



# Foresight as a tool for strategic thinking and action

**EFI Young Leadership Programme 2019**

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# Outline

What and why is foresight

Strategic foresight and anticipation in forest-based industries

Exploring futures for strategic action

Methodological plurality

Take-home messages



# What and why is foresight?



## Nature of futures knowledge

- Future cannot be predicted → Assessment of alternative futures
- Future is not pre-determined → Assessment of probabilities
- Future is not value-free → Assessment of what people want
- We can (to some extent) affect future → Proactive action

**Foresight is the act of learning about futures and making one**

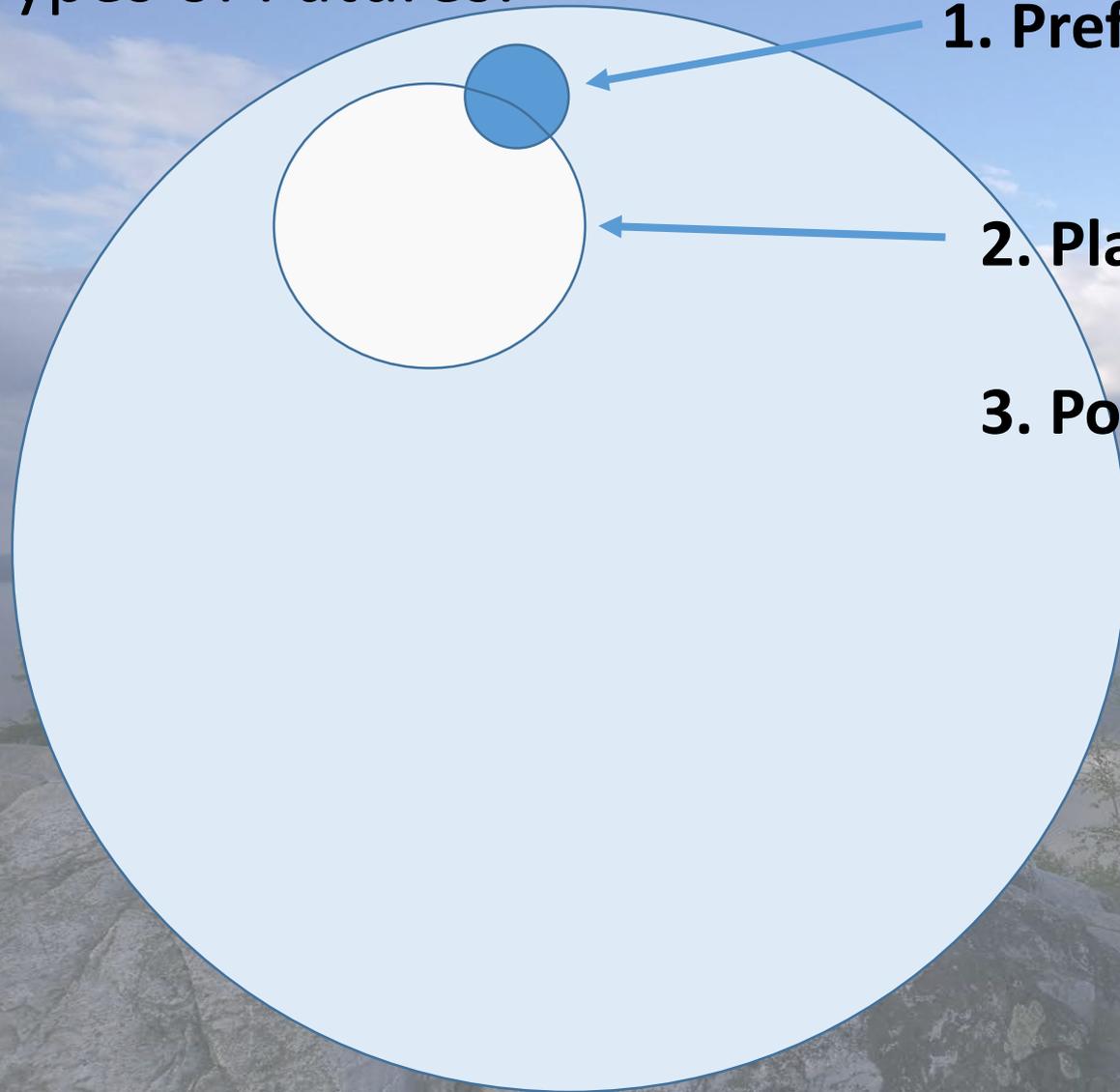
## Potential benefits for companies, sectors, countries, and regions

- Reaching and maintaining competitive advantage
  - Staying prepared for a change in market, policy, or technology

# ANTICIPATION

Staying prepared  
for the future

# 3 Types of Futures:



**1. Preferable Futures**

**2. Plausible Futures**

**3. Possible Futures**

# Potential contributions of foresight in the forest-based bioeconomy



Effectiveness in responding to global challenges

Sustainability and responsibility of forest-based businesses

Early readiness to act with demographic changes

Contributing to rural and urban livelihoods and quality of life

Maintaining public acceptability of forest usage and serving their evolving needs

Without anticipatory approach, the efforts are vulnerable to **unsuccess**

Alongside technological change patterns, the following game changers, for example, may affect the future opportunities to use forests



