# Perception of the forest-based sector, its innovations and future pathways

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# Why perceptions matter?

Essential for…
-  effective communication
-  expectation management
-  innovation managment

# Introduction

**Forests in the spotlight**

**'*In agreement with the public nothing can fail, without public acceptance nothing will succeed*'**
**- Abraham Lincoln**

# Communication in the forest sector

## Why necessary?

- ✓ Vague picture of forest-based sector's activities (EU Commission 2002)

- ✓ EU citizens chose the "Conservation and protection of forests" as most important topic for their home country forests (Rametsteiner et al. 2009)

- ✓ Sustainable forest management was the most important topic in the sustainability communication of the 100 largest FBS companies (Vidal and Kozak 2008)

- ✓ **Need for sustainability communication to legitimize the forest-based sector activities among the public**

# Challenges for communication

## Problem statement

✓Communication is successful when knowing the needs of stakeholders (Skouloudis et al. 2015, Pratt et al. 2013)

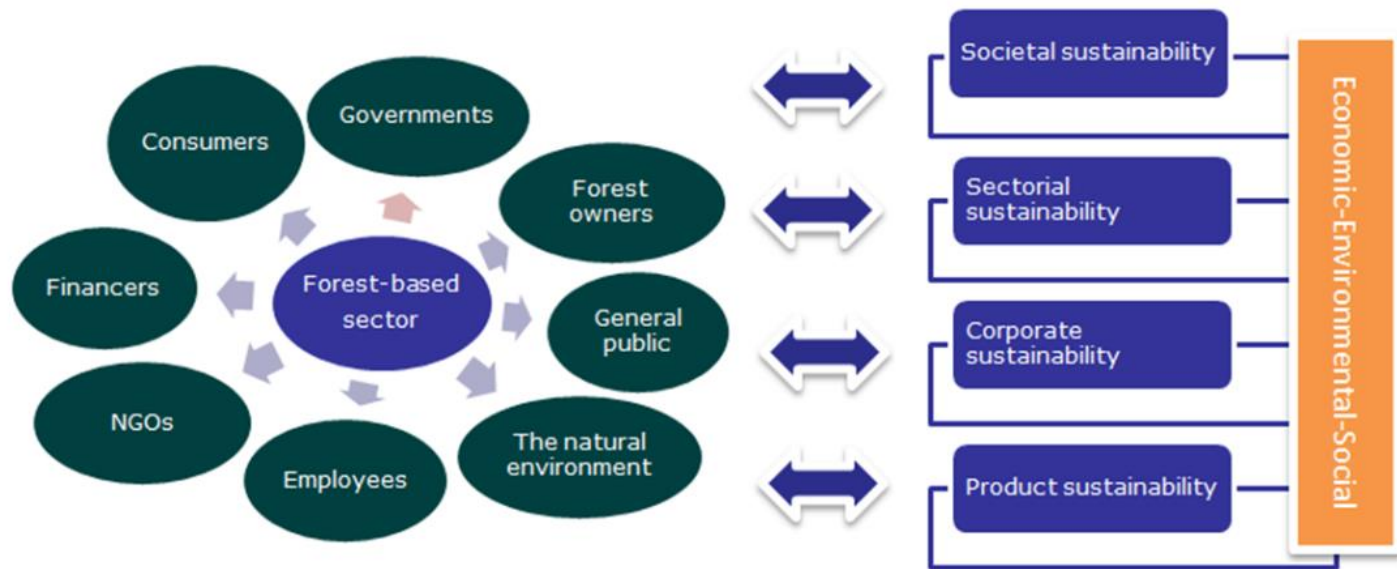✓Complexity: Different stakeholder, communication channels and levels of sustainability



Figure 1: Forest-based sector stakeholder system with interaction to hierarchical levels of sustainability (Läthinen et al., 2016)

# What is communicated by the forest sector?

Content analysis:

