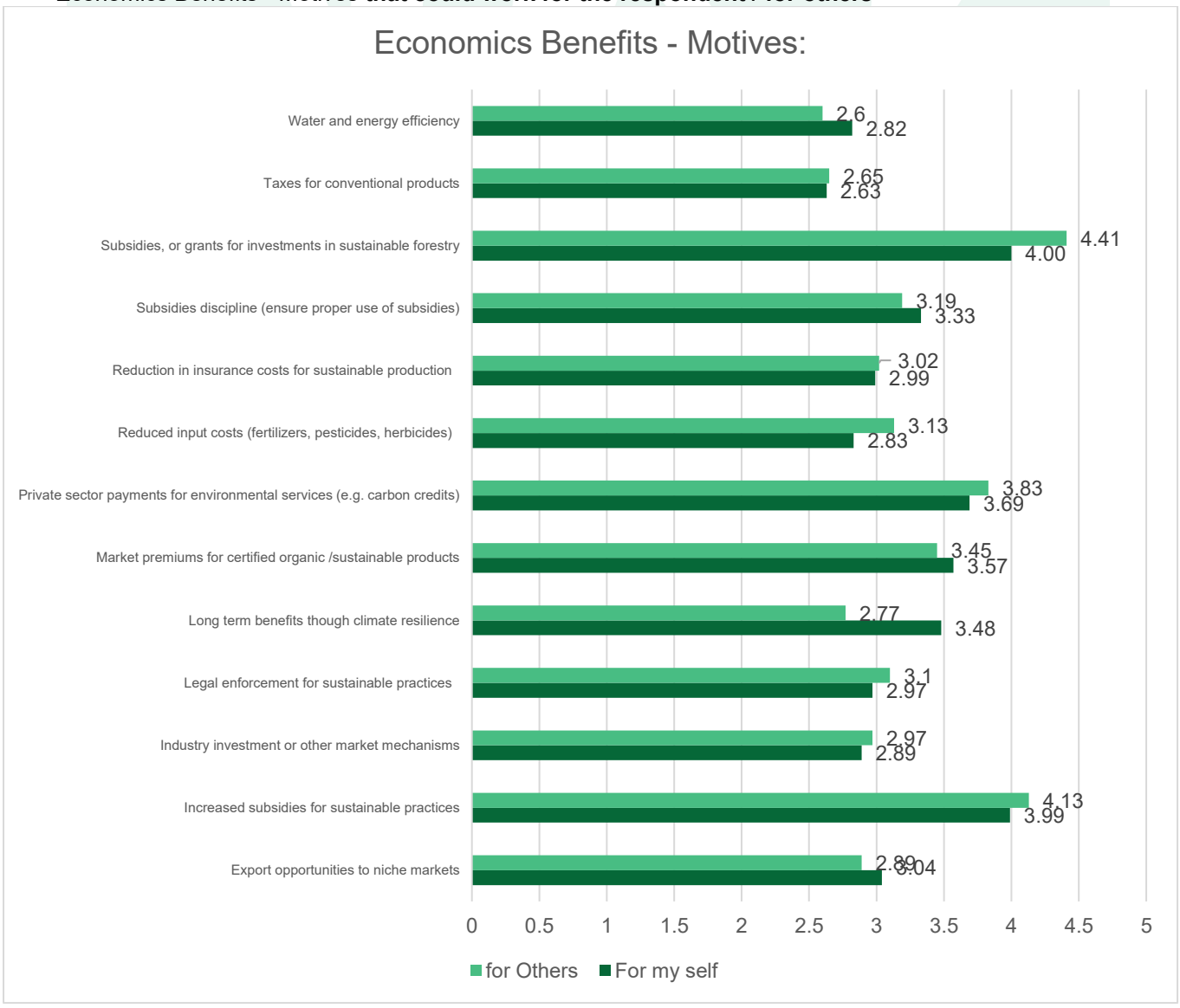
Descriptives of Economics Benefits - Motives **that could work for OTHER FORESTERS**:

Economics Benefits - Motives:	N	Min	Max	Mean	Std. Dev.
Subsidies, or grants for investments in sustainable forestry	63	1	5	4.41	1.042
Increased subsidies for sustainable practices	64	1	5	4.13	1.106
Private sector payments for environmental services (e.g. carbon credits)	63	1	5	3.83	1.277
Market premiums for certified organic /sustainable products	62	1	5	3.45	1.375
Subsidies discipline (ensure proper use of subsidies) :	59	1	5	3.19	1.167
Reduced input costs (fertilizers, pesticides, herbicides)	63	1	5	3.13	1.397
Legal enforcement for sustainable practices	62	1	5	3.10	1.364
Reduction in insurance costs for sustainable production	61	1	5	3.02	1.335
Industry investment or other market mechanisms	62	1	5	2.97	1.318
Export opportunities to niche markets	63	1	5	2.89	1.233
Long term benefits though climate resilience	60	1	5	2.77	1.320
Taxes for conventional products	63	1	5	2.65	1.427
Water and energy efficiency	58	1	5	2.60	1.242

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 53 Test Statistic 128.512 Degree of Freedom 12, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Economics Benefits - Motives **that could work for the respondent / for others**



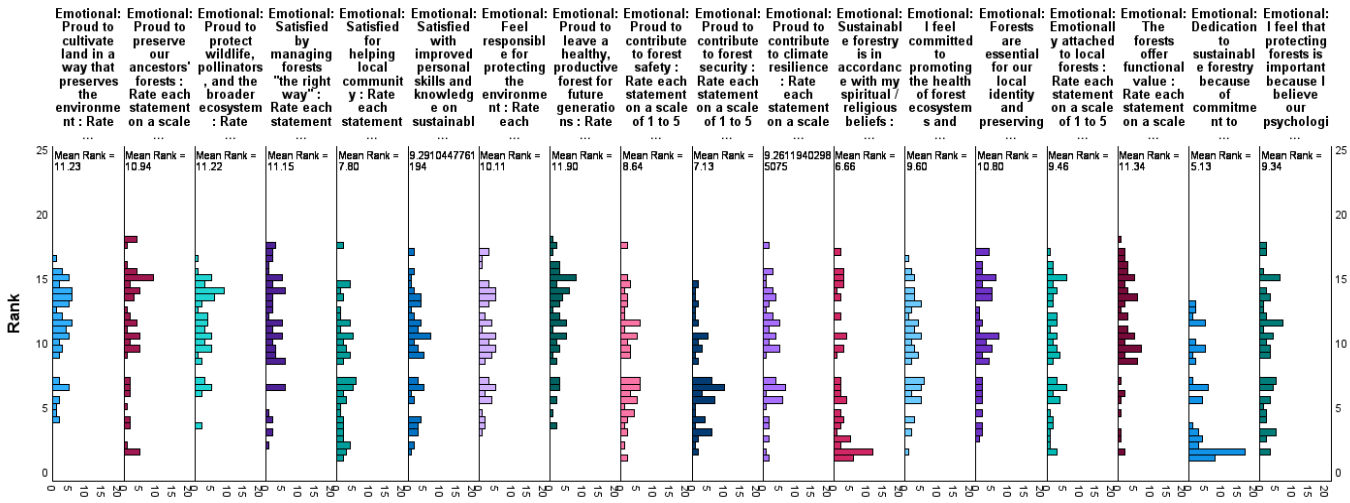
Paired Samples Statistics for Economics Benefits - Motives

Paired Differences (Me− Other foresters)	Mean	Std. Deviation	t	df	Two-Sided p (sig)
Pair 1 Increased subsidies for sustainable practices:	-0.078	0.860	-0.727	63	0.470
Pair 2 Subsidies discipline (ensure proper use of subsidies	0.169	1.069	1.218	58	0.228
Pair 3 Subsidies, or grants for investments in sustainable forestry	-0.270	0.971	-2.207	62	0.031
Pair 4 Legal enforcement for sustainable practices	0.000	1.155	0.000	60	1.000
Pair 5 Private sector payments for environmental services (e.g. carbon credits)	-0.111	1.018	-0.867	62	0.390
Pair 6 Taxes for conventional products	0.000	0.539	0.000	62	1.000
Pair 7 Market premiums for certified organic /sustainable products	0.258	0.957	2.123	61	0.038
Pair 8 Export opportunities to niche markets	0.063	0.840	0.600	62	0.551
Pair 9 Reduced input costs (fertilizers, pesticides, herbicides)	-0.254	1.015	-1.985	62	0.052
Pair 10 Water and energy efficiency	0.207	0.669	2.355	57	0.022
Pair 11 Long term benefits though climate resilience	0.800	1.176	5.269	59	**0.000**
Pair 12 Reduction in insurance costs for sustainable production	0.016	0.866	0.148	60	0.883
Pair 13 Industry investment or other market mechanisms	-0.097	0.534	-1.426	61	0.159

Descriptives of Emotional Motives **that could work for the respondent**:

Emotional Motives:	N	Min	Max	Mean	Std. Dev.
Proud to cultivate land in a way that preserves the environment	71	1	5	4.07	1.234
Proud to preserve our ancestors' forests	71	1	5	3.99	1.336
Proud to protect wildlife, pollinators, and the broader ecosystem	71	1	5	4.06	1.068
Satisfied by managing forests "the right way"	71	1	5	4.11	1.049
Satisfied for helping local community	70	1	5	3.34	1.339
Satisfied with improved personal skills and knowledge on sustainable forestry	71	1	5	3.72	1.300
Feel responsible for protecting the environment	71	1	5	3.85	1.250
Proud to leave a healthy, productive forest for future generations	71	1	5	4.24	1.035
Proud to contribute to forest safety	69	1	5	3.57	1.242
Proud to contribute to forest security	69	1	5	3.30	1.287
Proud to contribute to climate resilience	71	1	5	3.77	1.344
Sustainable forestry is in accordance with my spiritual / religious beliefs	69	1	5	2.88	1.659
I feel committed to promoting the health of forest ecosystems and biodiversity.	71	1	5	3.76	1.336
Forests are essential for our local identity and preserving them is our responsibility	71	1	5	3.97	1.121
Emotionally attached to local forests	71	1	5	3.73	1.287
The forests offer functional value	71	2	5	4.15	.920
Dedication to sustainable forestry because of commitment to organizational mission	69	1	5	2.52	1.481
I feel that protecting forests is important because I believe our psychological wellbeing is connected to nature and forests.	70	1	5	3.61	1.289

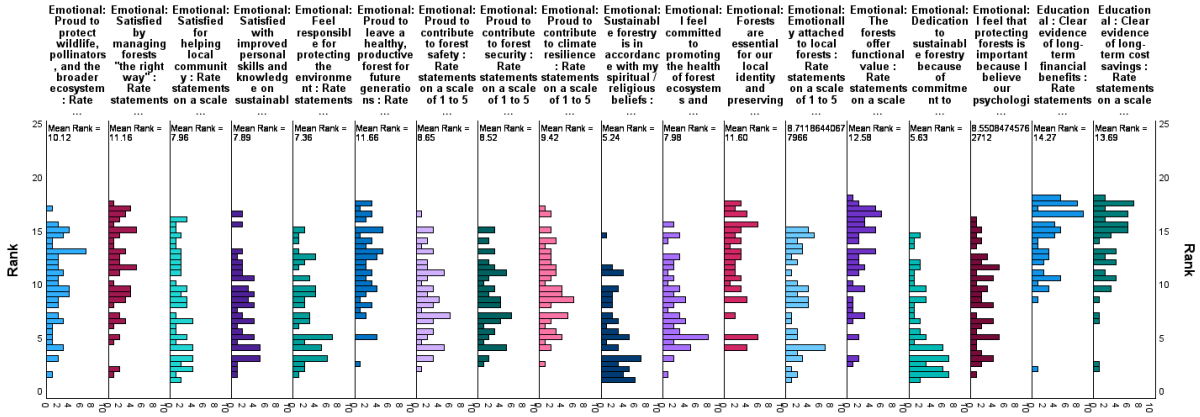
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 68 Test Statistic 191.322 df 17, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*


Emotional: Proud to cultivate land in a way that preserves the environment : Rate ...
Emotional: Proud to preserve our ancestors' forests : Rate each statement on a scale ...
Emotional: Proud to protect wildlife, pollinators, and the broader ecosystem : Rate ...
Emotional: Satisfied by managing forests "the right way" : Rate each statement ...
Emotional: Satisfied for helping local community : Rate each statement ...
Emotional: Satisfied with improved personal skills and knowledge on sustainabl ...
Emotional: Feel responsible for protecting the environment : Rate each ...
Emotional: Proud to leave a healthy, productive forest for future generations : Rate ...
Emotional: Proud to contribute to forest safety : Rate each statement on a scale of 1 to 5 ...
Emotional: Proud to contribute to forest security : Rate each statement on a scale of 1 to 5 ...
Emotional: Proud to contribute to climate resilience : Rate each statement on a scale ...
Emotional: Sustainable forestry is in accordance with my spiritual / religious beliefs : ...
Emotional: I feel committed to promoting the health of forest ecosystems and ...
Emotional: Forests are essential for our local identity and preserving ...
Emotional: Emotionally attached to local forests : Rate each statement on a scale of 1 to 5 ...
Emotional: The forests offer functional value : Rate each statement on a scale ...
Emotional: Dedication to sustainable forestry because of commitment to ...
Emotional: I feel that protecting forests is important because I believe our psychologi ...
Mean Rank = 11.23
Mean Rank = 10.94
Mean Rank = 11.22
Mean Rank = 11.15
Mean Rank = 7.80
Mean Rank = 9.2910447761194
Mean Rank = 10.11
Mean Rank = 11.90
Mean Rank = 8.64
Mean Rank = 7.13
Mean Rank = 9.2611940298507
Mean Rank = 6.66
Mean Rank = 9.60
Mean Rank = 10.80
Mean Rank = 9.46
Mean Rank = 11.34
Mean Rank = 5.13
Mean Rank = 9.34
Rank
0
5
10
15
20
25

Descriptives of Emotional Motives **that could work for OTHER FORESTERS**:

Emotional Motives	N	Min	Max	Mean	Std. Dev.
Proud to cultivate land in a way that preserves the environment	63	1	5	3.21	1.246
Proud to preserve our ancestors' forests	64	1	5	3.64	1.302
Proud to protect wildlife, pollinators, and the broader ecosystem	64	1	5	3.34	1.101
Satisfied by managing forests "the right way"	62	1	5	3.53	1.155
Satisfied for helping local community	62	1	5	2.89	1.229
Satisfied with improved personal skills and knowledge on sustainable forestry	62	1	5	2.85	1.304
Feel responsible for protecting the environment	63	1	5	2.81	1.176
Proud to leave a healthy, productive forest for future generations	63	1	5	3.56	1.188
Proud to contribute to forest safety	61	1	5	3.02	1.231
Proud to contribute to forest security	61	1	5	2.98	1.162
Proud to contribute to climate resilience	62	1	5	3.16	1.296
Sustainable forestry is in accordance with my spiritual / religious beliefs	60	1	5	2.28	1.250
I feel committed to promoting the health of forest ecosystems and biodiversity.	63	1	5	2.87	1.211
Forests are essential for our local identity and preserving them is our responsibility	63	1	5	3.51	1.230
Emotionally attached to local forests	63	1	5	3.06	1.176
The forests offer functional value	63	1	5	3.83	1.100
Dedication to sustainable forestry because of commitment to organizational mission	61	1	5	2.38	1.199
I feel that protecting forests is important because I believe our psychological wellbeing is connected to nature and forests.	61	1	5	2.89	1.199

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 53 Test Statistic 298.580, Degree of Freedom 17, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*


Emotional: Proud to protect wildlife, pollinators, and the broader ecosystem ... : Rate
Mean Rank = 10.12
Emotional: Satisfied by managing forests "the right way" : Rate statements ...
Mean Rank = 11.16
Emotional: Satisfied for helping local community : Rate statements on a scale ...
Mean Rank = 7.96
Emotional: Satisfied with improved personal skills and knowledge on sustainabl ...
Mean Rank = 7.89
Emotional: Feel responsible for protecting the environment : Rate statements ...
Mean Rank = 7.36
Emotional: Proud to leave a healthy, productive forest for future generations : Rate ...
Mean Rank = 11.66
Emotional: Proud to contribute to forest safety : Rate statements on a scale of 1 to 5 ...
Mean Rank = 8.65
Emotional: Proud to contribute to forest security : Rate statements on a scale of 1 to 5 ...
Mean Rank = 8.52
Emotional: Proud to contribute to climate resilience : Rate statements on a scale of 1 to 5 ...
Mean Rank = 9.42
Emotional: Sustainable forestry is in accordance with my spiritual / religious beliefs : ...
Mean Rank = 5.24
Emotional: I feel committed to promoting the health of forest ecosystems and ...
Mean Rank = 7.98
Emotional: Forests are essential for our local identity and preserving ...
Mean Rank = 11.60
Emotional: Emotionally attached to local forests : Rate statements on a scale of 1 to 5 ...
Mean Rank = 8.711864406779661
Emotional: The forests offer functional value : Rate statements on a scale ...
Mean Rank = 12.58
Emotional: Dedication to sustainable forestry because of commitment to ...
Mean Rank = 5.63
Emotional: I feel that protecting forests is important because I believe our psychologi ...
Mean Rank = 8.550847457627119
Educational : Clear evidence of long-term financial benefits : Rate statements on a scale ...
Mean Rank = 14.27
Educational : Clear evidence of long-term cost savings : Rate statements on a scale ...
Mean Rank = 13.69
Rank
Rank

Emotional Motives **that could work for the respondent / for others**

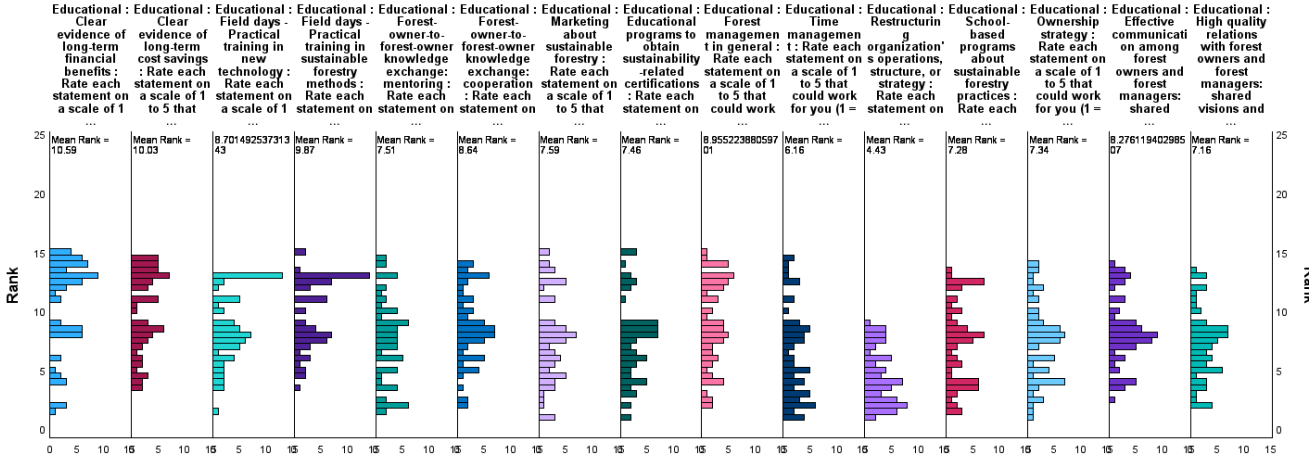
Paired Samples Statistics for Emotional Motives