Climate  
agreements

Human health  
movement

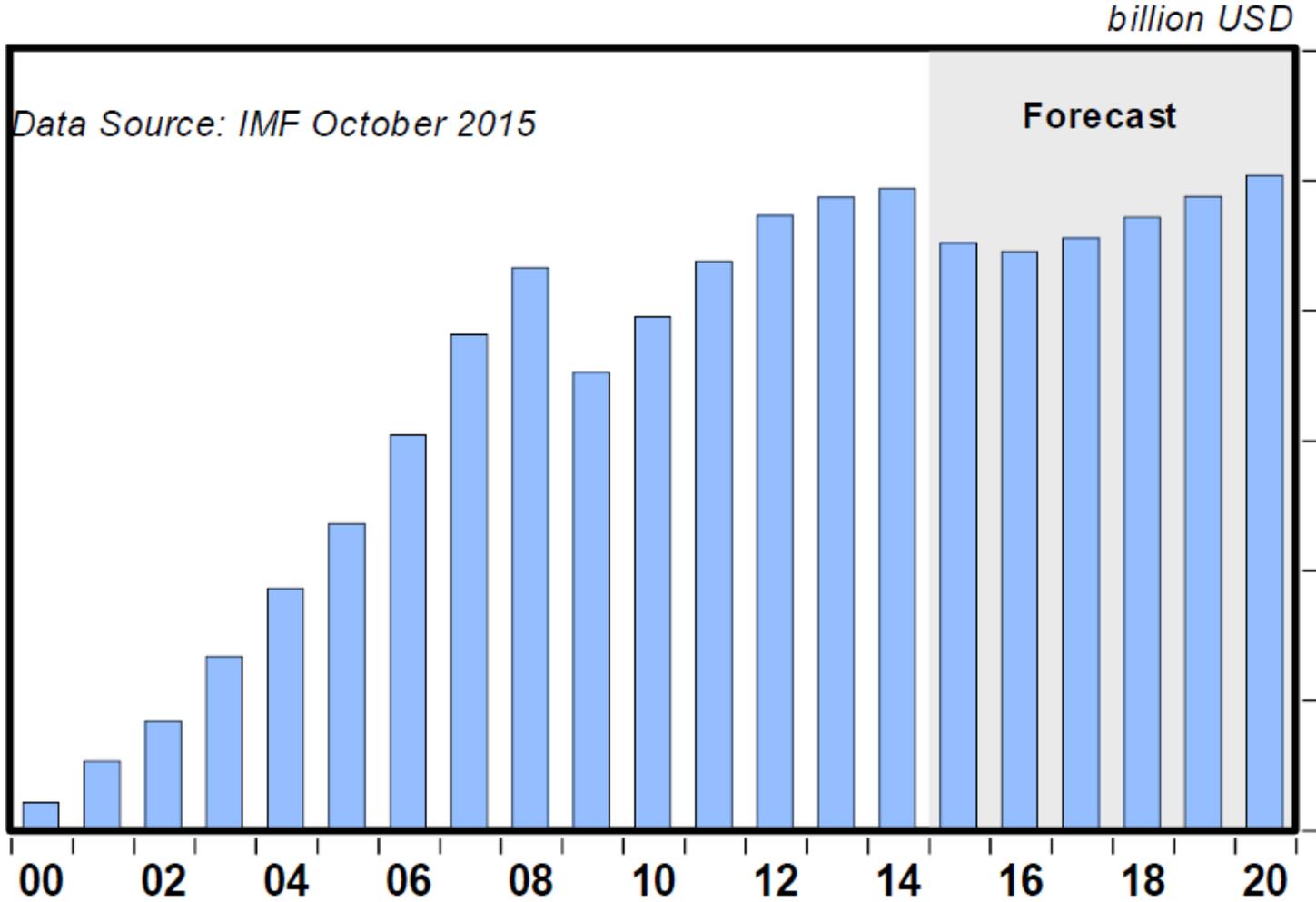
Economy in  
China

Oil market

Civil society

Land  
ownership  
and tenure

# Russian GDP in 2000-2014 and Forecast for 2015-2020



What is interesting in foresight is not (only) the forecast as such but the factors behind anticipated changes, their impacts and uncertainties

# Transformation – what is it, where does it come from, and how does it affect forest bioeconomy?

Growing concern of global sustainability

Complex socio-ecological and business-political developments

Rapid technological progress, intertwined with evolving social practices

The resulting transformative leaps in forest bioeconomy systems carry the potential to initiate a new era



# What can we do with transformations?



While we cannot fully orchestrate them...

...we can foresee, explore, and shape those transformations

In forest bioeconomy research, we will need

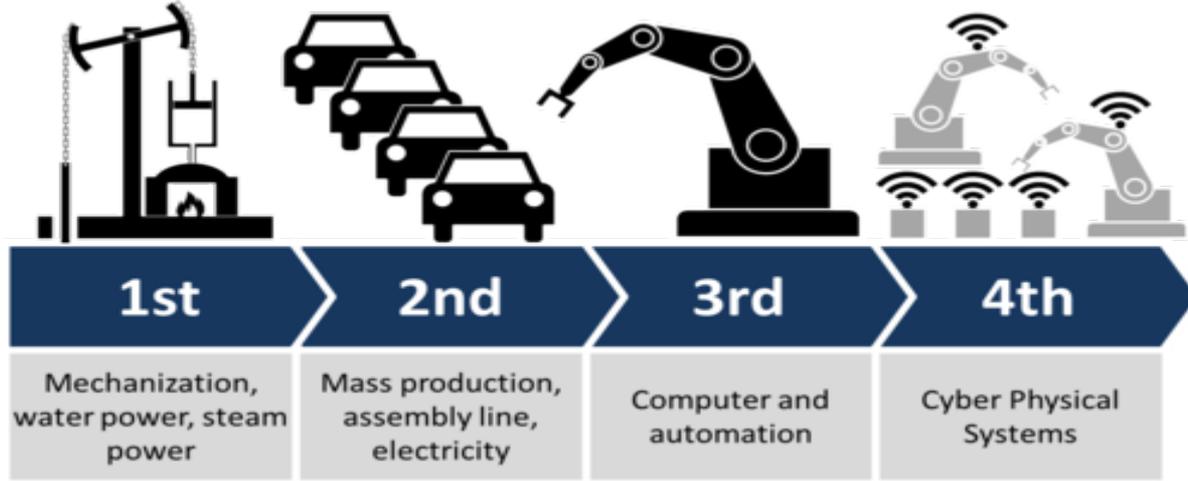
- Deeper understanding of the change patterns
- Collaboration across disciplines
- Out-of-the-box thinking

During this week, you have been and continue enhancing your capabilities to futures-oriented thinking and action

# Example: Industry 4.0 in forest industries

How to anticipate technological evolvement?

(Hujala and Hansen 2017)