- Focus on 2-3 topics of interest (TOI) whereas others are neglected

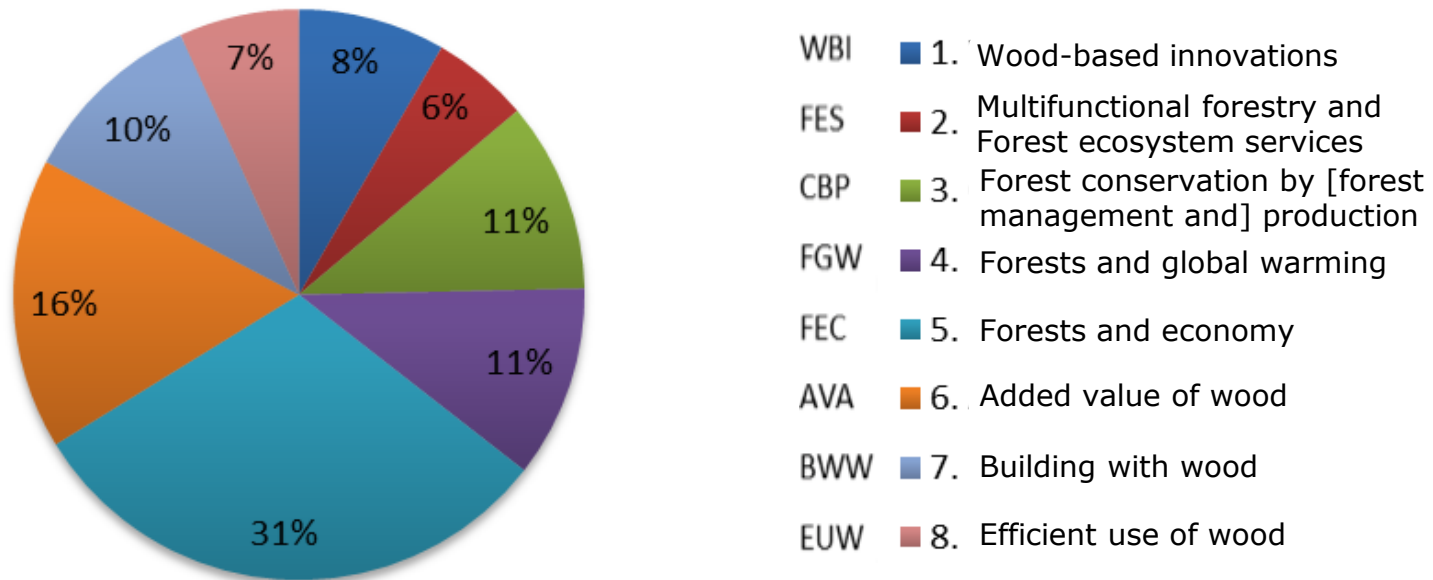- Focus on supplying factual information



| | | |
|---|---|---|
| WBI | 1. | Wood-based innovations |
| FES | 2. | Multifunctional forestry and Forest ecosystem services |
| CBP | 3. | Forest conservation by [forest management and] production |
| FGW | 4. | Forests and global warming |
| FEC | 5. | Forests and economy |
| AVA | 6. | Added value of wood |
| BWW | 7. | Building with wood |
| EUW | 8. | Efficient use of wood |

Figure: Amount of hits for each TOI (Korhonen et al. 2016)

# The forest-based bubble

## Online survey:

- Sector connection through profession, education, or forest ownership makes a difference especially regarding the perception of the responsible use of forest resources and the role of wood products in climate change mitigation

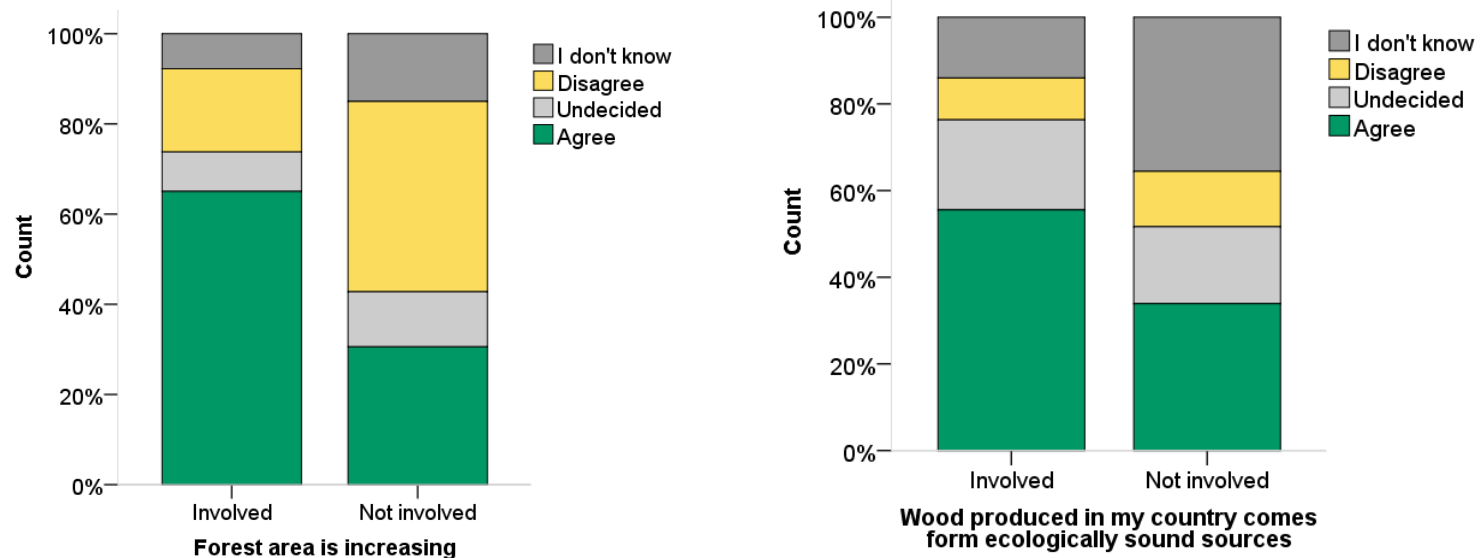- Higher rates of "disagree", "Undecided", and "I don't know" for people not involved in the sector



Figure: Differences in involvement regarding the perception of communicated items (Ranacher & Stern 2015)

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# Can perception be influenced by information?

## Cognitive response experiments

- Installed signposts at a new harvesting site in an urban forest, which contained information on: "What happened?", "Does it affect the forest?", "How is the wood used?"

- With the signposts forest visitors are less disturbed by the visual appearance, emphasize economic aspects, and are less worried about ecological impacts

| Property (attribute or value) | No infoboards A | Infoboards B | Control C |
|---|---|---|---|
| ecology – worries about environmental compatibility | 57% | 20% | 13% |
| visual appearance | 78% | 40% | 50% |
| Eco-social market economy | 9% | 30% | 25% |
| support of regional economy | 0% | 25% | 0% |
| energy production | 4% | 15% | 13% |
| greed of gain | 9% | 0% | 13% |

Table: Selected attributes recalled by the respondents (Huber et al. 2017)

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# You may say, that's OK...

But...