Paired Differences (Me− Other foresters)	Mean	Std. Deviation	t	df	Two-Sided p (sig)
Pair 1: Proud to cultivate land in a way that preserves the environment	0.952	1.211	6.244	62	0.000
Pair 2: Proud to preserve our ancestors' forests	0.469	1.259	2.977	63	0.004
Pair 3: Proud to protect wildlife, pollinators, and the broader ecosystem	0.859	1.111	6.189	63	0.000
Pair 4: Satisfied by managing forests "the right way"	0.694	1.125	4.855	61	0.000
Pair 5: Satisfied for helping local community	0.452	1.051	3.384	61	0.001
Pair 6: Satisfied with improved personal skills and knowledge on sustainable forestry	0.919	1.164	6.221	61	0.000
Pair 7: Feel responsible for protecting the environment	1.079	1.235	6.936	62	0.000
Pair 8: Proud to leave a healthy, productive forest for future generations	0.778	1.170	5.276	62	0.000
Pair 9: Proud to contribute to forest safety	0.459	0.941	3.809	60	0.000
Pair 10: Proud to contribute to forest security	0.361	1.081	2.607	60	0.012
Pair 11: Proud to contribute to climate resilience	0.629	1.105	4.483	61	0.000
Pair 12: Sustainable forestry is in accordance with my spiritual / religious beliefs	0.517	1.033	3.873	59	0.000
Pair 13: I feel committed to promoting the health of forest ecosystems and biodiversity.	0.968	1.107	6.944	62	0.000
Pair 14: Forests are essential for our local identity and preserving them is our responsibility	0.556	0.963	4.577	62	0.000
Pair 15: Emotionally attached to local forests	0.667	1.231	4.297	62	0.000
Pair 16: The forests offer functional value	0.397	1.025	3.074	62	0.003
Pair 17: Dedication to sustainable forestry because of commitment to organizational mission	0.049	1.257	0.305	60	0.761
Pair 18: I feel that protecting forests is important because I believe our psychological wellbeing is connected to nature and forests.	0.639	1.049	4.759	60	0.000

Descriptives of Educational Motives **that could work for the respondent**:

Educational Motives:	N	Min	Max	Mean	Std. Dev.
Clear evidence of long-term financial benefits	71	1	5	3.90	1.148
Clear evidence of long-term cost savings	71	1	5	3.76	1.088
Field days - Practical training in new technology	71	1	5	3.35	1.243
Field days - Practical training in sustainable forestry methods	71	1	5	3.63	1.245
Forest-owner-to-forest-owner knowledge exchange: mentoring	70	1	5	3.11	1.314
Forest-owner-to-forest-owner knowledge exchange: cooperation	70	1	5	3.43	1.281
Marketing about sustainable forestry	71	1	5	3.08	1.228
Educational programs to obtain sustainability-related certifications	71	1	5	2.99	1.248
Forest management in general	71	1	5	3.39	1.224
Time management	68	1	5	2.74	1.389
Restructuring organization's operations, structure, or strategy	68	1	5	2.28	1.280
School-based programs about sustainable forestry practices	71	1	5	3.00	1.331
Ownership strategy	68	1	5	3.09	1.324
Effective communication among forest owners and forest managers: shared visions and goals	68	1	5	3.29	1.173
High quality relations with forest owners and forest managers: shared visions and goals	70	1	5	3.03	1.063

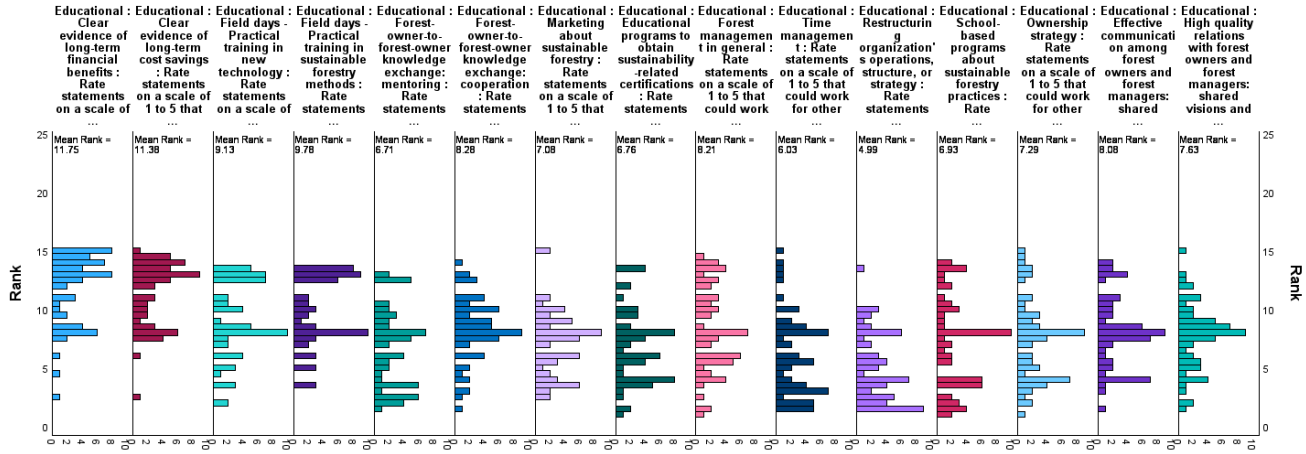
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 67 Test Statistic 164.218 df 14, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



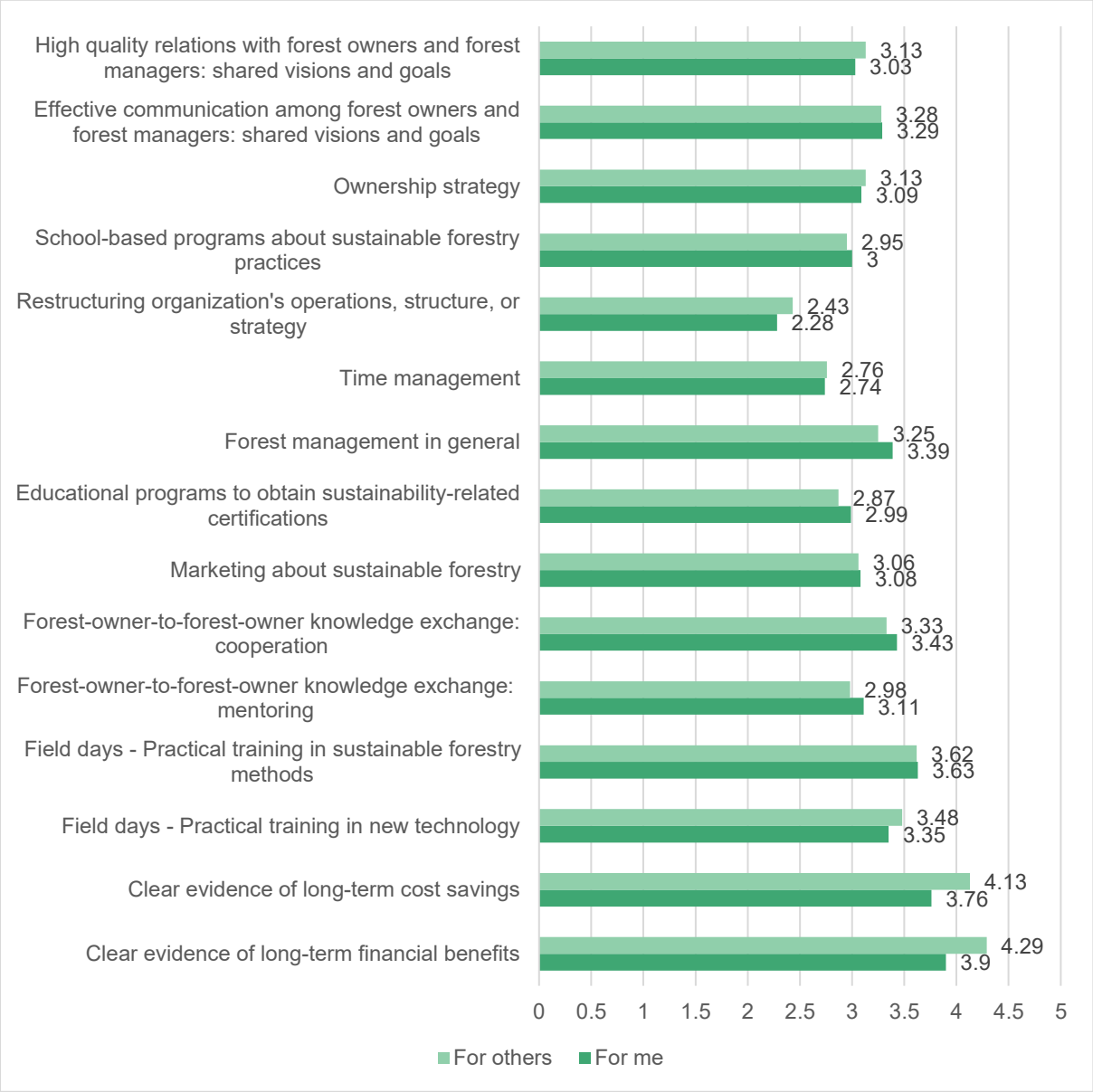
Descriptives of Educational Motives **that could work OTHER FORESTERS**:

Educational Motives:	N	Min	Max	Mean	Std. Dev.
Clear evidence of long-term financial benefits	63	2	5	4.29	0.812
Clear evidence of long-term cost savings	63	2	5	4.13	0.793
Field days - Practical training in new technology	63	1	5	3.48	1.162
Field days - Practical training in sustainable forestry methods	63	1	5	3.62	1.197
Forest-owner-to-forest-owner knowledge exchange: mentoring	63	1	5	2.98	1.143
Forest-owner-to-forest-owner knowledge exchange: cooperation	64	1	5	3.33	1.070
Marketing about sustainable forestry	62	1	5	3.06	1.143
Educational programs to obtain sustainability-related certifications	62	1	5	2.87	1.138
Forest management in general	63	1	5	3.25	1.231
Time management	62	1	5	2.76	1.237
Restructuring organization's operations, structure, or strategy	60	1	5	2.43	1.254
School-based programs about sustainable forestry practices	62	1	5	2.95	1.311
Ownership strategy	61	1	5	3.13	1.310
Effective communication among forest owners and forest managers: shared visions and goals	60	1	5	3.28	1.209
High quality relations with forest owners and forest managers: shared visions and goals	63	1	5	3.13	1.114

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 60 Test Statistic 206.416 df 14, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Educational Motives **that could work for the respondent / for others**



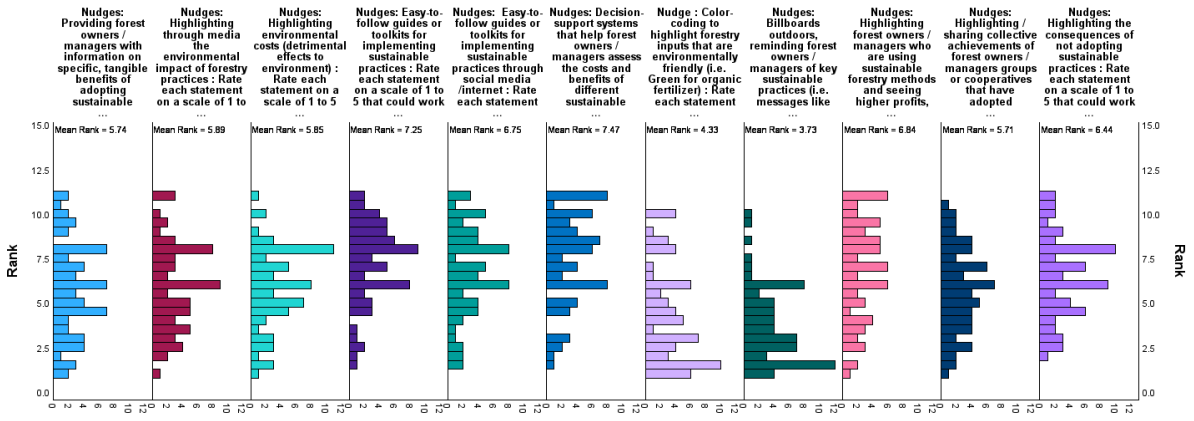
Paired Samples Statistics for Educational Motives

Paired Differences (Me− Other foresters)	Mean	Std. Deviation	t	df	Two-Sided p (sig)
Pair 1: Clear evidence of long-term financial benefits	-0.349	0.953	-2.908	62	0.005
Pair 2: Clear evidence of long-term cost savings	-0.333	0.741	-3.573	62	0.001
Pair 3: Field days - Practical training in new technology	-0.127	0.729	-1.382	62	0.172
Pair 4: Field days - Practical training in sustainable forestry methods	0.016	0.959	0.131	62	0.896
Pair 5: Forest-owner-to-forest-owner knowledge exchange: mentoring	0.063	0.780	0.646	62	0.521
Pair 6: Forest-owner-to-forest-owner knowledge exchange: cooperation	0.172	0.767	1.792	63	0.078
Pair 7: Marketing about sustainable forestry	-0.065	1.069	-0.475	61	0.636
Pair 8: Educational programs to obtain sustainability-related certifications	0.048	1.122	0.339	61	0.735
Pair 9: Forest management in general	0.063	1.076	0.468	62	0.641
Pair 10: Time management	-0.129	0.877	-1.158	61	0.251
Pair 11: Restructuring organization's operations, structure, or strategy	-0.217	0.976	-1.720	59	0.091
Pair 12: School-based programs about sustainable forestry practices	-0.016	0.967	-0.131	61	0.896
Pair 13: Ownership strategy	-0.098	0.907	-0.847	60	0.401
Pair 14: Effective communication among forest owners and forest managers: shared visions and goals	0.000	0.803	0.000	59	1.000
Pair 15: High quality relations with forest owners and forest managers: shared visions and goals	-0.048	0.728	-0.519	62	0.605

Descriptives of Nudges **that could work for the respondent**:

Nudges:	N	Min	Max	Mean	Std. Dev.
Providing forest owners / managers with information on specific, tangible benefits of adopting sustainable practices through social media	69	1	5	2.86	1.353
Highlighting through media the environmental impact of forestry practices	67	1	5	2.93	1.396
Highlighting environmental costs (detrimental effects to environment)	69	1	5	2.88	1.334
Easy-to-follow guides or toolkits for implementing sustainable practices	68	1	5	3.37	1.381
Easy-to-follow guides or toolkits for implementing sustainable practices through social media /internet	71	1	5	3.17	1.363
Decision-support systems that help forest owners / managers assess the costs and benefits of different sustainable practices	71	1	5	3.48	1.252
Color-coding to highlight forestry inputs that are environmentally friendly (i.e. Green for organic fertilizer)	70	1	5	2.29	1.353
Billboards outdoors, reminding forest owners / managers of key sustainable practices (i.e. messages like “Selective logging preserves biodiversity and enhances forest health”)	69	1	5	2.16	1.279
Highlighting forest owners / managers who are using sustainable forestry methods and seeing higher profits, better yields, or other positive outcomes	69	1	5	3.28	1.360
Highlighting / sharing collective achievements of forest owners / managers groups or cooperatives that have adopted sustainable practices	69	1	5	2.94	1.327
Highlighting the consequences of not adopting sustainable practices	69	1	5	3.14	1.342

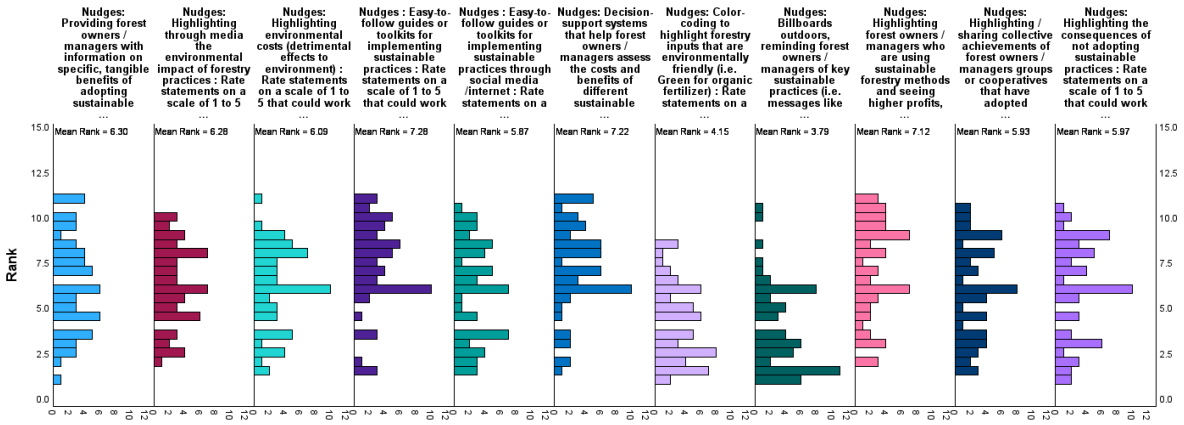
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 65 Test Statistic 109.528 df 10, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Nudges **that could work OTHER FORESTERS**:

Nudges:	N	Min	Max	Mean	Std. Dev.
Providing forest owners / managers with information on specific, tangible benefits of adopting sustainable practices through social media	63	1	5	3.30	1.173
Highlighting through media the environmental impact of forestry practices	61	1	5	3.13	1.162
Highlighting environmental costs (detrimental effects to environment)	63	1	5	3.08	1.209
Easy-to-follow guides or toolkits for implementing sustainable practices	64	1	5	3.47	1.208
Easy-to-follow guides or toolkits for implementing sustainable practices through social media /internet	64	1	5	3.02	1.202
Decision-support systems that help forest owners / managers assess the costs and benefits of different sustainable practices	66	1	5	3.55	1.192
Color-coding to highlight forestry inputs that are environmentally friendly (i.e. Green for organic fertilizer)	63	1	5	2.54	1.242
Billboards outdoors, reminding forest owners / managers of key sustainable practices (i.e. messages like “Selective logging preserves biodiversity and enhances forest health”)	63	1	5	2.43	1.329
Highlighting forest owners / managers who are using sustainable forestry methods and seeing higher profits, better yields, or other positive outcomes	63	1	5	3.38	1.250
Highlighting / sharing collective achievements of forest owners / managers groups or cooperatives that have adopted sustainable practices	63	1	5	3.06	1.318
Highlighting the consequences of not adopting sustainable practices	63	1	5	2.94	1.294