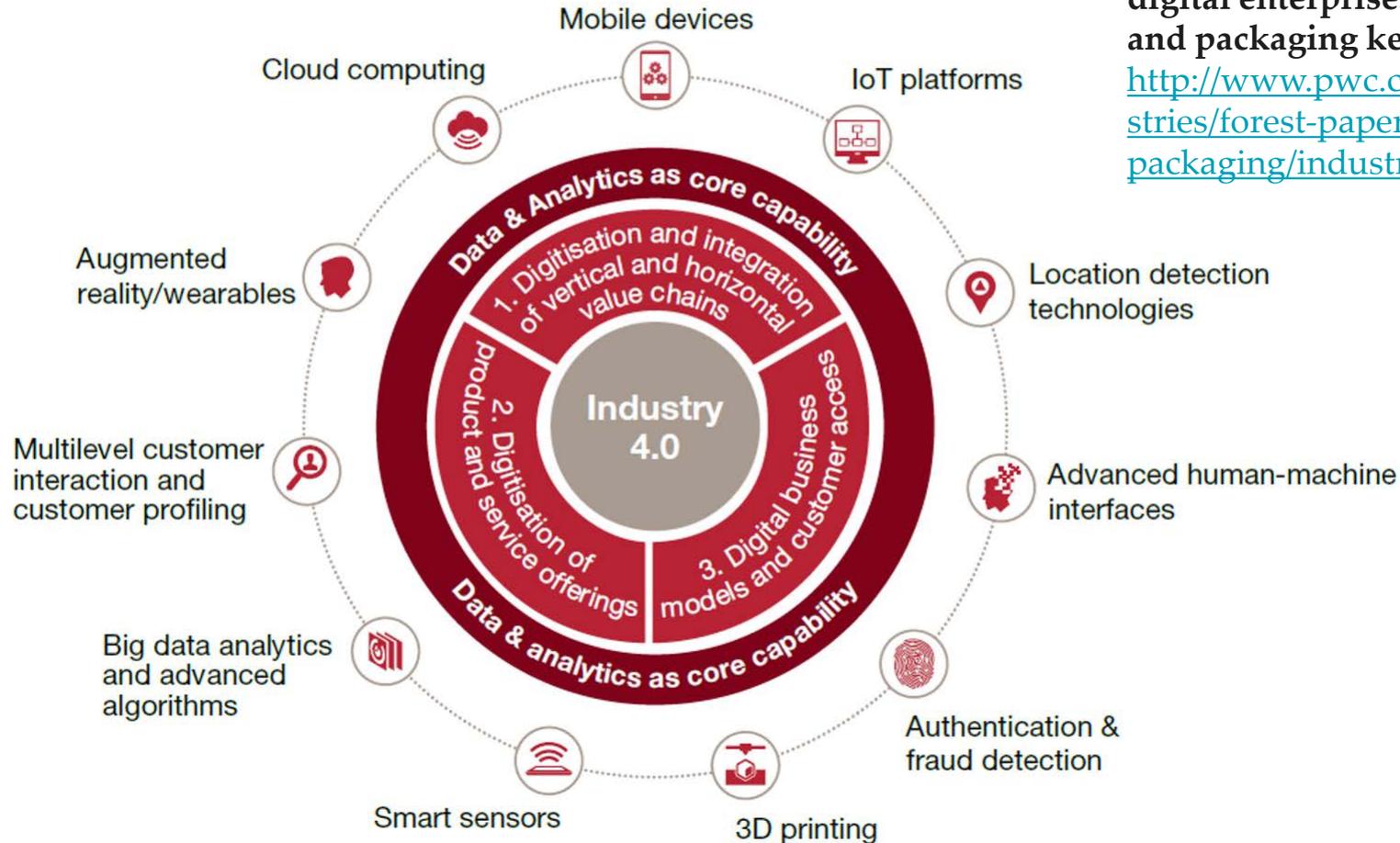


## Industrial generations

“Manufacturing has undergone many evolutionary stages and paradigm shifts. The paradigm shifts in going from a craft industry to mass production, then lean manufacturing, and finally to agile manufacturing and mass customizations. The digital age in manufacturing is giving rise to output devices that allow rapid customization and manufacturing, revolutionizing how we design, develop, fabricate, distribute, and consume products.” (Amicis and Hansen, 2017)

# Industry 4.0 Framework and Contributing Digital Technologies

PriceWaterhouseCoopers, 2016.  
Industry 4.0: Building the digital enterprise. Forest, paper and packaging key findings.  
<http://www.pwc.com/gx/en/industries/forest-paper-packaging/industry-4-0.html>



# What about Industry 4.0 in forest-based industries

Pulp, paper and packaging companies anticipate over a 3% increase in revenue and over a 4% decrease in costs, annually, over the next five years **due to digitization** (PwC 2016)

Internet of Things (IoT) and other Industry 4.0 (I4.0) features will **soon become commonplace** in industrial business

I4.0 represents a critical **culture-changing phenomenon** that is essential for the future competitiveness of forest sector companies operating in the bioeconomy of tomorrow

Where do wood industry companies stand as regards I4.0 and **what does it mean to their businesses?**

# Key benefits of Wood I4.0

- Potential for **reducing costs**
  - Better inventory control, increased Just-in-Time delivery...
- Potential of **adding value**
  - Better market/consumer insight → meeting better customer needs
  - Interface with final customers to allow mass-customization
- Tool to **enable enhanced customer orientation**
- Tool to **enable cross-sector collaboration**
- Necessity to maintain **competitiveness**



# Comparison: Wood I4.0 versus general I4.0

Forest resource data and **wood procurement logistics** sections of wood-based value chains have been intensively developed (e.g. Forest Big Data projects in Finland)

**Mill automation** is on advanced level and moving forward

However, I4.0 promises are mostly yet unfulfilled in the **customer/consumer sections** of the wood-based value chains

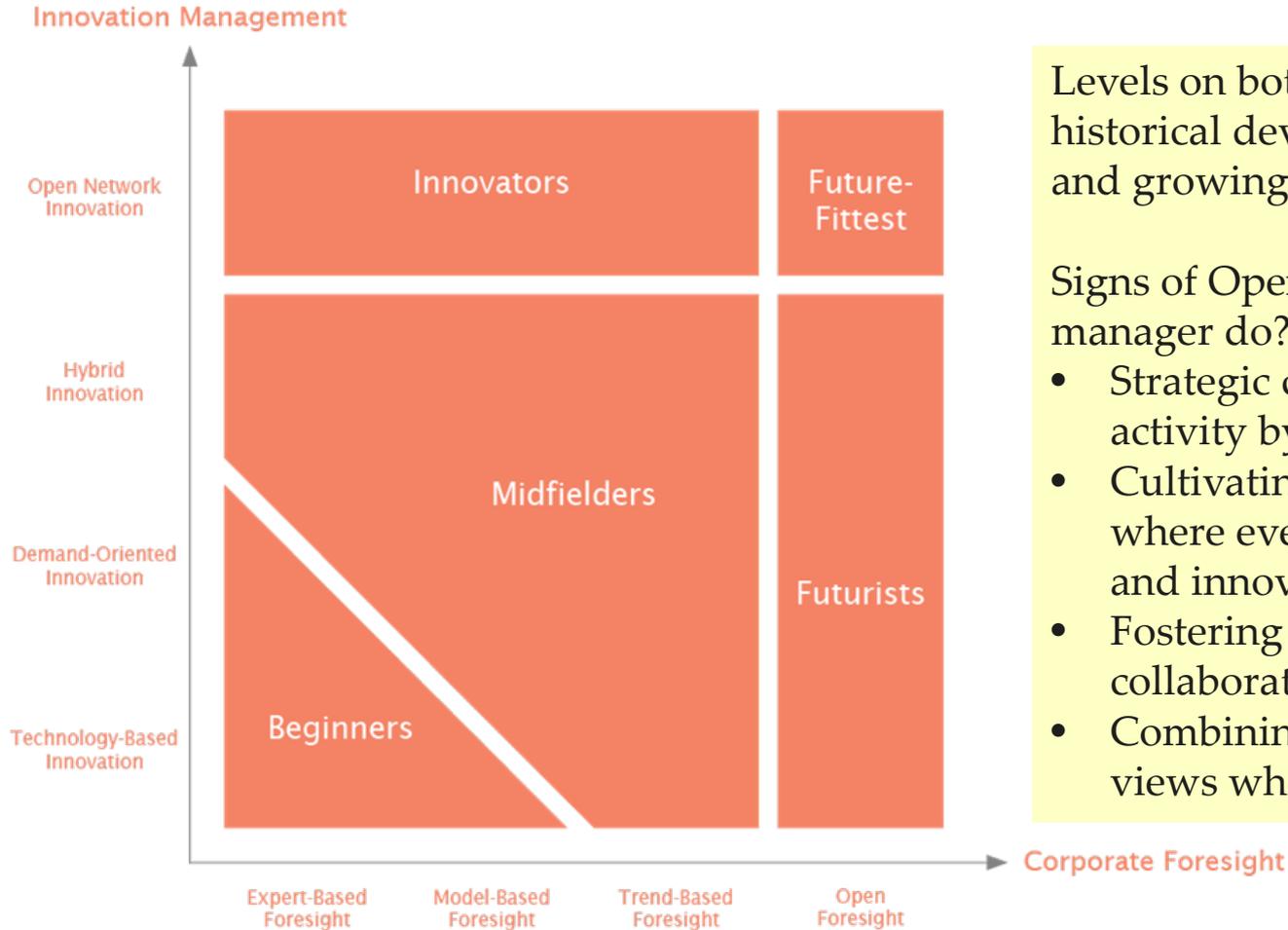
There is almost no refereed literature on **cross-sectoral collaboration** within the context of the forest industry