What´s innovation got to do,
got to do with it?
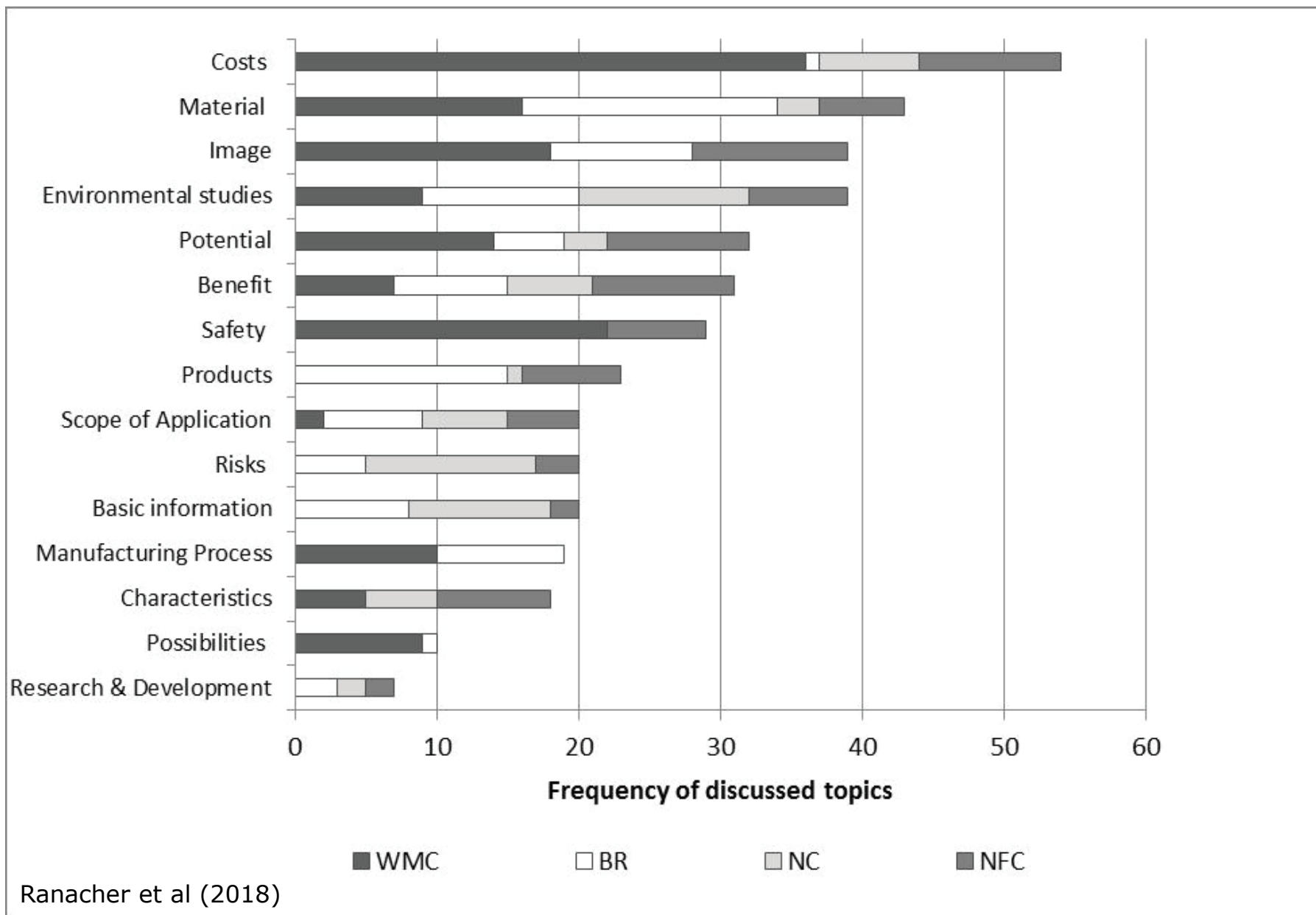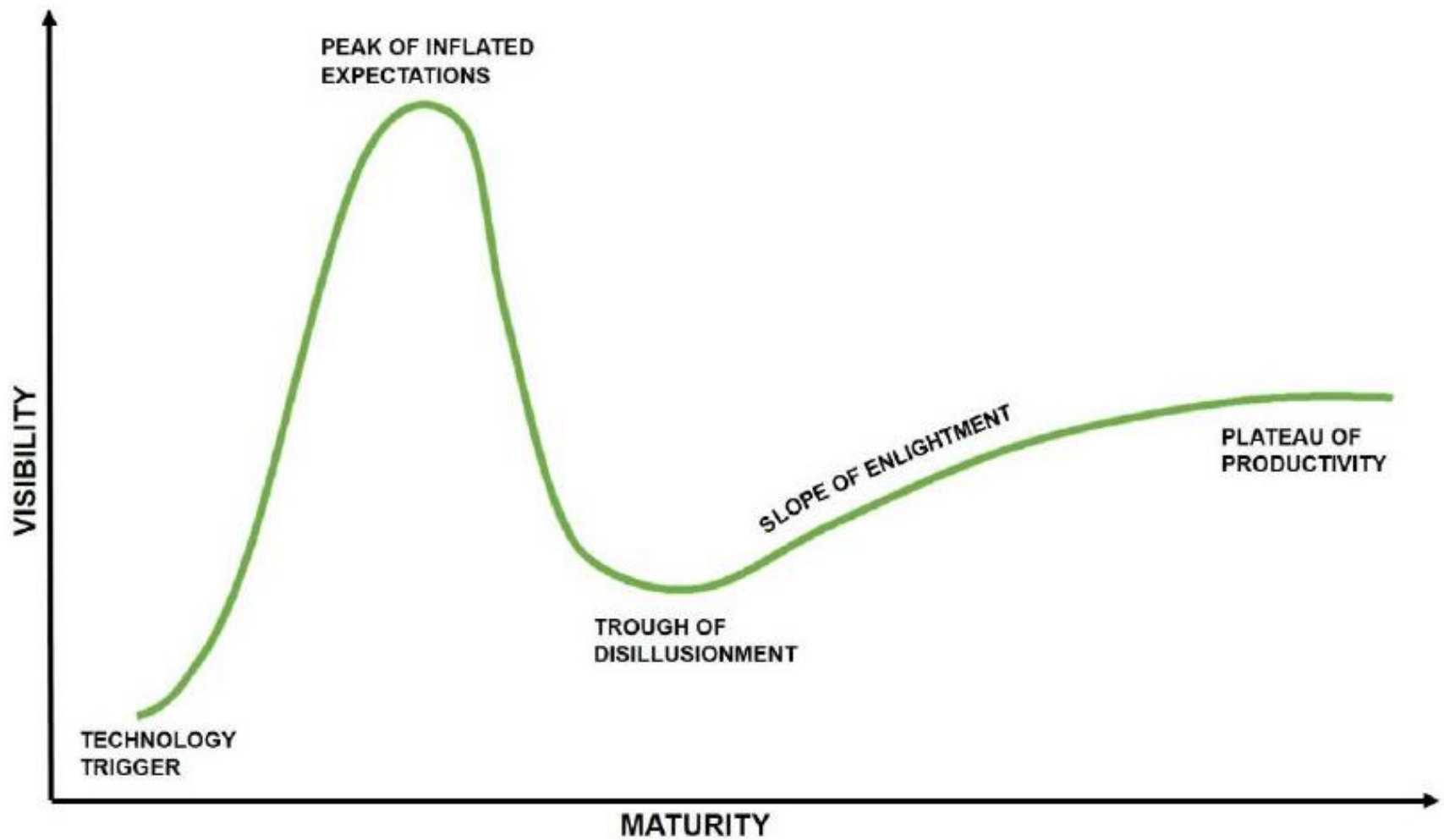
Ranacher et al (2018)