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 58 Test Statistic 94.915 df 10, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Nudges **that could work for the respondent / for others**

Paired Samples Statistics for Nudges

Paired Differences (Me− Other foresters)	Mean	Std. Deviation	t	df	Two-Sided p (sig)
Pair 1: Providing forest owners / managers with information on specific, tangible benefits of adopting sustainable practices through social media	-0.397	1.351	-2.332	62	0.023
Pair 2: Highlighting through media the environmental impact of forestry practices	-0.164	1.214	-1.055	60	0.296
Pair 3: Highlighting environmental costs (detrimental effects to environment)	-0.222	1.054	-1.673	62	0.099
Pair 4: Easy-to-follow guides or toolkits for implementing sustainable practices	-0.194	1.239	-1.230	61	0.223
Pair 5: Easy-to-follow guides or toolkits for implementing sustainable practices through social media /internet	0.141	0.924	1.218	63	0.228
Pair 6: Decision-support systems that help forest owners / managers assess the costs and benefits of different sustainable practices	-0.061	0.802	-0.614	65	0.541
Pair 7: Color-coding to highlight forestry inputs that are environmentally friendly (i.e. Green for organic fertilizer)	-0.254	1.402	-1.437	62	0.156
Pair 8: Billboards outdoors, reminding forest owners / managers of key sustainable practices (i.e. messages like “Selective logging preserves biodiversity and enhances forest health”)	-0.254	0.983	-2.050	62	0.045
Pair 9: Highlighting forest owners / managers who are using sustainable forestry methods and seeing higher profits, better yields, or other positive outcomes	-0.095	1.266	-0.597	62	0.553
Pair 10: Highlighting / sharing collective achievements of forest owners / managers groups or cooperatives that have adopted sustainable practices	-0.159	1.066	-1.182	62	0.242
Pair 11: Highlighting the consequences of not adopting sustainable practices	0.206	1.370	1.196	62	0.236
Pair 15: High quality relations with forest owners and forest managers: shared visions and goals	-0.048	0.728	-0.519	62	0.605

Appendix 2B

FORESTERS' ADVISORS DATA ANALYSIS

Frequencies of Gender

Gender	Counts	% of Total	Cumulative %
Male	21	60.0%	60.0%
Female	14	40.0%	100.0%

Frequencies of the Highest completed level of education

Highest completed level of education	Counts	% of Total	Cumulative %
Master, Postgraduate or doctoral degree	19	54.29%	54.29%
Bachelor's degree or equivalent level	14	40.00%	94.29%
College entrance qualification	2	5.71%	100.00%

Frequencies of Marital Status

Marital Status	Counts	% of Total	Cumulative %
Married	25	71.43%	71.43%
Single	7	20.00%	91.43%
Divorced	3	8.57%	100.00%

Frequencies of Country of activity

Country of activity	Counts	% of Total	Cumulative %
Portugal	13	37.14%	37.14%
UK	12	34.29%	71.43%
Lithuania	8	22.86%	94.29%
Finland	1	2.86%	97.14%
Sweden	1	2.86%	100.00%

Frequencies of Advisory role

Advisory role	Counts	% of Total	Cumulative %
Sustainability, Biodiversity & Climate	8	32.00%	32.00%
Forest Management & Advisory	7	28.00%	60.00%
Certification, Regulation & Compliance	5	20.00%	80.00%
Grants, Projects & Stakeholder Engagement	5	20.00%	100.00%

Descriptives of Foresters' Advisors Activities:

Foresters' Advisors Activities	N	Min	Max	Mean	Std. Dev.
Managing forestry subsidies and grants	35	1	5	3.54	1.400
Implementing sustainable forest management practices	34	2	5	3.97	.870
Forest certification schemes (e.g., FSC, PEFC)	34	1	5	3.56	1.481
Biodiversity conservation and habitat restoration	35	2	5	3.91	.781
Forest health monitoring and pest management	34	1	5	3.26	1.109
Forest inventory and mapping	33	1	5	3.39	1.298
Advising on forest carbon projects and carbon credits	34	1	5	2.91	1.083
Promoting agroforestry and silvopasture systems	34	1	5	2.74	1.214
Forest product marketing and value-added products	34	1	5	2.94	1.369
Introducing new technologies (e.g., remote sensing, GIS)	34	1	5	3.12	1.225
Providing training and education on forestry practices	34	1	5	3.41	1.184
Forest policy and regulation compliance	34	1	5	4.09	1.138
Community engagement and stakeholder consultation	35	1	5	3.63	1.215
Forest fire prevention and management	34	1	5	2.62	1.393
Ecosystem services and payment for ecosystem services (PES) schemes	34	1	5	2.88	1.365
Ownership services, ownership transitions	34	1	5	2.38	1.371
Forest taxation	34	1	5	1.85	1.019

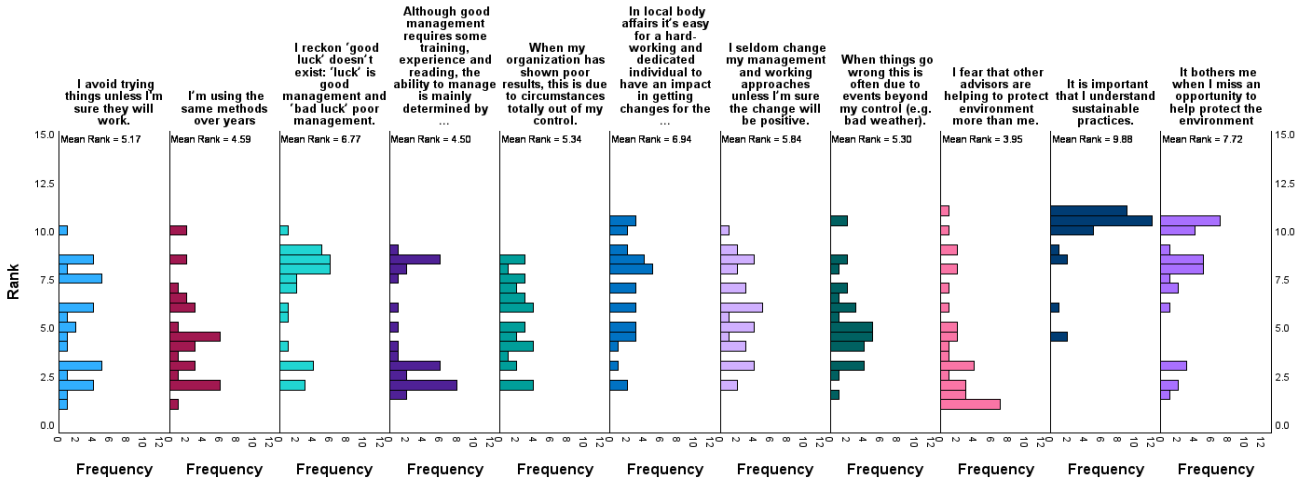
Note*: Answers range from Never (1) to Always (5)*

Descriptives of Foresters' Advisors Attitudes:

Foresters' Advisors Attitudes	N	Min	Max	Mean	Std. Dev.
I avoid trying things unless I'm sure they will work.	35	1	4	2.40	1.063
I'm using the same methods over years	35	1	5	2.29	1.126
I reckon 'good luck' doesn't exist: 'luck' is good management and 'bad luck' poor management.	34	1	5	3.09	1.190
Although good management requires some training, experience and reading, the ability to manage is mainly determined by genes.	35	1	4	2.23	1.087
When my organization has shown poor results, this is due to circumstances totally out of my control.	34	1	5	2.53	1.022
In local body affairs it's easy for a hard-working and dedicated individual to have an impact in getting changes for the better.	35	2	5	3.20	.994
I seldom change my management and working approaches unless I'm sure the change will be positive.	35	1	5	2.66	1.187
When things go wrong this is often due to events beyond my control (e.g. bad weather).	34	1	5	2.50	1.022
I fear that other advisors are helping to protect environment more than me.	35	1	5	1.97	1.294
It is important that I understand sustainable practices.	35	3	5	4.60	.553
It bothers me when I miss an opportunity to help protect the environment	35	1	5	3.71	1.274

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 32 Test Statistic 100.083 df 10, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*

Note*: Answers range from Not at all true of me (1) to Extremely true of me (5)*

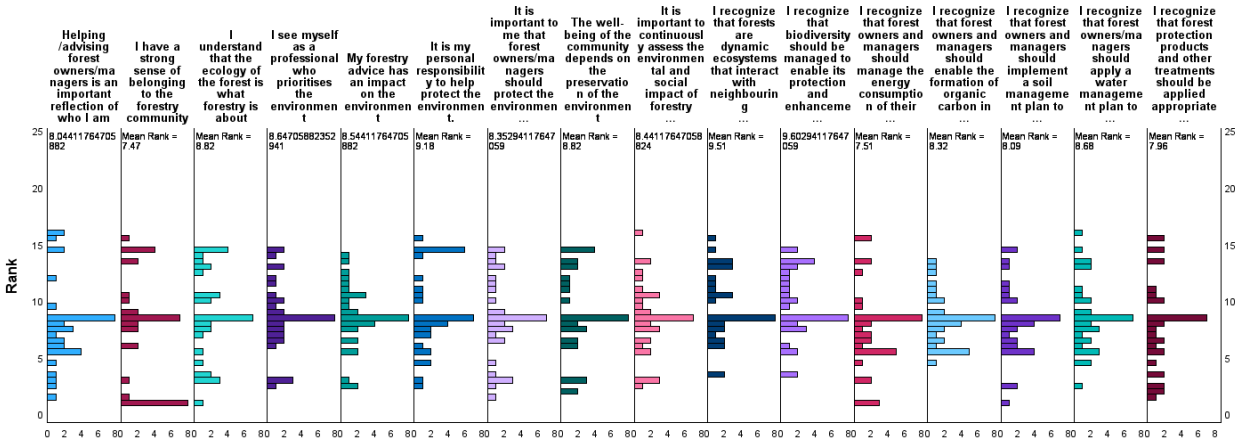


Descriptives of Foresters' Advisors Perceptions:

Perceptions	N	Min	Max	Mean	Std. Dev.
Helping /advising forest owners/managers is an important reflection of who I am	35	3	5	3.51	0.702
I have a strong sense of belonging to the forestry community	35	1	5	2.97	1.361
I understand that the ecology of the forest is what forestry is about	35	1	5	3.46	1.067
I see myself as a professional who prioritises the environment	35	1	5	3.51	0.981
My forestry advice has an impact on the environment	35	1	5	3.49	0.919
It is my personal responsibility to help protect the environment.	35	1	5	3.63	1.114
It is important to me that forest owners/managers should protect the environment even if it slows down economic growth of their forestry activities.	35	1	5	3.43	1.008
The well-being of the community depends on the preservation of the environment	34	1	5	3.47	1.134
It is important to continuously assess the environmental and social impact of forestry activities	35	1	5	3.49	1.011
I recognize that forests are dynamic ecosystems that interact with neighbouring landscapes.	35	1	5	3.66	.998
I recognize that biodiversity should be managed to enable its protection and enhancement	35	1	5	3.63	1.060
I recognize that forest owners and managers should manage the energy consumption of their forestry activities.	35	1	5	3.23	1.031
I recognize that forest owners and managers should enable the formation of organic carbon in soils and biomass.	35	1	5	3.46	0.886
I recognize that forest owners and managers should implement a soil management plan to enhance and optimize soil health	35	1	5	3.34	0.998
I recognize that forest owners/managers should apply a water management plan to improve and optimize water use and quality	35	1	5	3.46	0.950
I recognize that forest protection products and other treatments should be applied appropriately and as recommended.	35	1	5	3.31	1.022

Note*: Answers range from Much less than the advisors that I know to Much more than the advisors that I know*

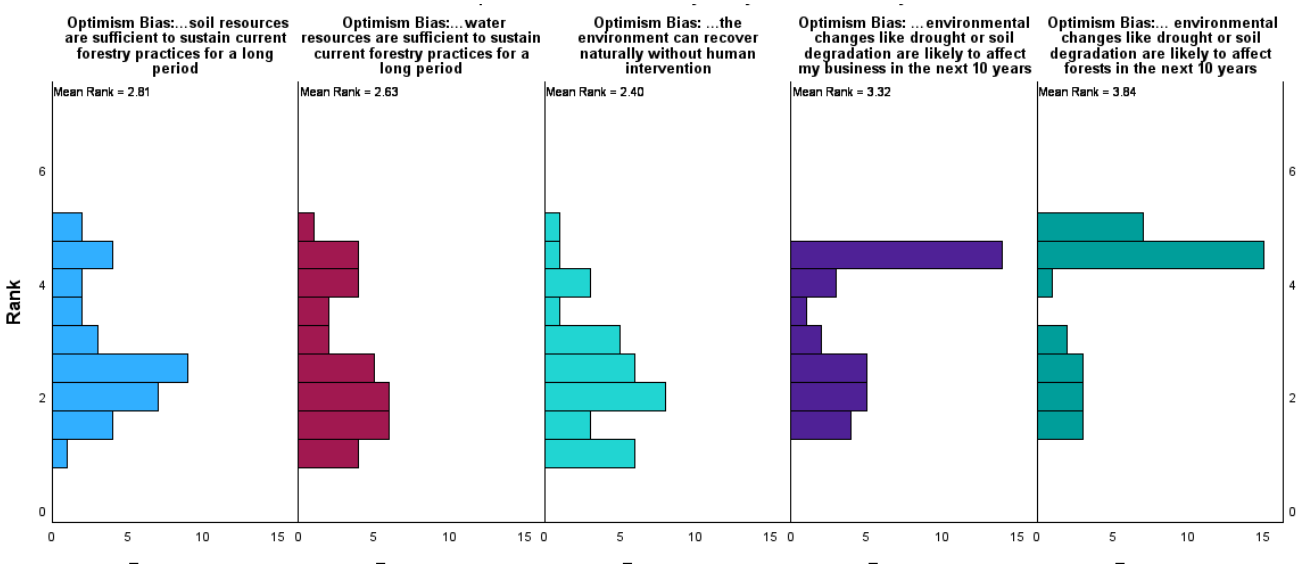
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 34 Test Statistic 15.285 Degree of Freedom 15, Asymptotic Sig.(2-sided test) 0.485, (there is NO evidence of statistically significant differences among these perceptions)*


Rank
Helping /advising forest owners/managers is an important reflection of who I am
Mean Rank = 8.04411764705882
I have a strong sense of belonging to the forestry community
Mean Rank = 7.47
I understand that the ecology of the forest is what forestry is about
Mean Rank = 8.82
I see myself as a professional who prioritises the environment
Mean Rank = 8.64705882352941
My forestry advice has an impact on the environment
Mean Rank = 8.54411764705882
It is my personal responsibility to help protect the environment.
Mean Rank = 9.18
It is important to me that forest owners/managers should protect the environmen ...
Mean Rank = 8.35294117647059
The well-being of the community depends on the preservation of the environment
Mean Rank = 8.82
It is important to continuously assess the environmental and social impact of forestry ...
Mean Rank = 8.44117647058824
I recognize that forests are dynamic ecosystems that interact with neighbouring ...
Mean Rank = 9.51
I recognize that biodiversity should be managed to enable its protection and enhanceme ...
Mean Rank = 9.60294117647059
I recognize that forest owners and managers should manage the energy consumption of their ...
Mean Rank = 7.51
I recognize that forest owners and managers should enable the formation of organic carbon in ...
Mean Rank = 8.32
I recognize that forest owners and managers should implement a soil management plan to ...
Mean Rank = 8.09
I recognize that forest owners/managers should apply a water management plan to ...
Mean Rank = 8.68
I recognize that forest protection products and other treatments should be applied appropriate ...
Mean Rank = 7.96

Descriptives of Optimism Bias:

Optimism Bias	N	Min	Max	Mean	Std. Dev.
…soil resources are sufficient to sustain current forestry practices for a long period	34	1	5	3.03	1.141
…water resources are sufficient to sustain current forestry practices for a long period	34	1	5	2.82	1.193
…the environment can recover naturally without human intervention	34	1	5	2.71	1.088
…environmental changes like drought or soil degradation are likely to affect my business in the next 10 years	34	2	5	3.59	1.158
… environmental changes like drought or soil degradation are likely to affect forests in the next 10 years	34	2	5	4.03	1.058

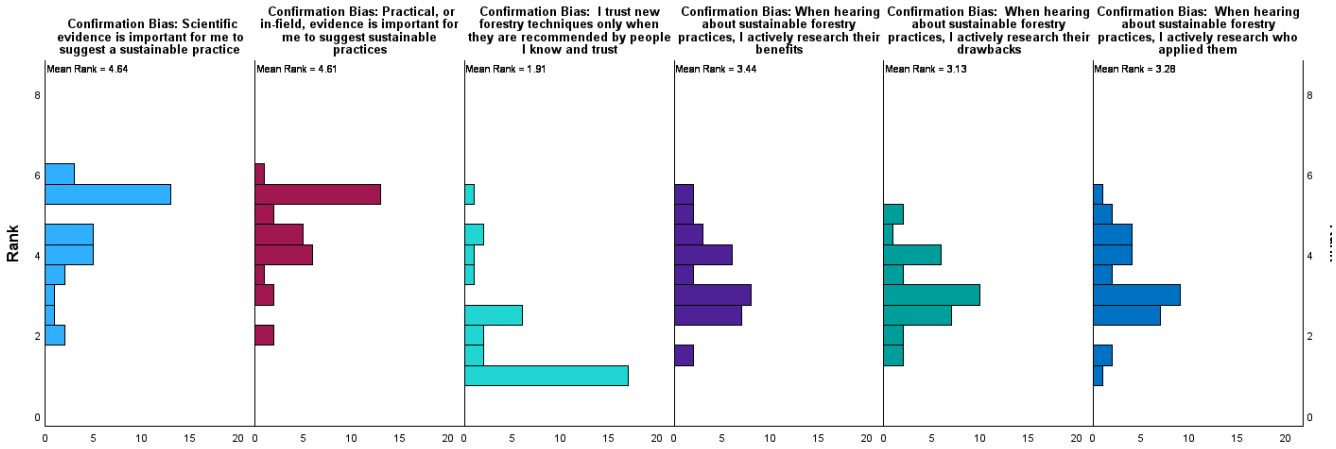
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 34 Test Statistic 23.078 Degree of Freedom 4, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Confirmation Bias:

Confirmation Bias	N	Min	Max	Mean	Std. Dev.
Scientific evidence is important for me to suggest a sustainable practice	34	3	5	4.53	0.615
Practical, or in-field, evidence is important for me to suggest sustainable practices	32	3	5	4.50	0.622
I trust new forestry techniques only when they are recommended by people I know and trust	34	2	5	3.18	0.797
When hearing about sustainable forestry practices, I actively research their benefits	34	3	5	4.12	0.640
When hearing about sustainable forestry practices, I actively research their drawbacks	34	3	5	4.00	0.550
When hearing about sustainable forestry practices, I actively research who applied them	34	2	5	4.03	0.674