The **traditional culture** of the forest industry affects innovation efforts in general, including the digital technologies driving I4.0

# Example: Integrating corporate foresight in innovation management in multinational forest industry

Case: Finland-based companies  
(Hujala, Hansen and Kangas 2019)

# Combining levels of innovation management and corporate foresight (von der Gracht et al., 2010)



Levels on both scales represent historical development of RDI focus and growing sophistication

Signs of Open Foresight (What can a manager do?)

- Strategic commitment to foresight activity by top-level management
- Cultivating company culture where everybody is a foresighter and innovator
- Fostering cross-sectoral collaboration
- Combining inside and outside views when developing business

# Examples of corporate foresight from three large Finnish forest industry companies (Hujala et al. 2019)

UPM	Stora Enso	Metsä Group
<p>Analyzes <b>global megatrends</b>, as opportunities and challenges for the company towards 2030 and beyond</p>	<p>Global driver analysis based on external academic and consulting reports, communicated in <b>Visions – Insight magazine on trends and forest-based business implications</b></p>	<p>States that the <b>changes in the operating environment</b> create versatile opportunities for Metsä Group as a forerunner of the bioeconomy</p>
<p>Business areas are analyzed with an <b>outlook to operational environment</b></p>	<p>States to have accelerated transformation to a renewable materials company (clear anticipatory strategy)</p>	<p><b>Anticipates</b> that urbanized, connected, wealthier, and ageing people will consume more of their sustainable products</p>
<p>Employs <b>risk table</b> with impact, management, and opportunity</p>	<p>Recognizes uncertainties in the global business environment and states to <b>proactively adapting to the changing macroeconomic situation</b></p>	<p>Successfully implemented years of restructuring work from a paper company to a paperboard company</p>
<p>Analyses energy price developments within markets and produces price forecasts that are based on <b>different scenarios</b></p>	<p>Holistic, systematic and proactive management of risks and opportunities: <b>a likelihood/impact risk map and key risks table</b></p>	<p>Carries out <b>risk assessments</b> as part of the annual planning and strategy process</p>
<p>Joined Ellen McArthur Foundation with circular bioeconomy transition ambitions</p>	<p>Has established <b>change agents</b> in the Pathfinders, Pathbuilders and Pathbreakers programmes to support the transformation of the company</p>	<p>In 2015 started <b>discussions with stakeholders and partners</b> on how to create value and to better understand total impact on society</p>

# AMBIDEXTERITY

Capability of  
simultaneously  
perform in existing  
market and innovate  
for future

# Example: Strategic exploration of implications of "Coming Age of Wood"

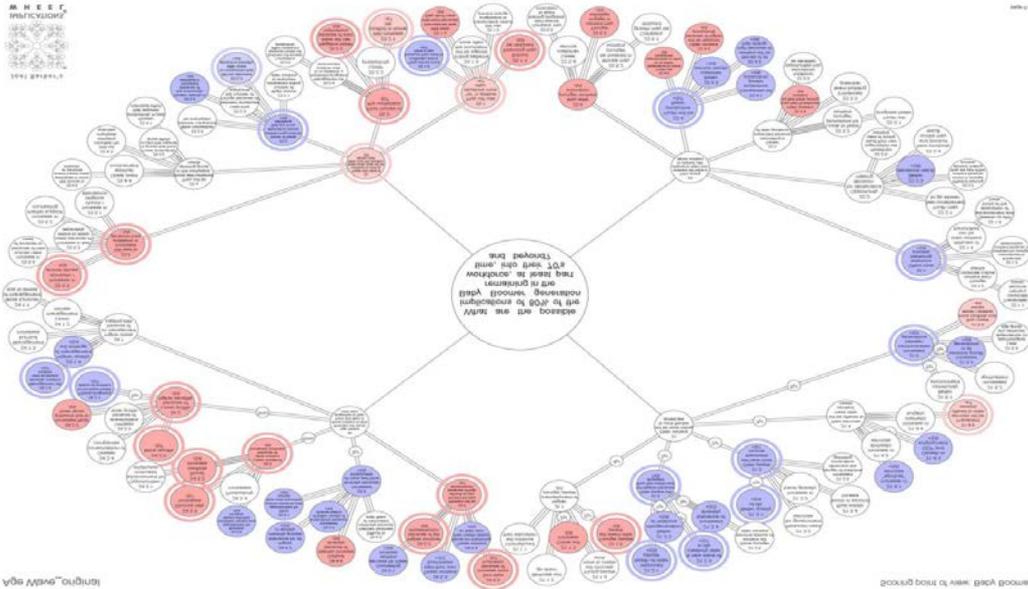
Bengston, Hujala and Butler (2019)