**Figure 2.** Gartner technology hype cycle (adapted from [38]).
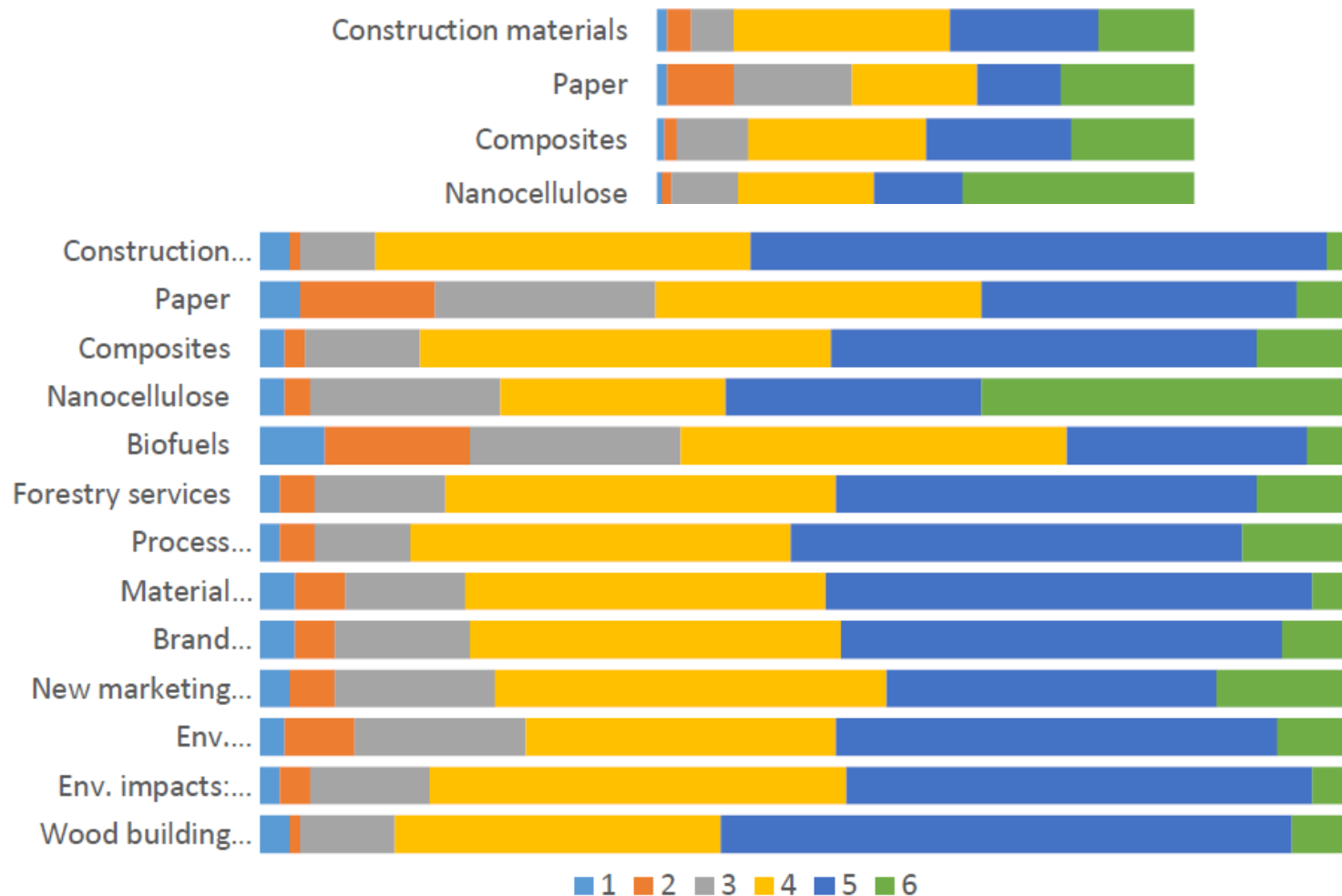
Stern et al (2018)