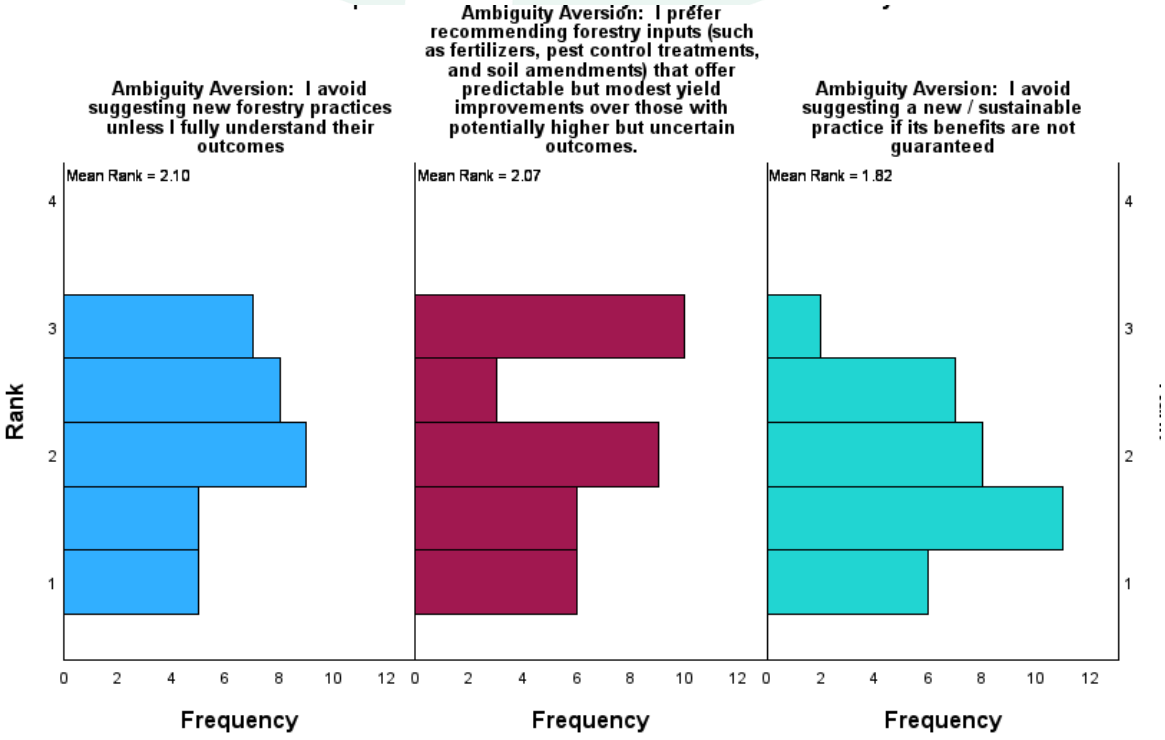
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 32 Test Statistic 69.465 Degree of Freedom 5, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Ambiguity Aversion:

Ambiguity Aversion	N	Min	Max	Mean	Std. Dev.
I avoid suggesting new forestry practices unless I fully understand their outcomes	34	1	5	3.24	1.208
I prefer recommending forestry inputs (such as fertilizers, pest control treatments, and soil amendments) that offer predictable but modest yield improvements over those with potentially higher but uncertain outcomes.	34	1	5	3.38	1.181
I avoid suggesting a new / sustainable practice if its benefits are not guaranteed	34	2	5	3.18	.968

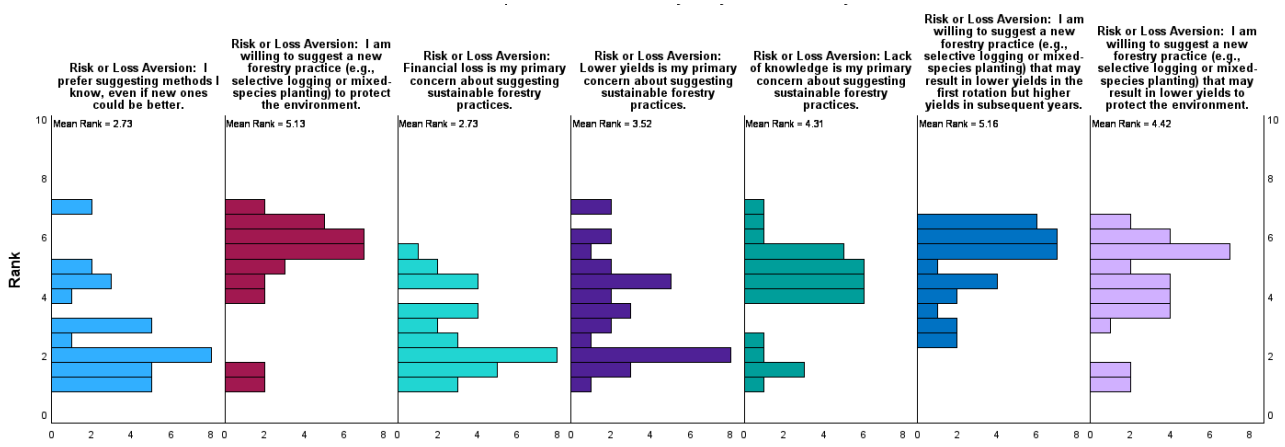
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 34 Test Statistic 2.370 Degree of Freedom 2, Asymptotic Sig.(2-sided test) 0.306, (there is NO evidence of statistically significant differences among these biases)*



Descriptives of Risk or Loss Aversion:

Risk or Loss Aversion	N	Min	Max	Mean	Std. Dev.
I prefer suggesting methods I know, even if new ones could be better.	34	2	4	2.76	.819
I am willing to suggest a new forestry practice (e.g., selective logging or mixed-species planting) to protect the environment.	34	1	5	4.00	1.015
Financial loss is my primary concern about suggesting sustainable forestry practices.	34	1	5	2.91	.933
Lower yields is my primary concern about suggesting sustainable forestry practices.	33	2	5	3.30	.883
Lack of knowledge is my primary concern about suggesting sustainable forestry practices.	34	2	5	3.68	.727
I am willing to suggest a new forestry practice (e.g., selective logging or mixed-species planting) that may result in lower yields in the first rotation but higher yields in subsequent years.	34	3	5	4.12	.769
I am willing to suggest a new forestry practice (e.g., selective logging or mixed-species planting) that may result in lower yields to protect the environment.	33	2	5	3.70	.951

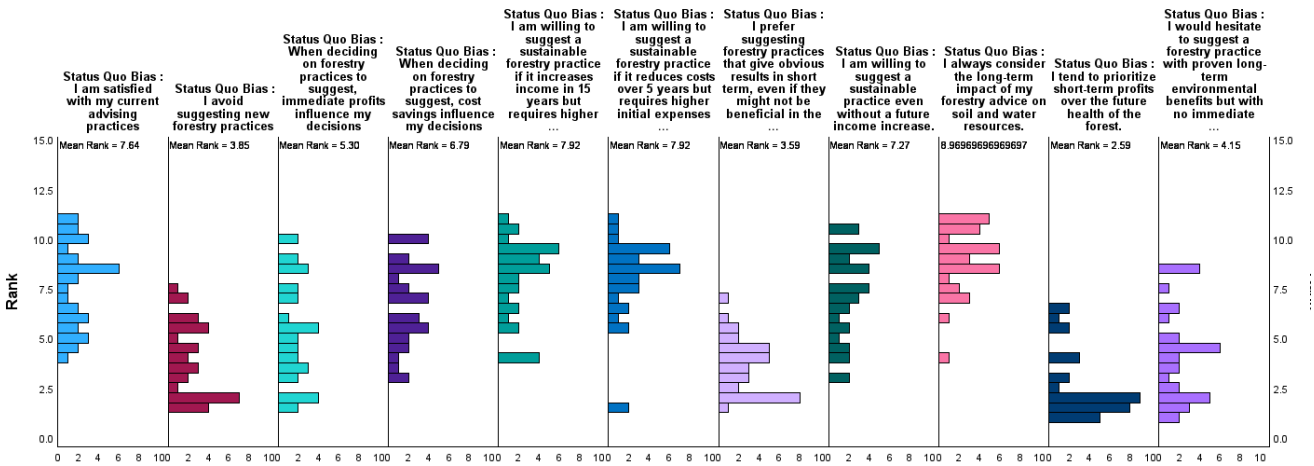
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 32 Test Statistic 54.930 Degree of Freedom 8, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Status Quo Biases:

Status Quo Biases	N	Min	Max	Mean	Std. Dev.
I am satisfied with my current advising practices	34	2	5	3.62	0.817
I avoid suggesting new forestry practices	34	1	4	2.29	0.760
When deciding on forestry practices to suggest, immediate profits influence my decisions	34	1	5	2.76	1.182
When deciding on forestry practices to suggest, cost savings influence my decisions	34	1	5	3.32	0.976
I am willing to suggest a sustainable forestry practice if it increases income in 15 years but requires higher initial expenses now	34	3	5	3.85	0.702
I am willing to suggest a sustainable forestry practice if it reduces costs over 5 years but requires higher initial expenses now	33	2	5	3.79	0.696
I prefer suggesting forestry practices that give obvious results in short term, even if they might not be beneficial in the long term.	34	1	4	2.21	0.729
I am willing to suggest a sustainable practice even without a future income increase.	34	1	5	3.56	0.960
I always consider the long-term impact of my forestry advice on soil and water resources.	34	2	5	4.15	0.610
I tend to prioritize short-term profits over the future health of the forest.	34	1	4	1.76	0.855
I would hesitate to suggest a forestry practice with proven long-term environmental benefits but with no immediate financial gain.	34	1	4	2.41	0.857

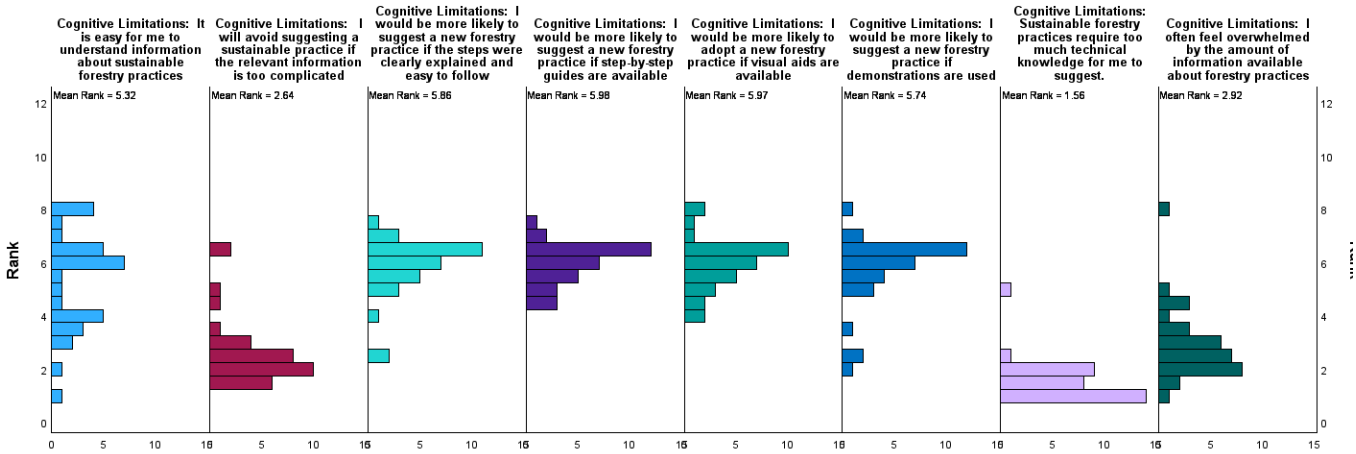
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 33 Test Statistic 170.604 Degree of Freedom 10, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Cognitive Limitations:

Cognitive Limitations:	N	Min	Max	Mean	Std. Dev.
It is easy for me to understand information about sustainable forestry practices	34	2	5	4.09	0.712
I will avoid suggesting a sustainable practice if the relevant information is too complicated	34	1	4	2.71	0.871
I would be more likely to suggest a new forestry practice if the steps were clearly explained and easy to follow	34	2	5	4.24	0.781
I would be more likely to suggest a new forestry practice if step-by-step guides are available	34	3	5	4.29	0.629
I would be more likely to adopt a new forestry practice if visual aids are available	34	3	5	4.32	0.535
I would be more likely to suggest a new forestry practice if demonstrations are used	34	2	5	4.18	0.834
Sustainable forestry practices require too much technical knowledge for me to suggest.	34	1	4	1.94	0.776
I often feel overwhelmed by the amount of information available about forestry practices	33	1	5	2.79	0.893

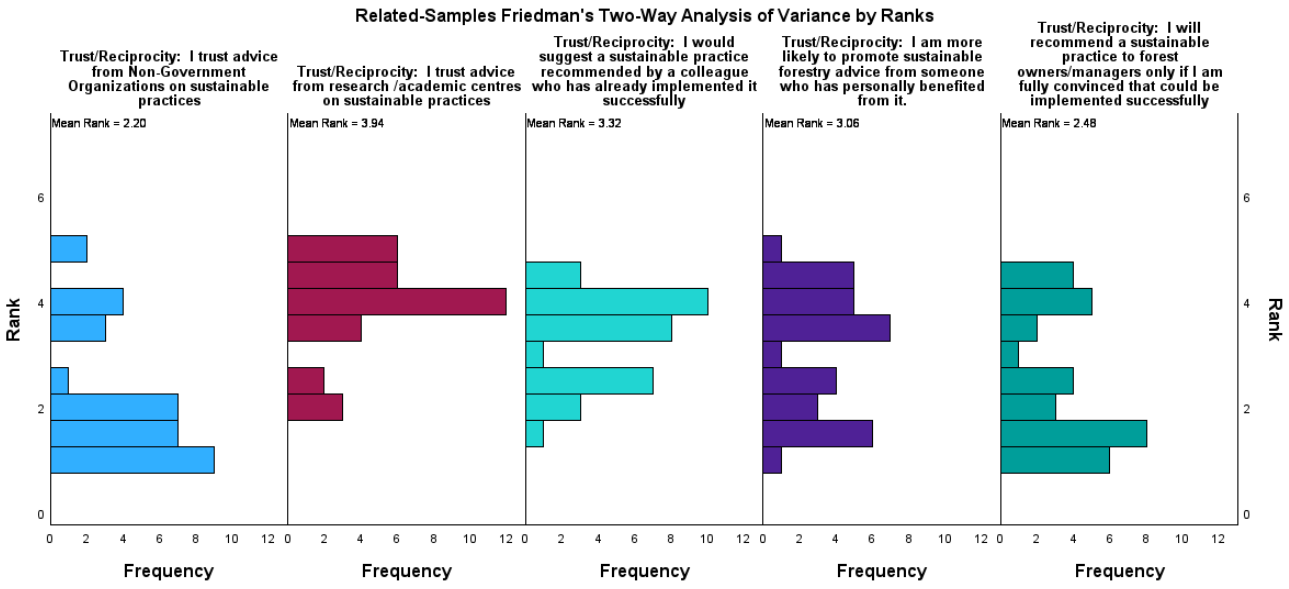
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 33 Test Statistic 154.089 Degree of Freedom 7, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Trust/ Reciprocity biases:

Trust/Reciprocity biases:	N	Min	Max	Mean	Std. Dev.
I trust advice from Non-Government Organizations on sustainable practices	33	1	5	3.15	1.121
I trust advice from research /academic centres on sustainable practices	33	4	5	4.33	0.479
I would suggest a sustainable practice recommended by a colleague who has already implemented it successfully	33	2	5	3.94	0.704
I am more likely to promote sustainable forestry advice from someone who has personally benefited from it.	33	2	5	3.79	0.820
I will recommend a sustainable practice to forest owners/managers only if I am fully convinced that could be implemented successfully	33	2	5	3.45	0.938

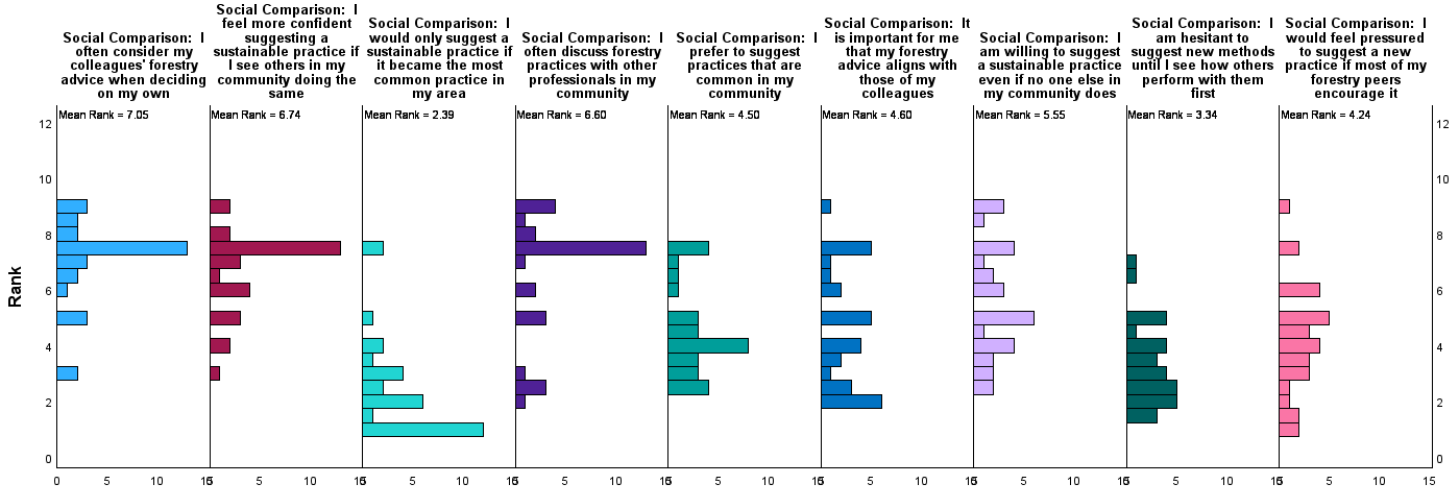
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 33 Test Statistic 32.352 Degree of Freedom 4, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Social Comparison biases:

Social Comparison biases:	N	Min	Max	Mean	Std. Dev.
I often consider my colleagues' forestry advice when deciding on my own	34	3	5	4.03	0.577
I feel more confident suggesting a sustainable practice if I see others in my community doing the same	34	2	5	3.91	0.753
I would only suggest a sustainable practice if it became the most common practice in my area	32	1	4	2.22	0.906
I often discuss forestry practices with other professionals in my community	34	1	5	3.85	0.958
I prefer to suggest practices that are common in my community	33	1	5	3.09	0.879
It is important for me that my forestry advice aligns with those of my colleagues	34	1	5	3.09	1.083
I am willing to suggest a sustainable practice even if no one else in my community does	34	2	5	3.62	0.888
I am hesitant to suggest new methods until I see how others perform with them first	34	2	4	2.59	0.743
I would feel pressured to suggest a new practice if most of my forestry peers encourage it	34	1	5	2.97	0.904