# The Implications Wheel®



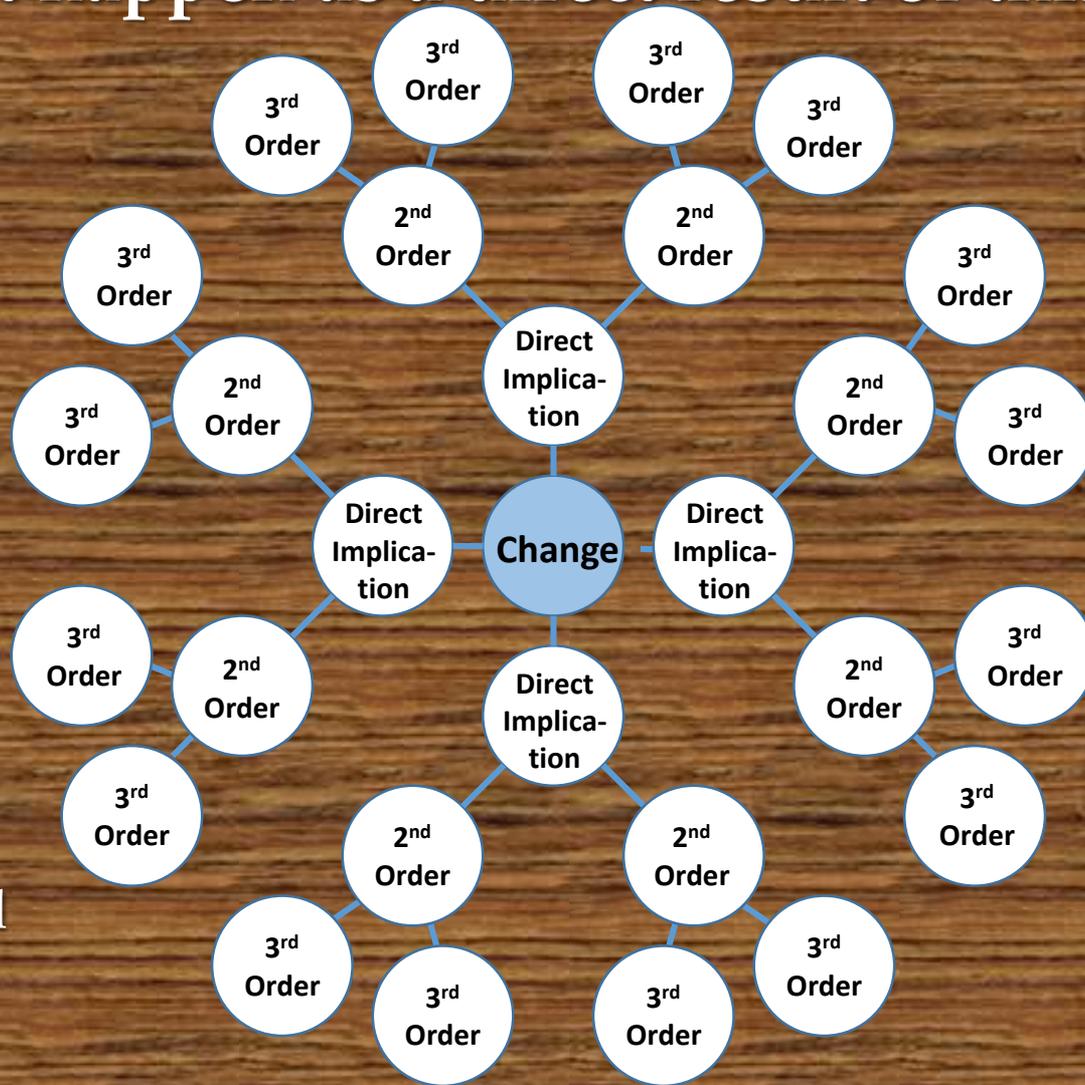
Joel Barker's  
IMPLICATIONS  
WHEEL®

- Refinement of the Futures Wheel
- More structured, same idea
- Used thousands of times by companies, military, governments, non-profits



A strategic exploration tool for “scouting the future”, including scoring of positive and negative implications for  
i) Likelihood, and  
ii) Desirability

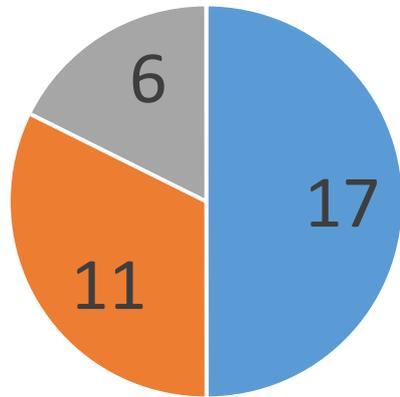
# What might happen as a direct result of this change?



Too  
Tenuous  
Beyond 3<sup>rd</sup>  
order



FuturesWheel online survey to forest ownership and wood industry specialists and stakeholders in Finland, Norway, and USA (n=34)