**Figure 4.** Respondent distribution to the statement: "For societal and sustainable development, I think the forest sector should focus their innovation efforts over the next 20 years on ... " (Scale from 1 = Strongly disagree, to 5 = Strongly agree, 6 = I don't know). Stern et al (2018)
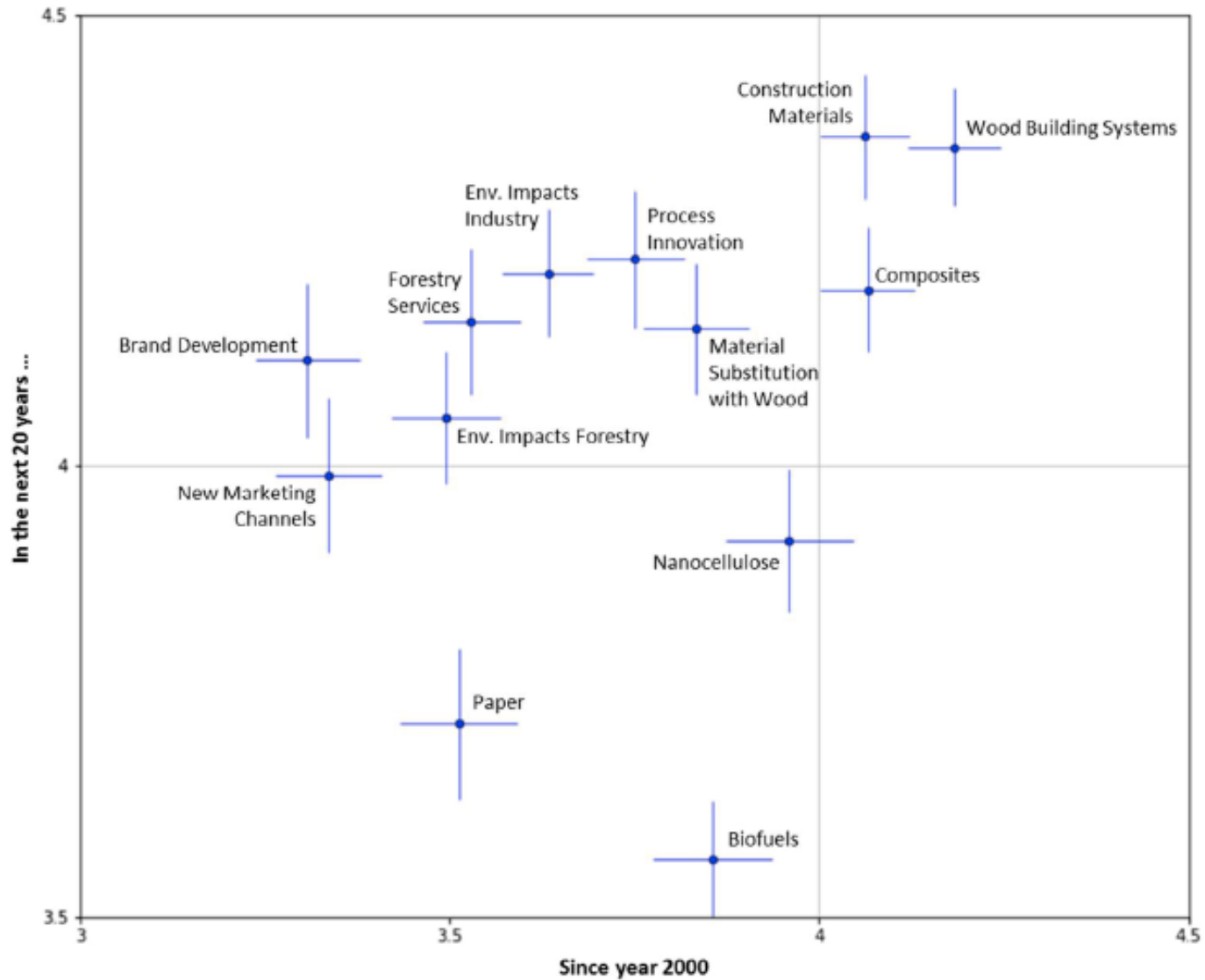
Figure 5. Performance Importance Grid (Scale from 1 = Strongly disagree, to 5 = Strongly agree).
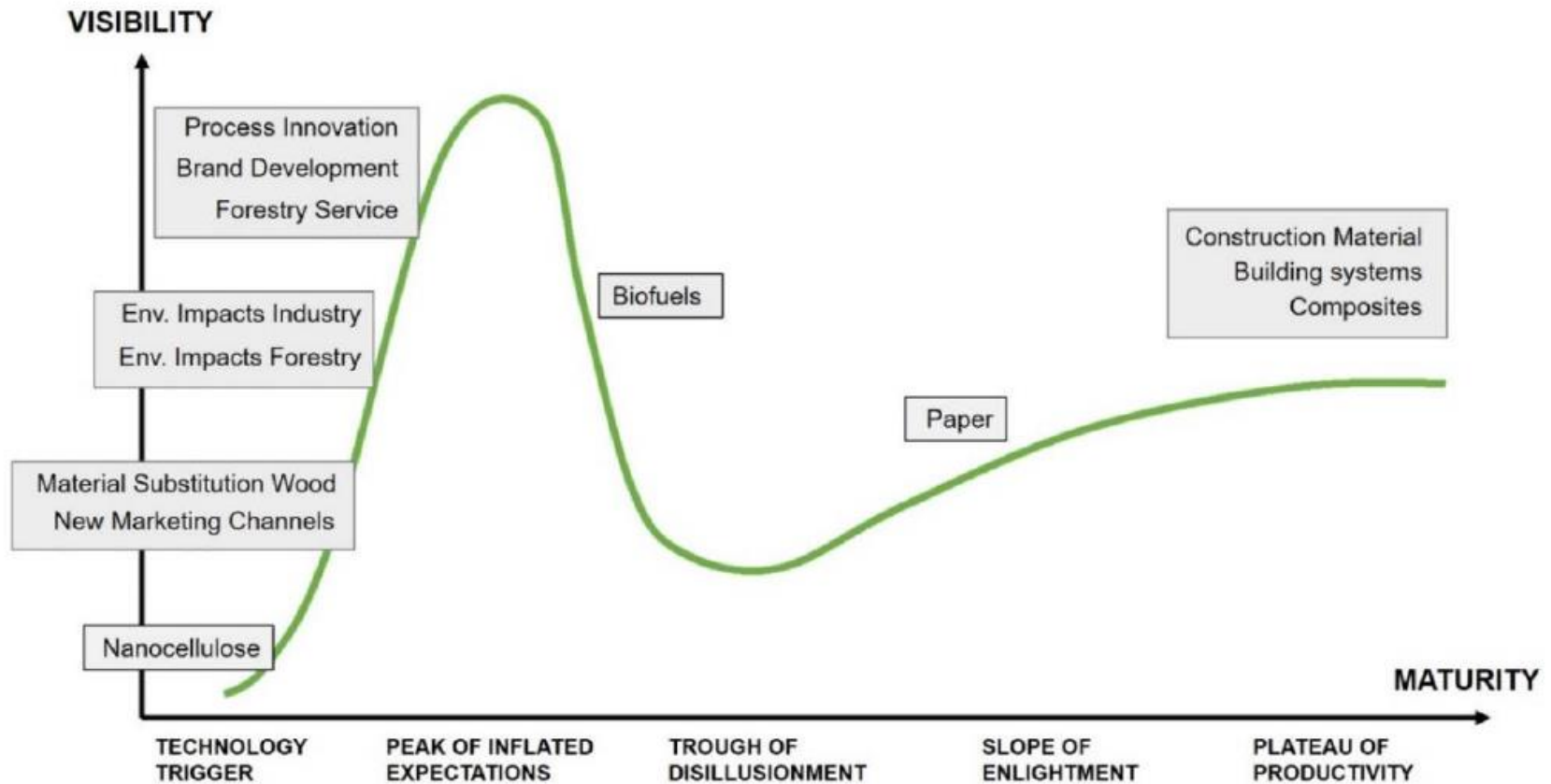
Stern et al (2018)