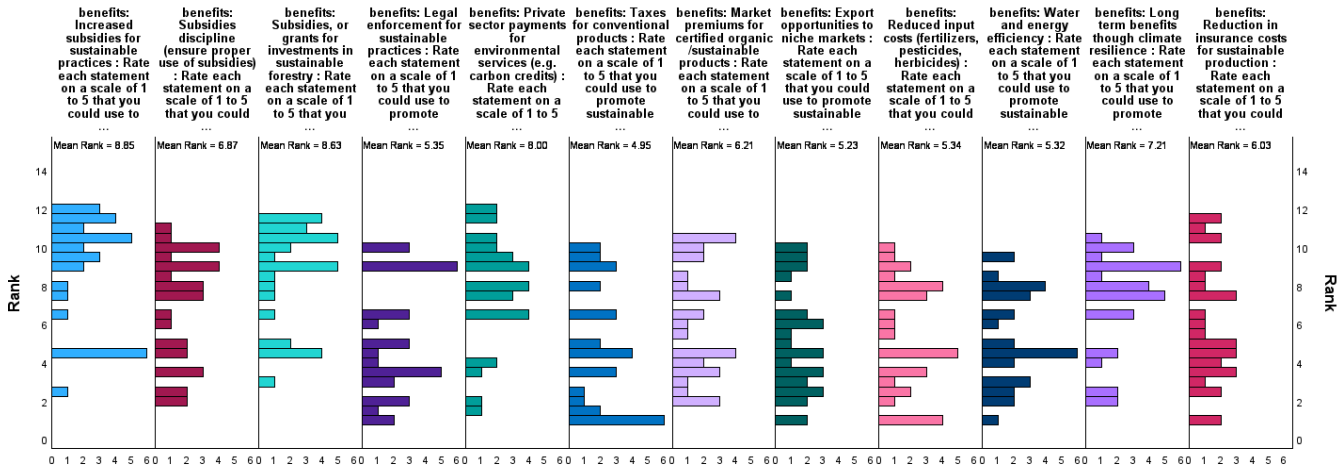
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 31 Test Statistic 106.218 Degree of Freedom 8, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Economics Benefits - Motives **that advisors like me could use to promote sustainable forestry practices**

Economics Benefits - Motives:	N	Min	Max	Mean	Std. Dev.
Increased subsidies for sustainable practices	32	1	5	4.34	1.153
Subsidies discipline (ensure proper use of subsidies)	32	1	5	3.75	1.414
Subsidies, or grants for investments in sustainable forestry	32	1	5	4.28	1.114
Legal enforcement for sustainable practices	32	2	5	3.38	1.100
Private sector payments for environmental services (e.g. carbon credits)	32	1	5	4.28	0.924
Taxes for conventional products	32	1	5	2.91	1.489
Market premiums for certified organic /sustainable products	32	1	5	3.66	1.359
Export opportunities to niche markets	32	1	5	3.31	1.424
Reduced input costs (fertilizers, pesticides, herbicides)	32	1	5	3.09	1.304
Water and energy efficiency	32	1	5	3.34	1.208
Long term benefits though climate resilience	32	2	5	3.94	0.801
Reduction in insurance costs for sustainable production	31	1	5	3.61	1.202

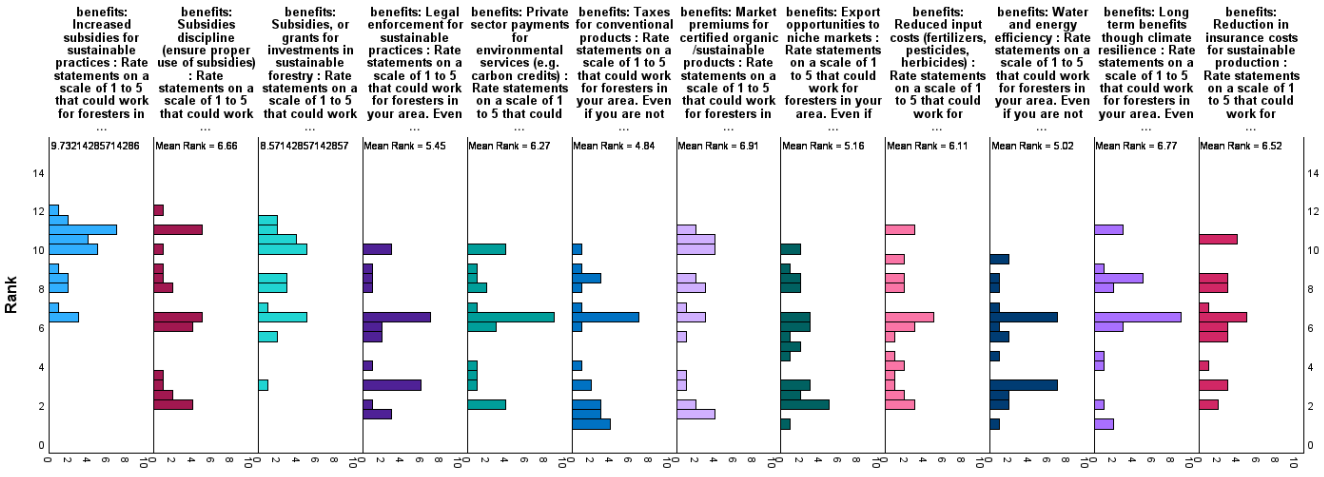
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 31 Test Statistic 63.904 Degree of Freedom 11, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



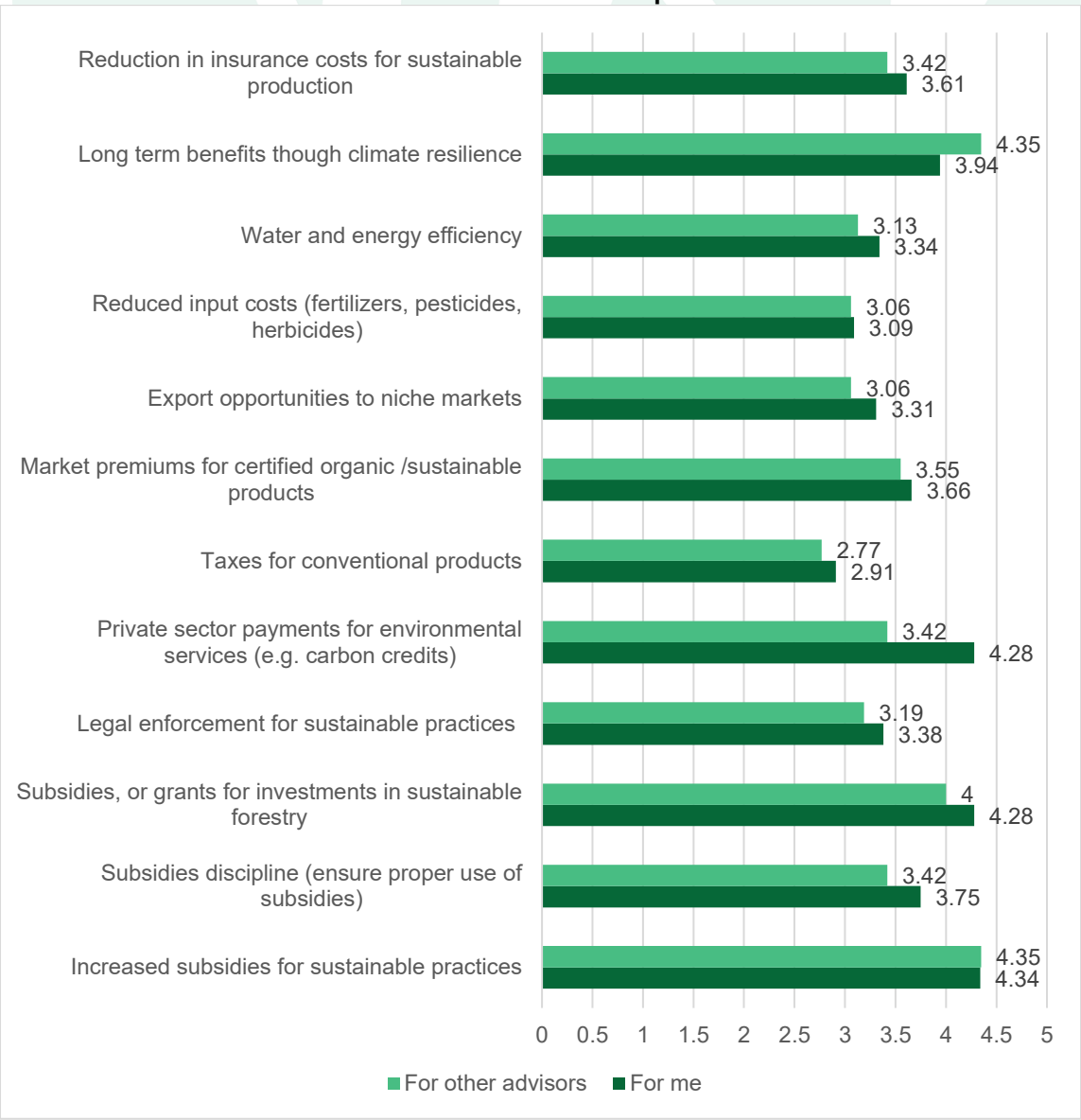
Descriptives of Economics Benefits - **that OTHER advisors could use to promote sustainable forestry practices**

Economics Benefits - Motives:	N	Min	Max	Mean	Std. Dev.
Increased subsidies for sustainable practices	31	1	5	4.35	1.199
Subsidies discipline (ensure proper use of subsidies)	31	1	5	3.42	1.455
Subsidies, or grants for investments in sustainable forestry	31	1	5	4.00	1.317
Legal enforcement for sustainable practices	31	1	5	3.19	1.223
Private sector payments for environmental services (e.g. carbon credits)	31	1	5	3.42	1.336
Taxes for conventional products	31	1	5	2.77	1.477
Market premiums for certified organic /sustainable products	31	1	5	3.55	1.609
Export opportunities to niche markets	31	1	5	3.06	1.389
Reduced input costs (fertilizers, pesticides, herbicides)	31	1	5	3.06	1.237
Water and energy efficiency	31	1	5	3.13	1.088
Long term benefits though climate resilience	31	1	5	4.35	1.199
Reduction in insurance costs for sustainable production	31	1	5	3.42	1.455

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 28 Test Statistic 66.079 Degree of Freedom 11, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Economics Benefits - Motives **that could work for the respondent / for other advisors**



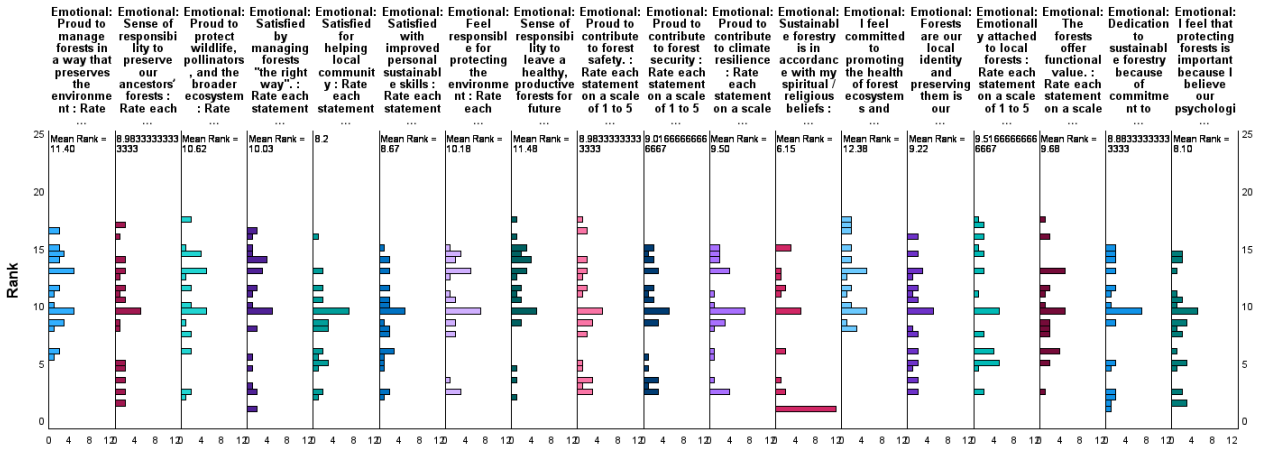
Paired Samples Statistics for Economics Benefits - Motives

Paired Differences (Me− Other Advisors)	Mean	Std. Deviation	t	df	Two-Sided p (sig)
Pair 1: Increased subsidies for sustainable practices	-0.032	0.912	-0.197	30	0.845
Pair 2: Subsidies discipline (ensure proper use of subsidies)	0.355	0.661	2.990	30	0.006
Pair 3: Subsidies, or grants for investments in sustainable forestry	0.258	0.965	1.489	30	0.147
Pair 4: Legal enforcement for sustainable practices	0.194	1.195	0.902	30	0.374
Pair 5: Private sector payments for environmental services (e.g. carbon credits)	0.903	1.326	3.794	30	0.001
Pair 6: Taxes for conventional products	0.129	0.922	0.779	30	0.442
Pair 7: Market premiums for certified organic /sustainable products	0.129	1.147	0.626	30	0.536
Pair 8: Export opportunities to niche markets	0.258	0.999	1.438	30	0.161
Pair 9: Reduced input costs (fertilizers, pesticides, herbicides)	0.000	1.238	0.000	30	1.000
Pair 10: Water and energy efficiency	0.194	0.749	1.438	30	0.161
Pair 11: Long term benefits though climate resilience	0.655	1.010	3.494	28	0.002
Pair 12: Reduction in insurance costs for sustainable production	0.333	1.322	1.381	29	0.178

Descriptives of Emotional Motives **that advisors like me could use to promote sustainable forestry practices**

Emotional Motives:	N	Min	Max	Mean	Std. Dev.
Proud to manage forests in a way that preserves the environment	32	2	5	4.16	0.884
Sense of responsibility to preserve our ancestors' forests	32	2	5	3.94	0.948
Proud to protect wildlife, pollinators, and the broader ecosystem	32	2	5	4.03	0.967
Satisfied by managing forests "the right way".	32	2	5	4.00	1.047
Satisfied for helping local community	32	2	5	3.87	0.871
Satisfied with improved personal sustainable skills	32	2	5	3.84	0.954
Feel responsible for protecting the environment	32	2	5	4.16	0.884
Sense of responsibility to leave a healthy, productive forests for future generations	32	2	5	4.34	0.787
Proud to contribute to forest safety.	32	1	5	3.84	1.194
Proud to contribute to forest security	30	1	5	3.80	1.243
Proud to contribute to climate resilience	32	2	5	3.94	1.014
Sustainable forestry is in accordance with my spiritual / religious beliefs	32	1	5	3.00	1.796
I feel committed to promoting the health of forest ecosystems and biodiversity.	32	2	5	4.34	0.937
Forests are our local identity and preserving them is our responsibility.	32	1	5	3.88	1.157
Emotionally attached to local forests	32	2	5	4.03	0.999
The forests offer functional value.	32	2	5	4.03	0.967
Dedication to sustainable forestry because of commitment to organizational mission.	32	1	5	3.75	1.191
I feel that protecting forests is important because I believe our psychological wellbeing is connected to nature and forests.	32	2	5	3.88	0.907

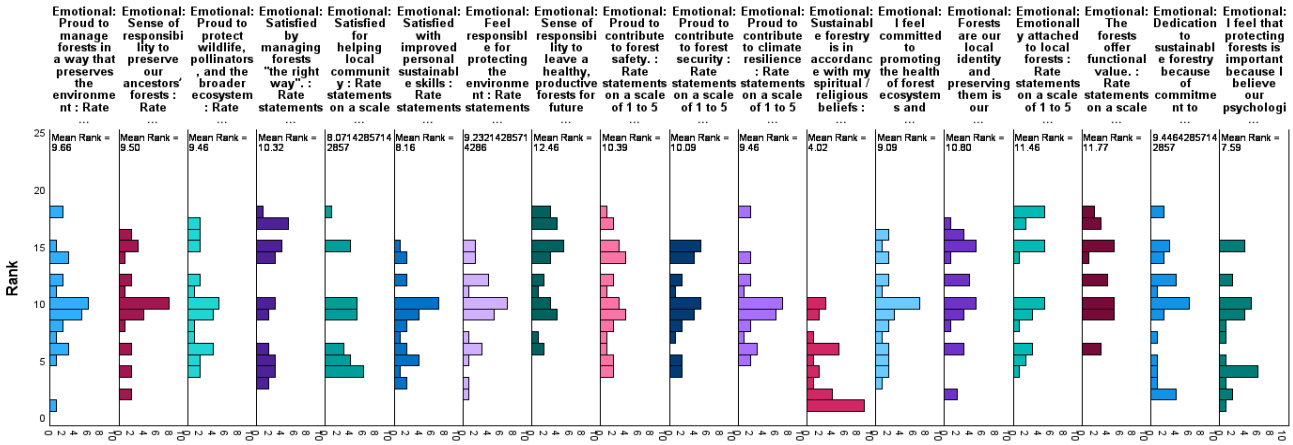
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 30 Test Statistic 54.630 df 17, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*


Emotional: Proud to manage forests in a way that preserves the environment : Rate ...
Mean Rank = 11.40
Emotional: Sense of responsibility to preserve our ancestors' forests : Rate each ...
Mean Rank = 8.983333333333333
Emotional: Proud to protect wildlife, pollinators, and the broader ecosystem : Rate ...
Mean Rank = 10.62
Emotional: Satisfied by managing forests "the right way". : Rate each statement ...
Mean Rank = 10.03
Emotional: Satisfied for helping local community : Rate each statement ...
8.2
Emotional: Satisfied with improved personal sustainable skills : Rate each statement ...
Mean Rank = 8.67
Emotional: Feel responsible for protecting the environment : Rate each ...
Mean Rank = 10.18
Emotional: Sense of responsibility to leave a healthy, productive forests for future ...
Mean Rank = 11.48
Emotional: Proud to contribute to forest safety. : Rate each statement on a scale of 1 to 5 ...
Mean Rank = 8.983333333333333
Emotional: Proud to contribute to forest security : Rate each statement on a scale of 1 to 5 ...
Mean Rank = 9.016666666666667
Emotional: Proud to contribute to climate resilience : Rate each statement on a scale ...
Mean Rank = 9.50
Emotional: Sustainable forestry is in accordance with my spiritual / religious beliefs : ...
Mean Rank = 6.15
Emotional: I feel committed to promoting the health of forest ecosystems and ...
Mean Rank = 12.38
Emotional: Forests are our local identity and preserving them is our ...
Mean Rank = 9.22
Emotional: Emotionally attached to local forests : Rate each statement on a scale of 1 to 5 ...
Mean Rank = 9.516666666666667
Emotional: The forests offer functional value. : Rate each statement on a scale ...
Mean Rank = 9.68
Emotional: Dedication to sustainable forestry because of commitment to ...
Mean Rank = 8.883333333333333
Emotional: I feel that protecting forests is important because I believe our psychologi ...
Mean Rank = 9.10
Rank
0
5
10
15
20
25
0 4 8 12