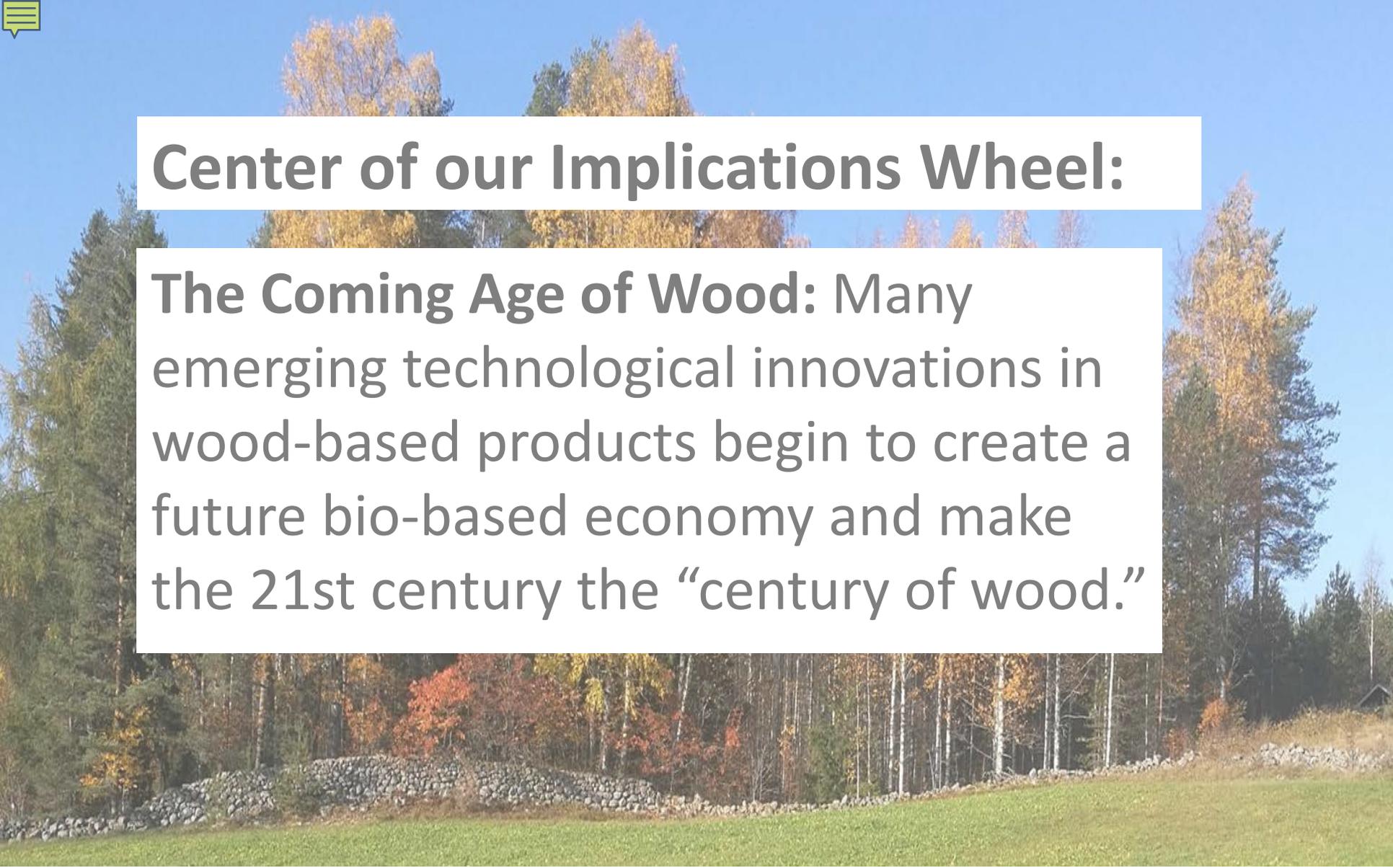
■ USA      ■ Finland  
■ Norway

## Gender:

- USA: 8 female, 9 male
- Finland: 9 female, 2 male
- Norway: 1 female, 5 male

## Types of Organizations:

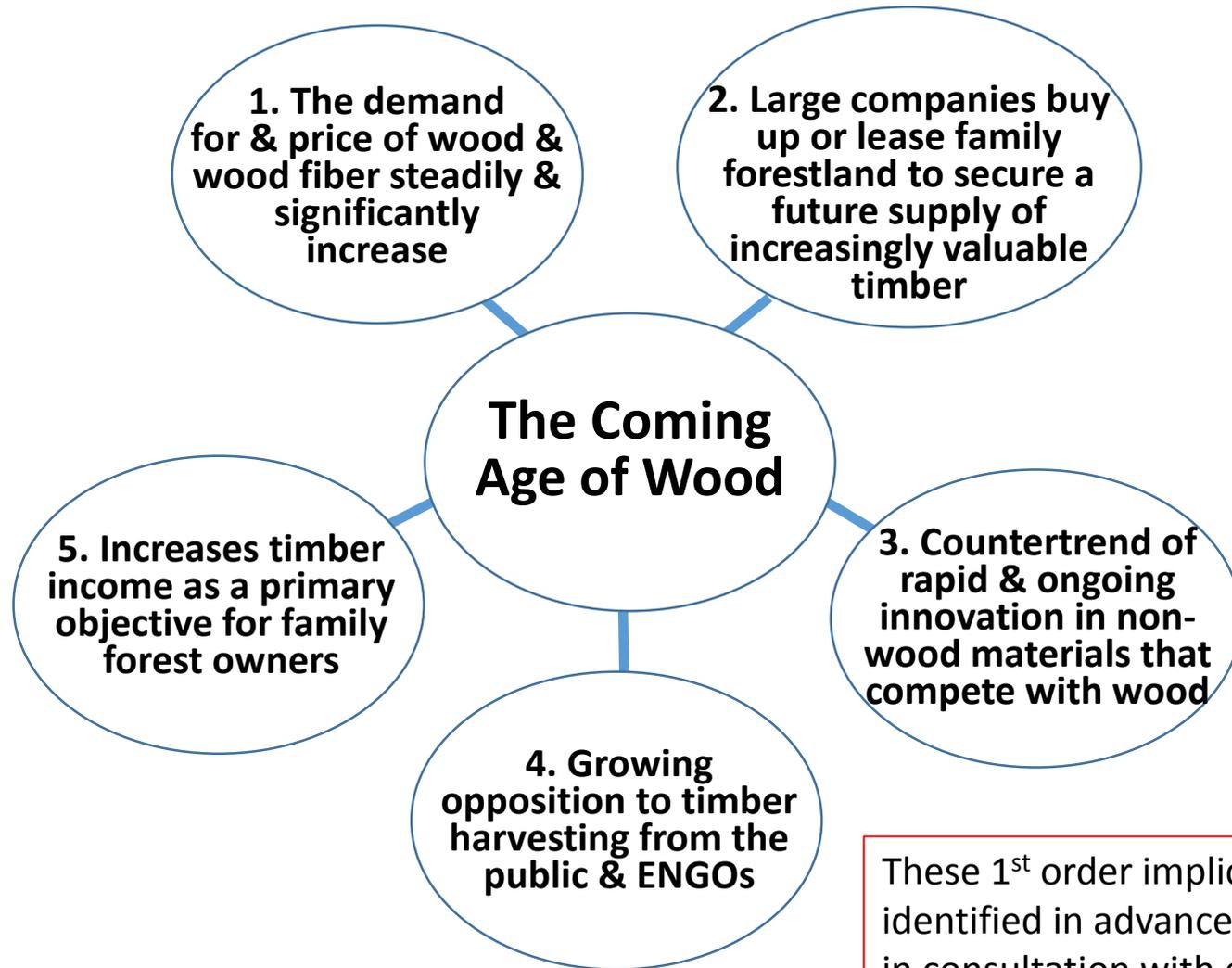
- Family forest owner and forest sector research, forest owners' associations, extension/education, wood-based industry, forest policy, NGOs
- Expertise from variety of viewing angles, professions, and both inside and outside perspectives



## Center of our Implications Wheel:

**The Coming Age of Wood:** Many emerging technological innovations in wood-based products begin to create a future bio-based economy and make the 21st century the “century of wood.”