**Figure 6.** Schematic position of the investigated innovation areas in Gartner's technology hype cycle.

Stern et al (2018)

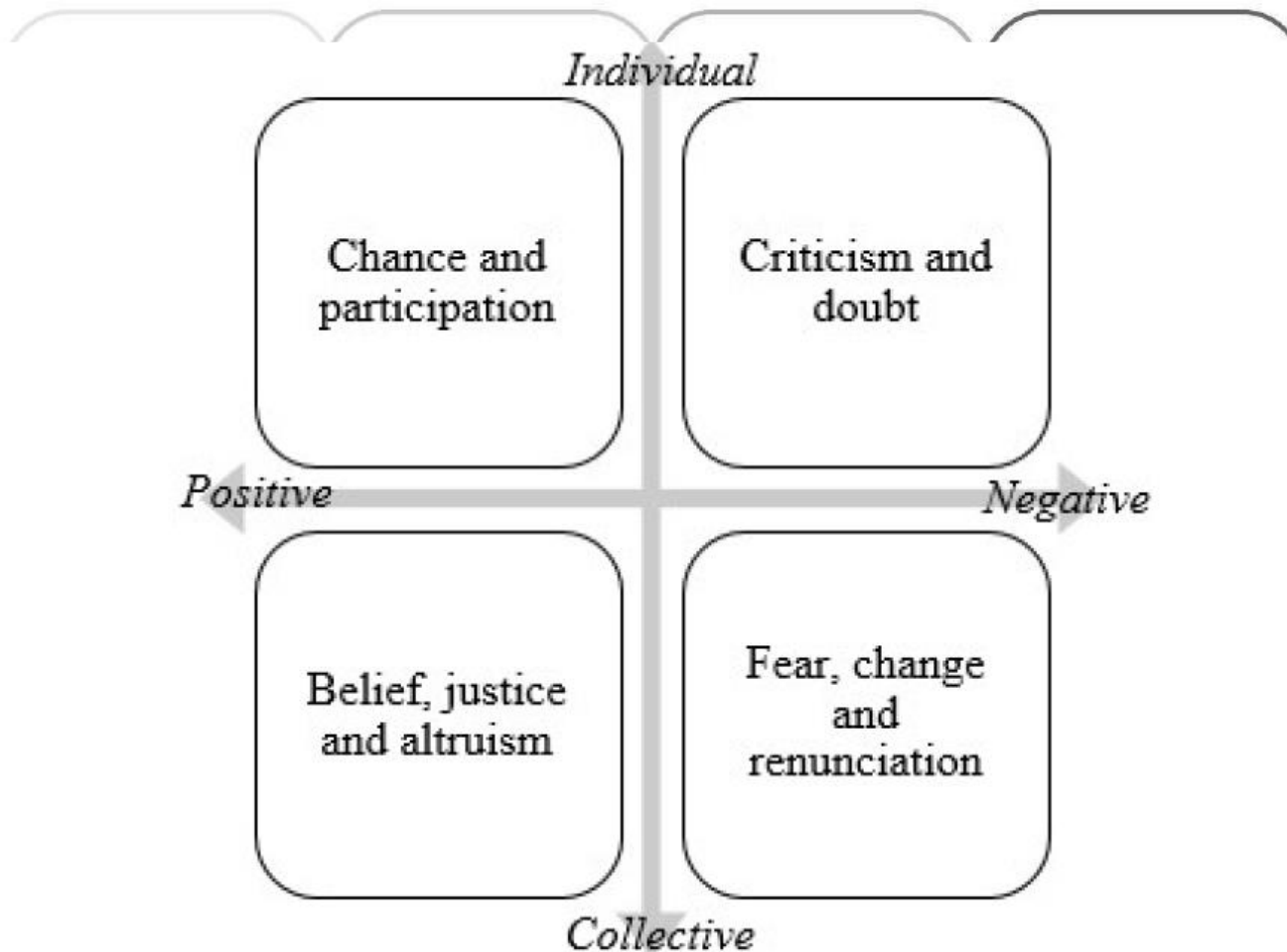# What about future pathways?