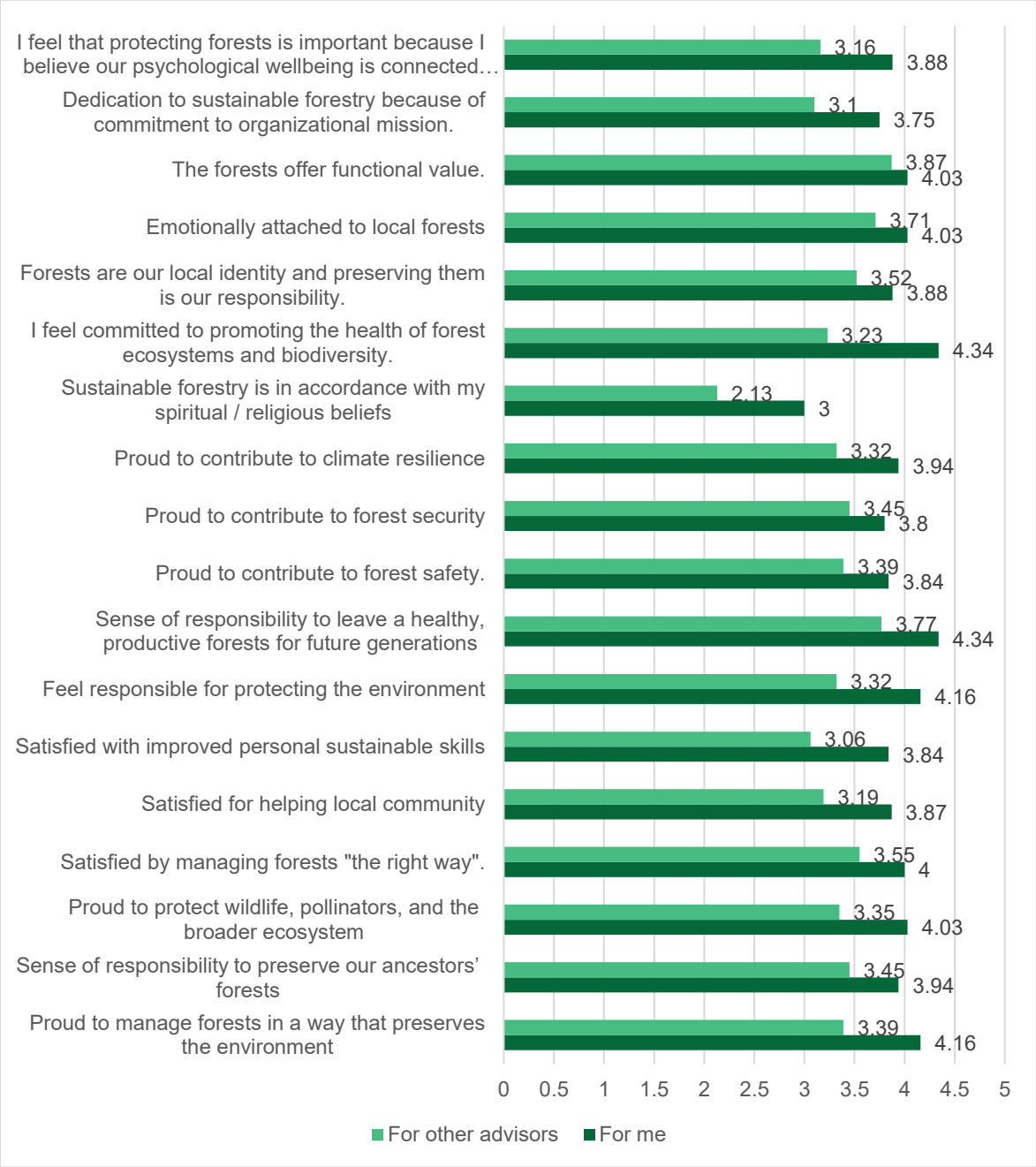
Descriptives of Emotional Motives **that OTHER advisors could use to promote sustainable forestry practices**:

Emotional Motives	N	Min	Max	Mean	Std. Dev.
Proud to manage forests in a way that preserves the environment	31	1	5	3.39	1.230
Sense of responsibility to preserve our ancestors' forests	31	1	5	3.45	1.179
Proud to protect wildlife, pollinators, and the broader ecosystem	31	1	5	3.35	1.082
Satisfied by managing forests "the right way".	31	1	5	3.55	1.362
Satisfied for helping local community	31	1	5	3.19	1.046
Satisfied with improved personal sustainable skills	31	1	5	3.06	1.237
Feel responsible for protecting the environment	31	1	5	3.32	1.166
Sense of responsibility to leave a healthy, productive forests for future generations	31	1	5	3.77	1.230
Proud to contribute to forest safety.	31	1	5	3.39	1.308
Proud to contribute to forest security	29	1	5	3.45	1.270
Proud to contribute to climate resilience	31	1	5	3.32	1.077
Sustainable forestry is in accordance with my spiritual / religious beliefs	30	1	5	2.13	1.358
I feel committed to promoting the health of forest ecosystems and biodiversity.	31	1	5	3.23	1.230
Forests are our local identity and preserving them is our responsibility.	31	1	5	3.52	1.235
Emotionally attached to local forests	31	1	5	3.71	1.243
The forests offer functional value.	31	1	5	3.87	1.176
Dedication to sustainable forestry because of commitment to organizational mission.	31	1	5	3.10	1.136
I feel that protecting forests is important because I believe our psychological wellbeing is connected to nature and forests.	31	1	5	3.16	1.128

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 28Test Statistic 84.709, Degree of Freedom 17, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*


Emotional: Proud to manage forests in a way that preserves the environment : Rate ...
Emotional: Sense of responsibility to preserve our ancestors' forests : Rate ...
Emotional: Proud to protect wildlife, pollinators, and the broader ecosystem : Rate ...
Emotional: Satisfied by managing forests "the right way". : Rate statements ...
Emotional: Satisfied for helping local community : Rate statements on a scale ...
Emotional: Satisfied with improved personal sustainable skills : Rate statements ...
Emotional: Feel responsible for protecting the environment : Rate statements ...
Emotional: Sense of responsibility to leave a healthy, productive forests for future ...
Emotional: Proud to contribute to forest safety. : Rate statements on a scale of 1 to 5 ...
Emotional: Proud to contribute to forest security : Rate statements on a scale of 1 to 5 ...
Emotional: Proud to contribute to climate resilience : Rate statements on a scale of 1 to 5 ...
Emotional: Sustainable forestry is in accordance with my spiritual / religious beliefs : ...
Emotional: I feel committed to promoting the health of forest ecosystems and ...
Emotional: Forests are our local identity and preserving them is our ...
Emotional: Emotionally attached to local forests : Rate statements on a scale of 1 to 5 ...
Emotional: The forests offer functional value. : Rate statements on a scale ...
Emotional: Dedication to sustainable forestry because of commitment to ...
Emotional: I feel that protecting forests is important because I believe our psychologi ...
Mean Rank = 9.66
Mean Rank = 9.50
Mean Rank = 9.46
Mean Rank = 10.32
8.071428571 2857
Mean Rank = 8.16
9.232142857 4286
Mean Rank = 12.46
Mean Rank = 10.39
Mean Rank = 10.09
Mean Rank = 9.46
Mean Rank = 4.02
Mean Rank = 9.09
Mean Rank = 10.80
Mean Rank = 11.46
Mean Rank = 11.77
9.446428571 2857
Mean Rank = 7.59
Rank
0
5
10
15
20
25

Emotional Motives **that could work for the respondent / for other foresters 'Advisors**



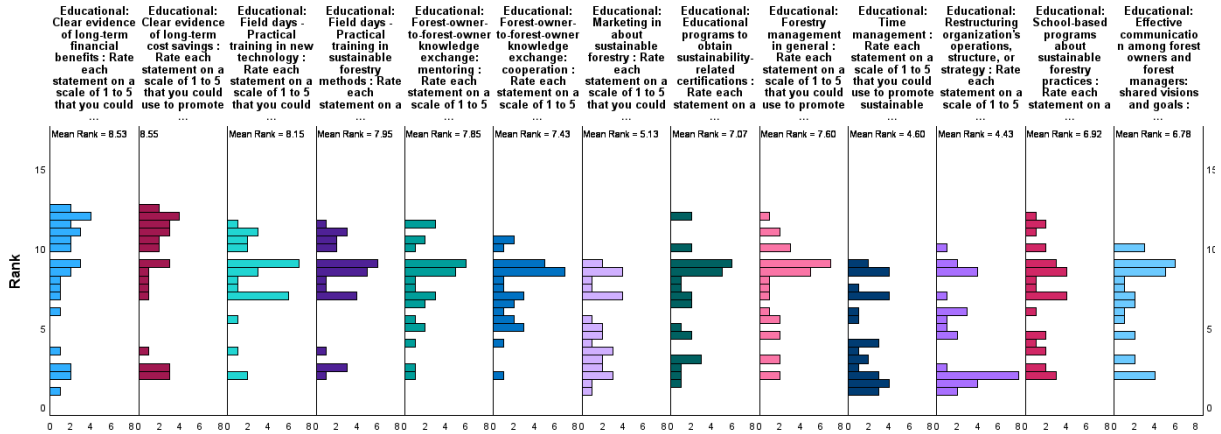
Paired Samples Statistics for Emotional Motives

Paired Differences (Me− Other foresters 'Advisors)	Mean	Std. Deviation	t	df	Two-Sided p (sig)
Pair 1: Proud to manage forests in a way that preserves the environment	0.742	1.365	3.025	30	0.005
Pair 2: Sense of responsibility to preserve our ancestors' forests	0.452	1.287	1.954	30	0.060
Pair 3: Proud to protect wildlife, pollinators, and the broader ecosystem	0.645	0.915	3.927	30	0.000
Pair 4: Satisfied by managing forests "the right way".	0.419	1.361	1.716	30	0.096
Pair 5: Satisfied for helping local community	0.645	1.018	3.528	30	0.001
Pair 6: Satisfied with improved personal sustainable skills	0.742	1.154	3.580	30	0.001
Pair 7: Feel responsible for protecting the environment	0.806	1.014	4.429	30	0.000
Pair 8: Sense of responsibility to leave a healthy, productive forests for future generations	0.548	1.121	2.725	30	0.011
Pair 9: Proud to contribute to forest safety.	0.419	1.232	1.895	30	0.068
Pair 10: Proud to contribute to forest security	0.310	0.967	1.727	28	0.095
Pair 11: Proud to contribute to climate resilience	0.581	0.672	4.811	30	0.000
Pair 12: Sustainable forestry is in accordance with my spiritual / religious beliefs	0.867	1.332	3.563	29	0.001
Pair 13: I feel committed to promoting the health of forest ecosystems and biodiversity.	1.097	1.274	4.792	30	0.000
Pair 14: Forests are our local identity and preserving them is our responsibility.	0.323	1.013	1.773	30	0.086
Pair 15: Emotionally attached to local forests	0.290	1.216	1.329	30	0.194
Pair 16: The forests offer functional value.	0.129	0.885	0.812	30	0.423
Pair 17: Dedication to sustainable forestry because of commitment to organizational mission.	0.613	0.715	4.770	30	0.000
Pair 18: I feel that protecting forests is important because I believe our psychological wellbeing is connected to nature and forests.	0.677	0.979	3.851	30	0.001

Descriptives of Educational Motives **that advisors like me could use to promote sustainable forestry practices**

Educational Motives:	N	Min	Max	Mean	Std. Dev.
Clear evidence of long-term financial benefits	32	2	5	4.44	.801
Clear evidence of long-term cost savings	32	2	5	4.44	.801
Field days - Practical training in new technology	32	2	5	4.25	.984
Field days - Practical training in sustainable forestry methods	32	2	5	4.25	.916
Forest-owner-to-forest-owner knowledge exchange: mentoring	32	2	5	4.22	1.008
Forest-owner-to-forest-owner knowledge exchange: cooperation	32	2	5	4.13	.976
Marketing in about sustainable forestry	32	1	5	3.38	1.289
Educational programs to obtain sustainability-related certifications	32	1	5	3.84	1.221
Forestry management in general	32	1	5	4.00	1.344
Time management	32	1	5	3.22	1.475
Restructuring organization's operations, structure, or strategy	32	1	5	3.22	1.362
School-based programs about sustainable forestry practices	32	2	5	4.00	1.164
Effective communication among forest owners and forest managers: shared visions and goals	31	1	5	3.71	1.442

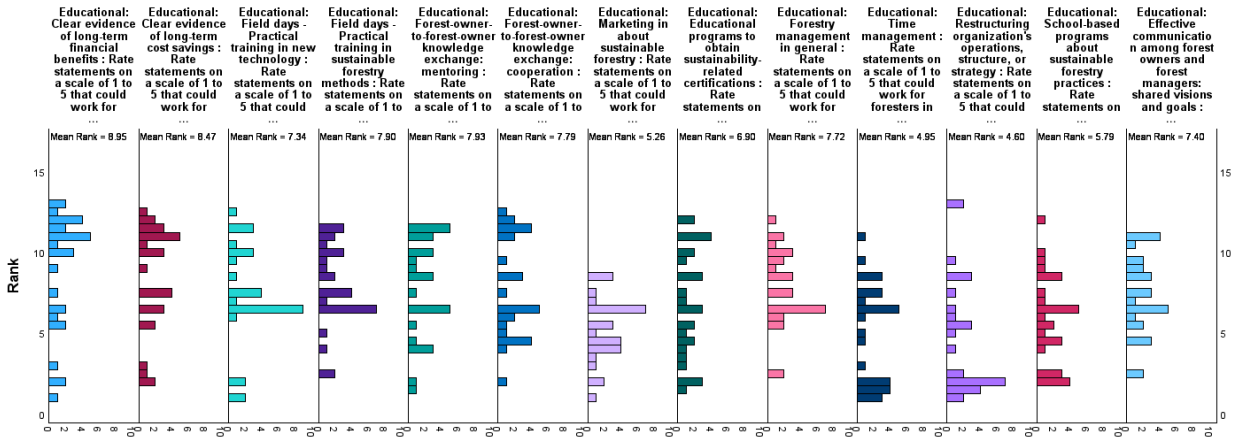
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 30 Test Statistic 67.857 df 12, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Descriptives of Educational Motives **that OTHER advisors could use to promote sustainable forestry practices**

Educational Motives:	N	Min	Max	Mean	Std. Dev.
Clear evidence of long-term financial benefits	31	1	5	4.03	1.169
Clear evidence of long-term cost savings	31	1	5	3.94	1.209
Field days - Practical training in new technology	31	1	5	3.61	1.230
Field days - Practical training in sustainable forestry methods	31	1	5	3.74	1.210
Forest-owner-to-forest-owner knowledge exchange: mentoring	31	1	5	3.65	1.305
Forest-owner-to-forest-owner knowledge exchange: cooperation	31	1	5	3.61	1.202
Marketing in about sustainable forestry	31	1	5	3.00	1.211
Educational programs to obtain sustainability-related certifications	31	1	5	3.42	1.177
Forestry management in general	31	1	5	3.65	1.253
Time management	31	1	5	2.87	1.284
Restructuring organization's operations, structure, or strategy	31	1	5	2.65	1.253
School-based programs about sustainable forestry practices	31	1	5	3.10	1.399
Effective communication among forest owners and forest managers: shared visions and goals	30	1	5	3.50	1.358

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 29 Test Statistic 61.503 df 12, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



Educational Motives **that could work for the respondent / for other foresters' Advisors**

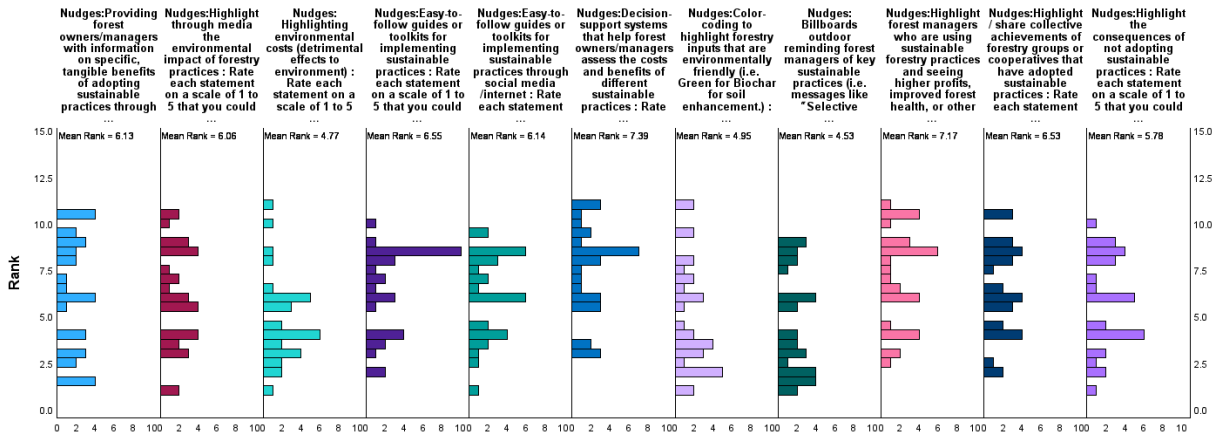
Paired Samples Statistics for Educational Motives

Paired Differences (Me - other foresters' advisors)	Mean	Std. Deviation	t	df	Two-Sided p (sig)
Pair 1: Clear evidence of long-term financial benefits	0.387	1.202	1.793	30	0.083
Pair 2: Clear evidence of long-term cost savings	0.484	1.387	1.942	30	0.062
Pair 3: Field days - Practical training in new technology	0.613	1.086	3.143	30	0.004
Pair 4: Field days - Practical training in sustainable forestry methods	0.484	1.092	2.468	30	0.020
Pair 5: Forest-owner-to-forest-owner knowledge exchange: mentoring	0.548	1.480	2.064	30	0.048
Pair 6: Forest-owner-to-forest-owner knowledge exchange: cooperation	0.484	1.151	2.341	30	0.026
Pair 7: Marketing in about sustainable forestry	0.323	0.748	2.402	30	0.023
Pair 8: Educational programs to obtain sustainability-related certifications	0.387	0.844	2.555	30	0.016
Pair 9: Forestry management in general	0.323	0.653	2.752	30	0.010
Pair 10: Time management	0.323	0.653	2.752	30	0.010
Pair 11: Restructuring organization's operations, structure, or strategy	0.548	0.850	3.592	30	0.001
Pair 12: School-based programs about sustainable forestry practices	0.871	1.544	3.142	30	0.004
Pair 13: Effective communication among forest owners and forest managers: shared visions and goals	0.167	0.592	1.542	29	0.134