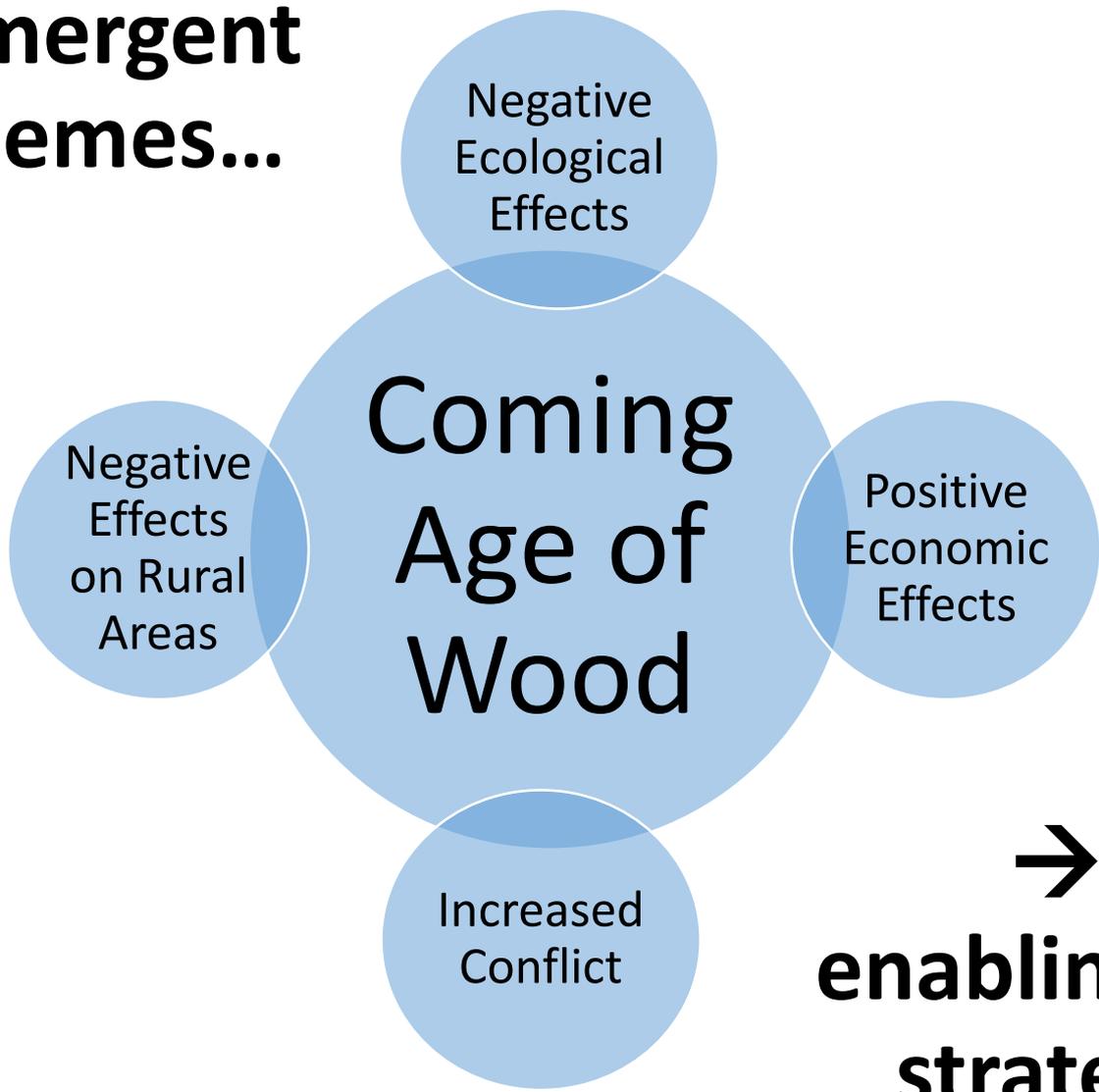
# What might happen as a direct result of...



These 1<sup>st</sup> order implications were identified in advance by the authors, in consultation with experts



**Emergent themes...**



**→ Identification of enabling and mitigation strategies and actions**

# Towards strategic, anticipatory action

Methodological avenues

# The "how" of studying futures and doing foresight

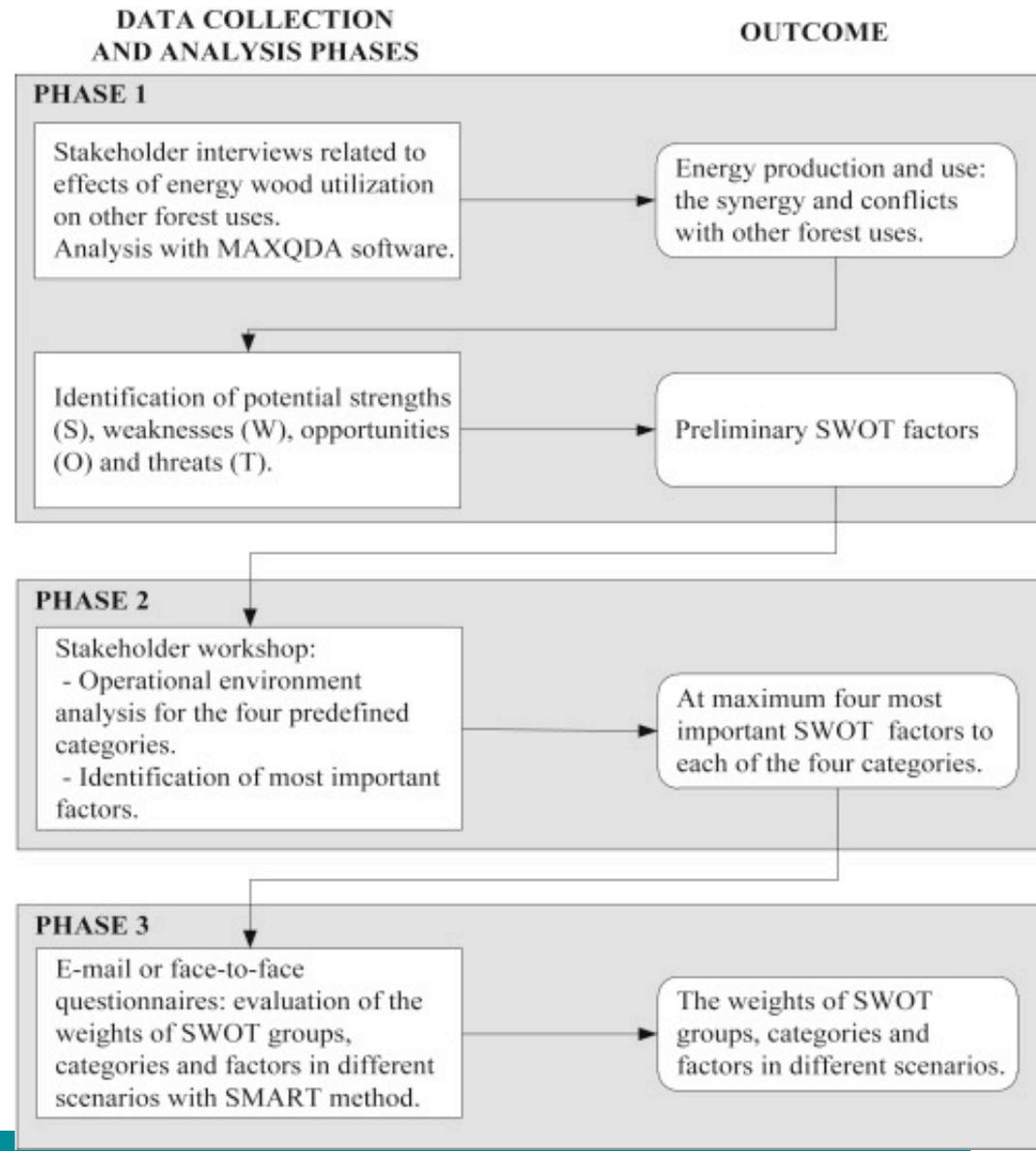


- The most beneficial tool is **futures thinking**
- Several strategic management and planning methods may be used to assess futures
- A variety of concepts, approaches and technical tools may prove helpful in foresight analyses and processes