A forest-based Bioeconomy?

**Figure 3.** Value matrix and applied value dimensions, adapted from Vringer et al. [39].
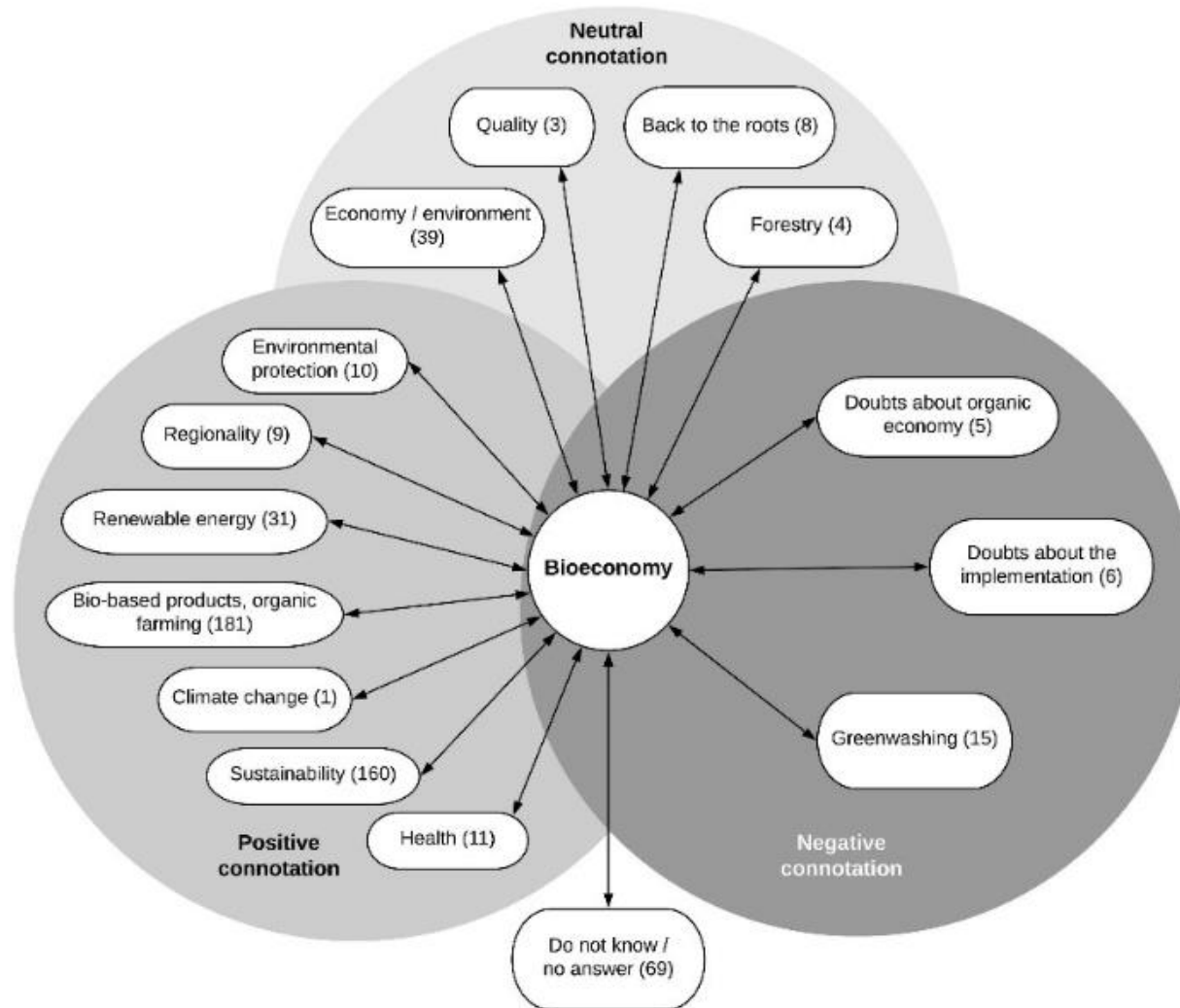
Stern et al (2018)

**Figure 5.** Thematic coding and attitude (i.e., neutral/positive/negative connotation) towards the definition of the term bioeconomy with the absolute frequency of mentioned topics given in brackets ($N = 456$).