Descriptives of Nudges **that advisors like me could use to promote sustainable forestry practices**

Nudges:	N	Min	Max	Mean	Std. Dev.
Providing forest owners/managers with information on specific, tangible benefits of adopting sustainable practices through social media	33	1	5	3.67	1.472
Highlight through media the environmental impact of forestry practices	32	2	5	3.78	0.975
Highlighting environmental costs (detrimental effects to environment)	32	1	5	3.34	1.234
Easy-to-follow guides or toolkits for implementing sustainable practices	32	1	5	3.81	1.148
Easy-to-follow guides or toolkits for implementing sustainable practices through social media /internet	32	1	5	3.63	1.264
Decision-support systems that help forest owners/managers assess the costs and benefits of different sustainable practices	32	2	5	4.13	0.833
Color-coding to highlight forestry inputs that are environmentally friendly (i.e. Green for Biochar for soil enhancement.)	32	1	5	3.28	1.326
Billboards outdoor reminding forest managers of key sustainable practices (i.e. messages like “Selective logging preserves biodiversity and enhances forest health”)	32	1	5	3.19	1.378
Highlight forest managers who are using sustainable forestry practices and seeing higher profits, improved forest health, or other positive outcomes.	32	1	5	3.97	1.204
Highlight / share collective achievements of forestry groups or cooperatives that have adopted sustainable practices	32	1	5	3.72	1.301
Highlight the consequences of not adopting sustainable practices	33	1	5	3.36	1.410

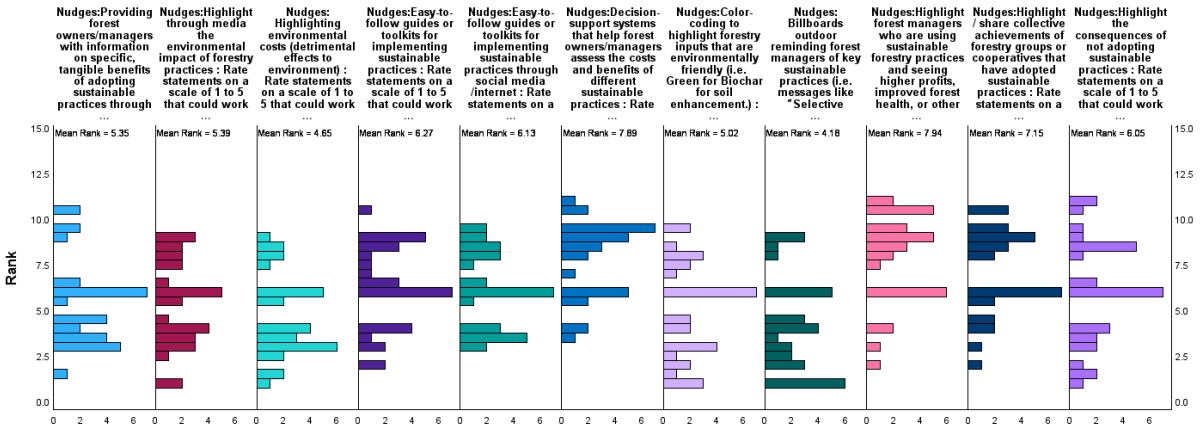
Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 32 Test Statistic 35.362 df 10, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*



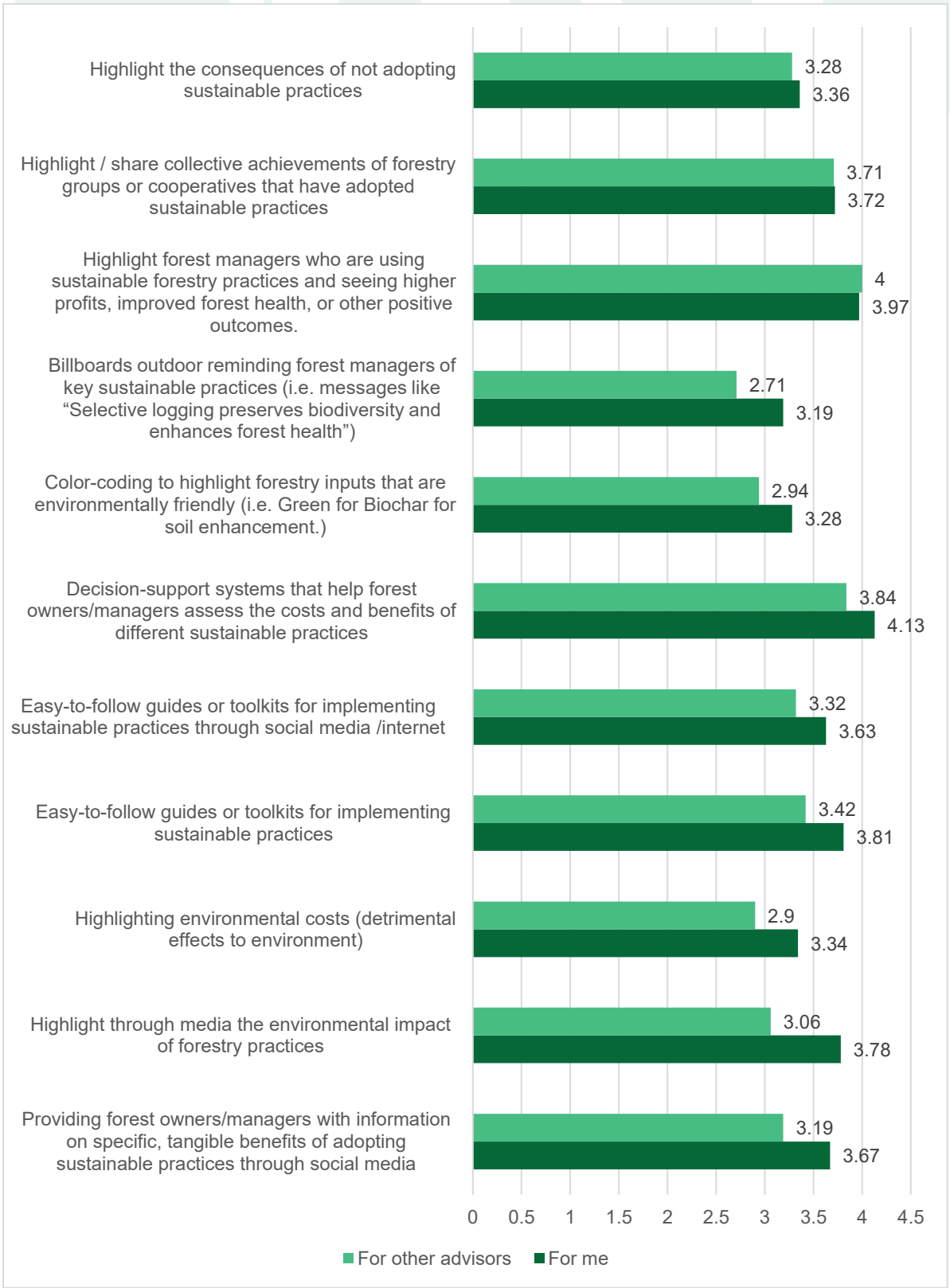
Descriptives of Nudges **that OTHER advisors could use to promote sustainable forestry practices**

Nudges:	N	Min	Max	Mean	Std. Dev.
Providing forest owners/managers with information on specific, tangible benefits of adopting sustainable practices through social media	31	1	5	3.19	1.167
Highlight through media the environmental impact of forestry practices	31	1	5	3.06	1.181
Highlighting environmental costs (detrimental effects to environment)	31	1	5	2.90	1.076
Easy-to-follow guides or toolkits for implementing sustainable practices	31	1	5	3.42	1.232
Easy-to-follow guides or toolkits for implementing sustainable practices through social media /internet	31	1	5	3.32	1.107
Decision-support systems that help forest owners/managers assess the costs and benefits of different sustainable practices	31	1	5	3.84	1.157
Color-coding to highlight forestry inputs that are environmentally friendly (i.e. Green for Biochar for soil enhancement.)	31	1	5	2.94	1.181
Billboards outdoor reminding forest managers of key sustainable practices (i.e. messages like “Selective logging preserves biodiversity and enhances forest health”)	31	1	5	2.71	1.442
Highlight forest managers who are using sustainable forestry practices and seeing higher profits, improved forest health, or other positive outcomes.	31	1	5	4.00	1.265
Highlight / share collective achievements of forestry groups or cooperatives that have adopted sustainable practices	31	1	5	3.71	1.216
Highlight the consequences of not adopting sustainable practices	32	1	5	3.28	1.420

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 31 Test Statistic 62.352 df 10, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these biases)*


Nudges:Providing forest owners/managers with information on specific, tangible benefits of adopting sustainable practices through ...
Mean Rank = 5.35
Nudges:Highlight through media the environmental impact of forestry practices : Rate statements on a scale of 1 to 5 that could work ...
Mean Rank = 5.39
Nudges: Highlighting environmental costs (detrimental effects to environment) : Rate statements on a scale of 1 to 5 that could work ...
Mean Rank = 4.65
Nudges:Easy-to-follow guides or toolkits for implementing sustainable practices : Rate statements on a scale of 1 to 5 that could work ...
Mean Rank = 6.27
Nudges:Easy-to-follow guides or toolkits for implementing sustainable practices through social media /internet : Rate statements on a ...
Mean Rank = 6.13
Nudges:Decision-support systems that help forest owners/managers assess the costs and benefits of different sustainable practices : Rate ...
Mean Rank = 7.89
Nudges:Color-coding to highlight forestry inputs that are environmentally friendly (i.e. Green for Biochar for soil enhancement.) : ...
Mean Rank = 5.02
Nudges: Billboards outdoor reminding forest managers of key sustainable practices (i.e. messages like "Selective ...
Mean Rank = 4.18
Nudges:Highlight forest managers who are using sustainable forestry practices and seeing higher profits, improved forest health, or other ...
Mean Rank = 7.94
Nudges:Highlight / share collective achievements of forestry groups or cooperatives that have adopted sustainable practices : Rate statements on a ...
Mean Rank = 7.15
Nudges:Highlight the consequences of not adopting sustainable practices : Rate statements on a scale of 1 to 5 that could work ...
Mean Rank = 6.05
Rank
0.0
2.5
5.0
7.5
10.0
12.5
15.0
0 2 4 6

Nudges **that could work for the respondent / for other foresters 'Advisors**



Paired Samples Statistics for Nudges

Paired Differences (Me − Other foresters' advisors)	Mean	Std. Deviation	t	df	Two-Sided p (sig)
Pair 1: Providing forest owners/managers with information on specific, tangible benefits of adopting sustainable practices through social media	0.516	1.435	2.003	30	0.054
Pair 2: Highlight through media the environmental impact of forestry practices	0.677	1.222	3.087	30	0.004
Pair 3: Highlighting environmental costs (detrimental effects to environment)	0.387	0.989	2.179	30	0.037
Pair 4: Easy-to-follow guides or toolkits for implementing sustainable practices	0.355	0.709	2.785	30	0.009
Pair 5: Easy-to-follow guides or toolkits for implementing sustainable practices through social media /internet	0.258	0.729	1.971	30	0.058
Pair 6: Decision-support systems that help forest owners/managers assess the costs and benefits of different sustainable practices	0.258	0.631	2.278	30	0.030
Pair 7: Color-coding to highlight forestry inputs that are environmentally friendly (i.e. Green for Biochar for soil enhancement.)	0.323	0.653	2.752	30	0.010
Pair 8: Billboards outdoor reminding forest managers of key sustainable practices (i.e. messages like "Selective logging preserves biodiversity and enhances forest health")	0.516	1.387	2.071	30	0.047
Pair 9: Highlight forest managers who are using sustainable forestry practices and seeing higher profits, improved forest health, or other positive outcomes.	-0.032	0.605	-0.297	30	0.768
Pair 10: Highlight / share collective achievements of forestry groups or cooperatives that have adopted sustainable practices	0.065	0.854	0.421	30	0.677
Pair 11: Highlight the consequences of not adopting sustainable practices	0.125	0.751	0.941	31	0.354

Appendix 3A

FOOD CONSUMERS' DATA

SECTION A: DEMOGRAPHICS

Frequencies of Gender

Gender	Counts	% of Total	Cumulative %
Male	148	61.8%	68.6%
Female	248	36.9%	97.7%

Frequencies of the Highest completed level of education

Highest completed level of education	Counts	% of Total	Cumulative %
Master, Postgraduate or doctoral degree	219	54.61%	54.61%
Bachelor's degree or equivalent level	100	24.94%	79.55%
Upper secondary education	34	8.48%	88.03%
College entrance qualification	28	6.98%	95.01%
Lower secondary/primary education or below	20	4.99%	100.00%

Frequencies of Marital Status

Marital Status	Counts	% of Total	Cumulative %
Married	220	54.86%	54.86%
Single	155	38.65%	93.52%
Divorced	23	5.74%	99.25%

Frequencies of Are you responsible for decision making about buying food products in your home

Decision making Responsible	Counts	% of Total	Cumulative %
Yes	371	92.5%	92.5%
No	30	7.5%	100.00%

Frequencies of How is responsible.

Decision making Responsible	Counts	% of Total	Cumulative %
Parents	10	2.49%	2.5%
My wife	8	2.00%	4.5%
My mother	6	1.50%	6.0%
My Father	4	1.00%	7.0%
Together with my wife	2	0.50%	7.5%

Frequencies of No of Children

No of Children	Counts	% of Total	Cumulative %
0	204	50.87%	50.9%
1	53	13.22%	64.1%
2	89	22.19%	86.3%
3	42	10.47%	96.8%
4	10	2.49%	99.3%
>4	3	0.75%	100.00%

Frequencies of How many adults live in your household including yourself.

No of adults	Counts	% of Total	Cumulative %
1	76	18.95%	19.0%
2	210	52.37%	71.3%
3	62	15.46%	86.8%
4	38	9.48%	96.3%
5	15	3.74%	100.0%

Frequencies of Country of Origin

Country of Origin	Counts	% of Total	Cumulative %
Greece	66	16.46%	16.46%
Portugal	64	15.96%	32.42%
Lithuania	47	11.72%	44.14%
Tunisia	45	11.22%	55.36%
Sweden	30	7.48%	62.84%
Spain	29	7.23%	70.07%
France	28	6.98%	77.06%
Serbia	27	6.73%	83.79%
Slovenia	21	5.24%	89.03%
United Kingdom	9	2.24%	91.27%
Poland	8	2.00%	93.27%
others	16	3.99%	97.26%
N/A	11	2.74%	100.00%
	401	100.0%	

Frequencies of the place you live.

Place	Counts	% of Total	Cumulative %
large City	191	47.63%	47.6%
Small Town	129	32.17%	79.8%
Rural Village	76	18.95%	98.8%

Frequencies of Awareness of EU Common Agricultural Policy

	Counts	% of Total	Cumulative %
Not aware at all	70	17.46%	17.5%
Slightly aware	109	27.18%	44.6%
Average	103	25.69%	70.3%
Aware	84	20.95%	91.3%
Fully aware	29	7.23%	98.5%

Frequencies of How often do you have difficulties paying bills?

	Counts	% of Total	Cumulative %
Never	180	44.89%	44.9%
almost never	113	28.18%	73.1%
Sometimes	76	18.95%	92.0%
Most of the times	28	6.98%	99.0%

SECTION B: SUSTAINABLE FOOD PRODUCTS

Descriptives of How important are the following characteristic for sustainable food products

Characteristic	N	Min	Max	Mean	Std. Dev.
Minimally Processed	399	1	5	3.96	1.027
Locally produced	399	1	5	4.23	0.795
Fair revenue for farmers	399	1	5	4.22	0.880
Available near me	396	1	5	4.11	0.836
Organic	398	1	5	3.58	1.096
Transferred through local or short supply chains	396	1	5	3.76	1.019
Nutritious and Healthy	400	1	5	4.52	0.708
Little use or no use of pesticides	399	1	5	4.04	1.017
Affordable	397	1	5	4.15	0.865
Low environmental and climate impact (carbon footprint)	400	1	5	3.92	0.963
Minimal packaging	398	1	5	3.78	1.103
No plastic on packaging	399	1	5	3.73	1.138
Supporting animal welfare	397	1	5	4.04	0.962
Respecting workers' rights, fair pay, health and safety	399	1	5	4.35	0.813

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 379 Test Statistic 450.905 Degree of Freedom 13, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*

Descriptives of Which of the following do you consider to be the most important characteristic of sustainable food products

Perceptions about sustainable food product:	N	Min	Max	Mean	Std. Dev.
Highly sophisticated irrigation strategies are used in their production.	396	1	5	3.38	1.057
I accept their higher price.	392	1	5	3.30	0.995
I do not care too much about them.	388	1	5	2.49	1.238
I have never heard about sustainable food products.	388	1	5	2.27	1.365
More water is required in their production.	390	1	5	2.85	1.194
Their taste is similar to that of conventional products.	392	1	5	3.27	1.215
There is a need for a logo that clearly identifies them.	392	1	5	3.81	1.114
No need for sustainable products.	390	1	5	2.15	1.395
There are plenty of natural resources and they will be there for a long time.	393	1	5	2.62	1.483
They are authentic because they ensure a proper future of agriculture.	393	1	5	3.81	1.028
Their packaging is nice, and labels come in bright colours.	392	1	5	2.32	1.209
They are healthier.	396	1	5	3.99	1.005
They are homogeneous in size, and I like that.	389	1	5	2.33	1.248
They are more expensive.	393	1	5	3.35	1.113
They are packed using non-degradable plastics.	390	1	5	2.98	1.307
They are produced in a more traditional way.	389	1	5	3.34	1.181
They are grown or produced with fewer chemicals.	395	1	5	4.08	1.006
They are tastier.	392	1	5	3.53	1.259
They deserve my trust.	392	1	5	3.84	1.089
They do not attract my attention.	389	1	5	2.43	1.237
They have a poor flavour.	388	1	5	2.25	1.256
They have better quality.	395	1	5	4.00	0.949
They look natural.	392	1	5	3.74	1.054

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 355 Test Statistic 2114.845 Degree of Freedom 22, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*

Descriptives of To what extent do you agree with the following statements about sustainable food products

Statements about sustainable food products	N	Min	Max	Mean	Std. Dev.
Sustainable products are environmentally friendly products.	394	1	5	4.11	0.939
I do not trust sustainable food products.	394	1	5	2.05	1.112
Their price is too high for me. I' m not buying them	393	1	5	2.92	1.050
Sustainable chicken tastes better (because birds have the best possible nutrition)	392	1	5	3.61	0.961
Sustainable chicken price is affordable	389	1	5	3.20	0.932
The taste of tomatoes is the same, no matter their sustainable origin	396	1	5	2.31	1.165
The price of tomatoes is the same, no matter their sustainable origin	390	1	5	2.32	1.081
I recommend their purchase to my family/friends	396	1	5	3.71	1.028