# Combination of methods to support futures thinking and structure futures information

Example: combining SWOT analysis and multi-criteria rating (Pezdevšek Malovrh et al. 2016) in analysing alternative futures of forest bioenergy production and use in Finland, Germany, Norway, and Slovenia



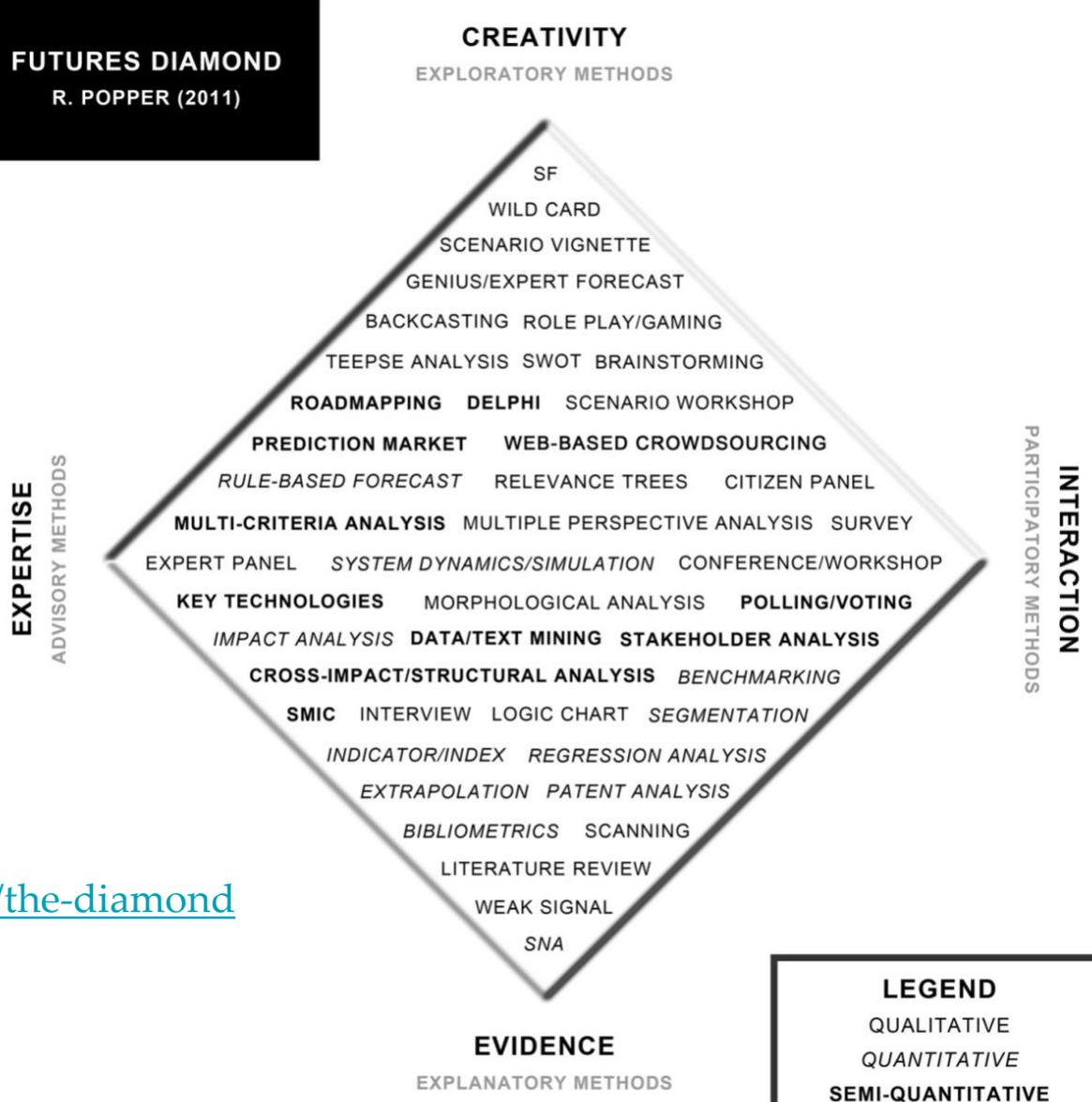


# Rafael Popper's Futures Diamond of various (types of) methods

<http://www.futuresdiamond.com/en/the-diamond>

## FUTURES DIAMOND

R. POPPER (2011)



# Take-home messages



Foresight is a  
strategic asset

Futures  
preparedness  
enables competitive  
advantage

Policies and  
businesses call for  
anticipation

Foresight combines  
creativity and rigor

Foresight is  
participatory action  
that combines  
knowledges

# References

- Bengston, D.N., Hujala, T., & Butler, B.J. 2019. **The “Coming Age of Wood” and Family Forest Owners: An Implications Wheel® Exploration.** In review.
- Hujala, T., & Hansen, E. 2017. **Wood-based businesses in the next era of manufacturing.** Presentation in NOFOBE & NB-Nord Meeting “Industrial Scale Bioeconomy and its Requirements”, 14.6.2017, Lappeenranta, Finland.
- Hujala, T., Hansen, E., & Kangas, J. 2019. **Mature forest industry companies: The path to future-fittest in the circular bioeconomy.** In review.
- Pezdevšek Malovrh, Š., Kurttila, M., Hujala, T., Kärkkäinen, L., Leban, V., Lindstad, B.H., Peters, D.M., Rhodius, R., Solberg, B., Wirth, K., Zadnik Stirn, L. & Krč, J. 2016. **Decision support framework for evaluating the operational environment of forest bioenergy production and use: case of four European countries.** Journal of Environmental Management 180: 68–81.
- von der Gracht, H.A., Vennemann, C. R., & Darkow, I. L. 2010. **Corporate foresight and innovation management: A portfolio-approach in evaluating organizational development.** Futures, 42(4), 380-393.

*Thank you!*



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