Stern et al (2018)

**Table 4.** Significant differences in frequency of attributes by target group (N = 456).

| Laddering Theme | Target Group | | | | $\chi^2(df)$ | p Value |
|---|---|---|---|---|---|---|
| | Students (n = 126) | Employees (n = 153) | Farmers (n = 67) | Pensioners (n = 110) | | |
| Curiosity/interest | 34.92% | 20.26% | 22.39% | 15.45% | $\chi^2(3) = 14.055$ | 0.002 |
| Back to nature | 15.08% | 18.30% | 34.33% | 32.73% | $\chi^2(3) = 16,961$ | 0.001 |
| Quality of life | 8.73% | 17.65% | 11.94% | 22.73% | $\chi^2(3) = 9944$ | 0.016 |
| Doubts about sustainability and equity of a bioeconomy | 8.73% | 15.69% | 26.87% | 15.45% | $\chi^2(3) = 14,896$ | 0.009 |
| Doubts about effectiveness | 16.67% | 10.46% | 31.34% | 15.45% | $\chi^2(3) = 11,101$ | 0.002 |
| Inequity | 5.56% | 10.46% | 20.90% | 11.82% | $\chi^2(3) = 10,667$ | 0.012 |
| Fear for own existence | 0.00% | 9.80% | 7.46% | 3.64% | $\chi^2(3) = 14,561$ | 0.002 |

**Table 5.** Frequency of select mentioned topics by the four EMCB groups (N = 456).

| Attributes | Level of EMCB | | | | $\chi^2(df)$ | p-Value |
|---|---|---|---|---|---|---|
| | Very High EMCB (n = 114) | High EMCB (n = 114) | Low EMCB (n = 114) | Very Low EMCB (n = 114) | | |
| Optimism | 45% | 32% | 32% | 25% | $\chi^2(3) = 10.816$ | 0.013 |
| Sense of responsibility | 41% | 29% | 19% | 25% | $\chi^2(3) = 14.676$ | 0.002 |
| Health | 23% | 9% | 16% | 18% | $\chi^2(3) = 8.601$ | 0.036 |
| Justice | 18% | 14% | 9% | 6% | $\chi^2(3) = 8.775$ | 0.032 |
| Sustainable Consumption | 44% | 45% | 36% | 29% | $\chi^2(3) = 7.966$ | 0.047 |
| Quality of life | 25% | 17% | 12% | 8% | $\chi^2(3) = 14.597$ | 0.002 |
| Doubts on realism | 16% | 23% | 22% | 32% | $\chi^2(3) = 8.154$ | 0.043 |

Stern et al (2018)

# Conclusions

- Communication (knowledge, interest)

- Expectations (up and down)

- Not just positive - fears

- Integration (open innovation)

**Thank you for your attention!**

# References

Huber, J.; Ranacher, L.; Stern, T.; Schwarzbauer, P. Forest management or greed of gain? An information experiment on peri-urban forest visitors' attitudes regarding harvesting operations. Urban For. Urban Green. 2017, 27, 214–220.

Korhonen, E.; Toppinen, A.; Lähtinen, K.; Ranacher, L.; Werner, A.; Stern, T.; Kutnar, A. Communicating Forest Sector Sustainability: Results from Four European Countries. Forest Products Journal 2016, 66, 5, 362-370

Lähtinen, K.; Toppinen , A.; Suojanen, H.; Stern, T.; Ranacher, L.; Burnard, M.; Kuzman, M. K. Forest Sector Sustainability Communication in Europe:a Systematic Literature Review on the Contents and Gaps. Curr. Forestry Rep. 2017, 3, 173–187

Ranacher, L.; Höfferer, K.; Lettner, M.; Hesser, F.; Stern, T.; Rauter, R.; Schwarzbauer, P. What would potential future opinion leaders like to know? An explorative study on the perceptions of four wood-based

innovations. J. Land Manag. Food Environ. 2018, 69, 47–59.

# References

Ranacher, L.; Lähtinen, K.; Järvinen, E.; Toppinen, A. Perceptions of the general public on forest sector responsibility: A survey related to ecosystem services and forest sector business impacts in four European countries. Forest Policy and Economics 2017, 78, 180-189.

Ranacher, L., Stern, T. Are your messages being heard? Evaluation of the forest-based sector's communication on sustainable forest management in Austria Journal of the Austrian Society of Agricultural Economics, 2015, 25, 159-168

Stern, T.; Ploll, U.; Spies, R.; Schwarzbauer, P.; Hesser, F.; Ranacher, L. Understanding Perceptions of the Bioeconomy in Austria—An Explorative Case Study Sustainability 2018, 10 , 1-17.

Stern, T.; Ranacher, L.; Mair, C.; Berghäll, S.; Lähtinen, K.; Forsblom, M.; Toppinen, A. Perceptions on the Importance of Forest Sector Innovations: Biofuels, Biomaterials, or Niche Products? Forests 2018, 9, 255, 1-13

Vringer, K.; Aalbers, T.; Blok, K. Household energy requirement and value patterns. Energy Policy 2007, 35, 553–566.

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