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 371 Test Statistic 945.453 Degree of Freedom 7, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*

SECTION C: CONSUMING ATTITUDES

Descriptives of Consuming Attitudes

Consuming Attitudes	N	Min	Max	Mean	Std. Dev.
A vegetarian diet can reduce greenhouse gas emissions	399	1	5	3.16	1.195
Assurance of animal welfare in food production is important to me.	399	1	5	4.07	0.852
Consuming products made from environmentally friendly grains is more expensive than consuming conventional products.	397	1	5	3.77	0.865
Consuming seasonal vegetables is environmentally friendly.	397	1	5	4.21	0.889
Conventional and highly automated farming leads to higher quality products.	398	1	5	2.99	1.065
Conventional fruits have the same nutrient and antioxidant content as organic fruits.	397	1	5	2.81	1.108
Intensive agriculture leads to reduced biodiversity which I find unacceptable.	396	1	5	3.66	1.117
Food/Gastronomic/Agricultural tourism can help the development and sustainability of small local farmers.	395	1	5	3.98	0.887
Greenhouse tomatoes have fewer nutrients because they contain more water.	396	1	5	2.95	0.995
I am willing to pay a slightly higher price for local foods.	398	1	5	3.84	0.920
The less food packaging the more sustainable the food.	398	1	5	3.61	1.068
I avoid buying processed food because it is not healthy.	399	1	5	3.65	1.113
I pay attention to environmental information on food labels.	397	1	5	3.50	1.082
I enjoy eating rain-fed vegetables because they are tastier than irrigated products.	397	1	5	3.01	1.040
I prefer buying food from local or nearby markets/producers.	399	1	5	3.89	0.938
I will avoid producers and products that I know have a high impact on the environment.	398	1	5	3.69	1.019
If the price is reasonable, I will buy foods produced using sustainable strategies.	398	1	5	4.18	0.889
I think cooking oils coming from plants grown with less water have a healthier fatty acid profile than conventional cooking oils.	397	1	5	3.03	0.897
Food produced locally is fresher than that sold in supermarkets or hypermarkets.	396	1	5	3.80	1.088

Local products are more nutritious than other products because they are picked riper and are fresher.	394	1	5	3.72	1.065
Organic foods are better used by the body because they do not have chemicals.	396	1	5	3.47	1.174
Organic vegetables have a nice appearance and are uniform.	395	1	5	2.73	1.088
Reducing land use, freshwater consumption, and fossil fuels used in food production should be an important goal of food producers.	396	1	5	3.89	1.018
Small farmers are essential to guarantee farming sustainability in the world.	395	1	5	4.09	0.959
Social aspects of food production (for example, fair trade, social right of workers) are important to me.	397	1	5	4.12	0.911
Sustainable agriculture must be concerned with ensuring the economic viability of the farm and the farmer.	395	1	5	4.22	0.892
The price I pay for organic or more sustainable foods is worth it.	396	1	5	3.70	0.969
The volume of water needed to grow 1 kg of tomatoes is approximately the same as the amount needed to grow 1 kg of wheat.	394	1	5	2.71	0.958
World food production cannot be maintained through local products; intensive agriculture is needed.	390	1	5	3.31	1.113
Even if the price of organic products is slightly higher than that of conventional products, I will buy the organic products.	394	1	5	3.52	1.078
When I choose local foods, I reduce transporting and packaging costs.	394	1	5	4.08	0.955

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 354 Test Statistic 2126.480 Degree of Freedom 30, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*

SECTION D: WILLINGNESS TO PAY

Descriptives of Willingness to Pay for sustainable food

Willingness to Pay for	N	Min	Max	Mean	Std. Dev.
Tap water.	390	0	5	1.06	1.425
Bottled water.	394	0	5	1.17	1.325
Food for special dietary uses.	391	0	5	1.72	1.339
Cheese.	394	0	5	1.92	1.319
Dairy based products.	393	0	5	1.89	1.282
Milk and dairy based drinks.	394	0	5	1.82	1.295
Eggs.	395	0	5	2.07	1.416
Fish based preparations.	388	0	5	1.58	1.353
Fish and fish products.	390	0	5	1.94	1.382
Seafood and seafood products.	388	0	5	1.78	1.408
Meat based preparation.	389	0	5	1.82	1.396
Meat, meat products and substitutes.	388	0	5	1.96	1.431
Other alcoholic beverages and substitutes.	393	0	5	1.20	1.440
Wine and substitutes.	390	0	5	1.39	1.488
Beer and substitutes.	387	0	5	1.28	1.420
Coffee, tea and cocoa.	394	0	5	1.65	1.418
Snack foods.	393	0	5	1.24	1.326
Soft drinks.	393	0	5	1.09	1.284
Fruit and vegetable juices.	393	0	5	1.73	1.452
Fruits.	392	0	5	2.14	1.464
Starchy roots and potatoes.	393	0	5	1.82	1.399
Vegetables, nuts and beans.	393	0	5	1.97	1.383
Vegetable soups (ready to eat).	393	0	5	1.18	1.236
Fats (vegetable and animal).	390	0	5	1.35	1.204
Sugar and sugar products	393	0	5	1.04	1.203
Cocoa and chocolate.	390	0	5	1.49	1.343
Cereals and cereal products.	391	0	5	1.56	1.281
Cereal-based mixed dishes.	390	0	5	1.32	1.231

Note*: answers range from 0 for 0% more on the price, up to 5 indicating more than 50%*

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 352 Test Statistic 1366.509 Degree of Freedom 27, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*

Appendix 3B

FORESTRY PRODUCTS' CONSUMERS' DATA

SECTION A: DEMOGRAPHICS

Frequencies of Gender

Gender	Counts	% of Total	Cumulative %
Male	65	42.76%	42.8%
Female	87	57.24%	100.0%

Frequencies of the Highest completed level of education

Highest completed level of education	Counts	% of Total	Cumulative %
Master, Postgraduate or doctoral degree	88	57.89%	57.9%
Bachelor's degree or equivalent level	34	22.37%	80.3%
College entrance qualification	15	9.87%	90.1%
Upper secondary education	12	7.89%	98.0%
Lower secondary/primary education or below	3	1.97%	100.0%

Frequencies of Marital Status

Marital Status	Counts	% of Total	Cumulative %
Married	75	49.34%	49.3%
Single	65	42.76%	92.1%
Divorced	7	4.61%	96.7%

Frequencies of No of Children

No of Children	Counts	% of Total	Cumulative %
0	16	21.6%	21.6%
1	6	8.1%	29.7%
2	34	45.9%	75.7%
3	17	23.0%	98.6%
4	1	1.4%	100.0%

Frequencies of No of Adults

No of adults	Counts	% of Total	Cumulative %
0	1	0.7%	0.7%
1	21	14.9%	15.6%
2	84	59.6%	75.2%
3	14	9.9%	85.1%
4	17	12.1%	97.2%
>4	4	2.8%	100.00%

Frequencies of Are you responsible for decision making about buying forestry products in your home

Decision making Responsible	Counts	% of Total	Cumulative %
No	15	9.9%	9.9%
Yes	137	90.1%	100.0%

Frequencies of if not, who is responsible

Responsible for decision making	Counts	% of Total	Cumulative %
My husband	1	0.66%	0.7%
My mother	5	3.29%	3.9%
My parents	7	4.61%	8.6%
My wife	2	1.32%	9.9%

Frequencies of the place you live Place

Place	Counts	% of Total	Cumulative %
Large City	66	43.42%	43.4%
Small /medium Town	56	36.84%	80.3%
Rural Village	28	18.42%	98.7%

Frequencies of Country of Origin

Country of Origin	Counts	% of Total	Cumulative %
Portugal	36	23.68%	23.7%
Lithuania	32	21.05%	44.7%
Greece	29	19.08%	63.8%
United Kingdom	28	18.42%	82.2%
Sweden	12	7.89%	90.1%
Finland	4	2.63%	92.76%
France	2	1.32%	94.08%
Germany	2	1.32%	95.39%
France	1	0.66%	96.05%
Portugal	1	0.66%	96.71%
N/A	5	3.29%	100.0%
	152	100%	

Frequencies of Awareness of EU forest strategy for 2030

	Counts	% of Total	Cumulative %
not at all aware	34	23.6%	23.6%
slightly aware	46	31.9%	55.6%
average	27	18.8%	74.3%
aware	32	22.2%	96.5%
Fully aware	5	3.5%	100.0%

Frequencies of How often do you have difficulties paying bills?

	Counts	% of Total	Cumulative %
Never	67	44.08%	44.1%
Almost never	53	34.87%	78.9%
Sometimes	27	17.76%	96.7%
Always	2	1.32%	98.0%

SECTION B: SUSTAINABLE FORESTRY PRODUCTS

Descriptives of How important are in your view the following characteristics in sustainable forestry products or services

Characteristics of sustainable forestry products	N	Min	Max	Mean	Std. Dev.
Natural	150	2	5	4.11	0.738
Locally produced	151	1	5	4.13	0.797
Cultural heritage and traditional knowledge	151	1	5	3.73	0.923
Fair compensation for those involved in the initial stages of the forestry supply chain	151	2	5	4.13	0.830
Available near me	150	2	5	3.99	0.819
Eco-certified	152	1	5	3.95	0.933
Transferred through local or short supply chains	151	1	5	3.71	0.935
Sustainable and resilient	152	2	5	4.28	0.782
Chemical-free	152	1	5	4.01	1.023
Affordable	152	2	5	4.21	0.725
Low environmental and climate impact	150	1	5	4.19	0.849
Minimal packaging	152	1	5	3.99	0.976
No plastic on packaging	152	1	5	3.84	1.074
Protecting biodiversity	152	1	5	4.21	0.881
Respecting workers' rights, fair pay, health and safety	152	1	5	4.32	0.758
Transparent and traceable	152	1	5	4.06	0.832
Quality and durability	150	2	5	4.47	0.673
Reusability and ability to recycle	152	1	5	4.15	0.919

Note*: Answers range from not important at all to very important*

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 140 Test Statistic 179.332 Degree of Freedom 17, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*

Descriptives of To what extent do you agree with the following statements about sustainable products or services

Statements about sustainable products or services	N	Min	Max	Mean	Std. Dev.
They come from forests with advanced forest management techniques.	152	1	5	3.81	0.859
I accept their higher price.	151	1	5	3.40	0.918
I do not care too much about them.	148	1	5	2.38	1.109
I have never heard about sustainable forestry products.	149	1	5	2.29	1.221
Less water is required in their production.	147	1	5	3.39	0.849
Their quality is like that of conventional products.	147	1	5	3.27	0.976
There is a need for a logo that clearly identifies them.	150	1	5	3.80	0.934
No need for sustainable products.	150	1	5	2.02	1.266
There are plenty of natural resources and they will be there for a long time.	147	1	5	2.42	1.249
They are authentic because they ensure a proper future of agriculture.	150	1	5	3.55	0.916
Their packaging is nice, and labels come in bright colours.	151	1	5	2.66	1.020
They are healthier for the ecosystem.	152	1	5	3.93	0.764
They are homogeneous in size, and I like that.	151	1	5	2.84	1.014
They are more expensive.	152	1	5	3.53	0.813
They are packed using non-degradable plastics.	151	1	5	3.08	1.123
They are produced in a more traditional way.	151	1	5	3.35	0.881
They are produced with fewer chemicals.	150	2	5	3.68	0.846
They have better aesthetic qualities.	150	1	5	3.24	1.021
They increase my trust.	149	1	5	3.63	0.888
They do not attract my attention.	150	1	5	2.36	0.992
They lack durability.	150	1	5	2.52	0.981
They have better quality.	149	1	5	3.67	0.842
They look natural.	150	1	5	3.68	0.877

Note*: Answers range from Strongly disagree to Strongly agree*

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 127 Test Statistic 842.064 Degree of Freedom 22, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*

Descriptives of To what extent do you agree with the following statements about sustainable products or services

Statements about sustainable products or services	N	Min	Max	Mean	Std. Dev.
Sustainable products are environmentally friendly products.	152	2	5	4.13	0.694
I do not trust sustainable products.	149	1	5	2.10	1.051
Their price is too high for me. I'm not buying them	150	1	5	2.86	0.920
Sustainable timber/products are of higher quality (because forests are managed with care for long-term health and resilience).	149	1	5	3.57	0.910
Sustainable paper is affordable.	151	2	5	3.54	0.690
Wood pellets are the same, no matter their sustainable origin	149	1	5	2.72	1.156
Wooden flooring is the same, no matter their sustainable origin	148	1	5	2.63	1.139
I recommend purchasing sustainable forestry products to my family/friends	149	1	5	3.83	0.876

Note*: Answers range from Strongly disagree to Strongly agree*

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 143 Test Statistic 359.317 Degree of Freedom 7, Asymptotic Sig.(2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*

SECTION C: CONSUMING ATTITUDES

Descriptives of To what extent do you agree with the following statements concerning consuming Attitudes

Consuming Attitudes	N	Min	Max	Mean	Std. Dev.
A sustainable forest management approach can reduce greenhouse gas emissions.	151	2	5	4.15	0.772
Assurance of sustainable forest practices is important to me.	152	1	5	4.04	0.876
Consuming forest products made from environmentally friendly forests is more expensive than consuming conventional products.	151	2	5	3.70	0.790
Using sustainably harvested wood is environmentally friendly.	152	1	5	4.00	0.797
Conventional and highly automated logging can lead to higher quality timber.	152	1	5	3.16	1.019
Conventional forestry products have the same durability and functionality as those from sustainably managed forests.	151	1	5	3.21	0.935
Intensive logging practices lead to reduced biodiversity, which I find unacceptable.	150	1	5	3.91	1.045
Eco-tourism in forests can help the development and sustainability of small local forestry businesses.	151	1	5	3.87	0.929
Timber from forests with lower carbon sequestration may have fewer ecological benefits.	150	1	5	3.18	0.997
I am willing to pay a slightly higher price for locally sourced wood forest products.	151	1	5	3.75	0.931
The less packaging on forest products, the more sustainable the product.	150	1	5	3.64	1.012
I avoid buying wood products that are heavily processed or manufactured, such as plywood, particleboard, or MDF, because they have a higher environmental impact.	151	1	5	3.24	1.044
I pay attention to environmental information on forest product labels.	151	1	5	3.67	1.025
I enjoy using paper from sustainably managed forests because it is better for the environment.	150	1	5	3.69	0.919
I prefer buying forest products, such as honey, herbs, Christmas trees, or locally crafted wooden furniture from local or nearby producers.	150	1	5	4.05	0.870
I avoid forest products and producers that I know have a high negative impact on the environment.	149	2	5	3.85	0.954
If the price is reasonable, I buy wood and products produced using sustainable forestry practices.	151	2	5	4.19	0.781
Wood from trees grown with less water may have a different structural quality compared to those grown with more water.	151	1	5	3.40	0.858

Forest products sourced locally are fresher and more sustainable than those sold in supermarkets or large retailers.	150	1	5	3.75	0.899
Local forest products are more durable and of higher quality because they are harvested and processed closer to the source.	146	1	5	3.51	1.012
Sustainably sourced wood products are better for the environment because they do not harm biodiversity.	152	1	5	3.84	0.823
Sustainably harvested wood products have a consistent appearance and are well-maintained.	151	1	5	3.23	0.860
Conserving forest land and reducing use of water and fossil fuels should be an important goal for forest industry.	150	2	5	4.24	0.817
Small local forestry businesses are essential to guarantee the sustainability of forest ecosystems.	151	1	5	3.99	0.931
Social aspects of forest-based products and services are important to me.	150	2	5	3.94	0.876
I value social labels in forest-based products and services that ensure responsible social practices.	149	2	5	3.85	0.928
Sustainable forestry must ensure the economic viability of the forest and people working in forestry.	152	2	5	4.19	0.735
Paying a fair price for sustainably managed forest-based products is a worthwhile investment in the environment and future resources.	150	2	5	4.04	0.759
As a responsible consumer, I choose timber products from sustainably managed forests, recognizing that tree species and forest management practices impact water use and overall environmental sustainability.	152	2	5	3.76	0.874
World forestry production cannot be maintained through local forestry alone; sustainable global forestry is needed.	152	2	5	3.95	0.871
Even if the price of sustainably sourced forest products is slightly higher than that of conventional products, I buy sustainable products.	152	1	5	3.64	0.887
When I choose local forest products, I reduce transportation and packaging costs.	151	1	5	3.95	0.904

Note*: Answers range from Strongly disagree to Strongly agree*

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 134 Test Statistic 593.894 Degree of Freedom 31, Asymptotic Sig. (2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*

SECTION D: WILLINGNESS TO PAY

Descriptives of Willingness to Pay for sustainable food.

Willingness to Pay for	N	Min	Max	Mean	Std. Dev.
Printed paper products	152	0	5	1.64	1.324
Tissue paper products	152	0	5	1.53	1.201
Paper packaging products	152	0	5	1.47	1.337
Wood furniture	151	0	5	2.36	1.556
Wood flooring	151	0	5	2.15	1.529
Wood utensils	151	0	5	2.11	1.504
Fuelwood, Charcoal, and Wood Pellets	148	0	5	1.51	1.264
Wood toys	151	0	5	2.00	1.541
Maple syrup	149	0	5	1.71	1.406
Birch syrup	146	0	5	1.74	1.472
Honey	148	0	5	2.39	1.487
Wild berries	149	0	5	2.15	1.614
Mushrooms	149	0	5	2.04	1.606
Wild herbs	150	0	5	2.03	1.545
Natural cosmetics	147	0	5	2.13	1.660
Essential oils	149	0	5	1.97	1.672
Forest-based crafts, decorative items, trees	147	0	5	1.96	1.609
Rattan products	148	0	5	1.51	1.536
Recreational and Wellness Services (including Hiking Trails, Camping Sites, Ecotourism, Forest therapy, and wellness retreats)	152	0	5	1.99	1.483
Wood-based textiles	149	0	5	1.92	1.445
Engineered wood products	150	0	5	1.76	1.324
Engineered partly wood products	150	0	5	1.70	1.408
Cork products	148	0	5	1.67	1.440
Natural dyes	148	0	5	1.78	1.473
Medicinal plants	147	0	5	2.10	1.606
Forest-based beverages (birch sap drinks, herbal teas)	150	0	5	1.75	1.650

Note*: answers range from zero for 0% more on the price, up to 5 indicating more than 50%*

Note*: Related-Samples Friedman's Two-Way Analysis of Variance by Ranks Summary: Total N 132 Test Statistic 314.512 Degree of Freedom 25, Asymptotic Sig. (2-sided test) <0.001, (there is evidence of statistically significant differences among these perceptions)*