



PFFN Research Agenda: Designing Digital & Playful Technologies for Fair and Inclusive Participation in Forest Planning

1. Purpose and Rationale

Forest planning and decision-making across the Nordic Countries and Europe more broadly is increasingly expected to incorporate diverse values, societal goals, and stakeholder perspectives. Yet meaningful digital participation is often hindered by barriers such as the complexity of information, lack of accessible tools, unequal technology skills, and insufficient recognition of underrepresented groups.

The PlayFair Forest Network (PFFN) aims to understand *how digital tools and playful technologies can be intentionally designed* to address these gaps and foster **fair, inclusive, and engaging participation** in forest planning. This includes investigating user needs, inclusivity considerations, participatory methods, and how gameful and playful approaches can be used to democratise information and empower stakeholders.

This Research Agenda summarises the insights of the 12 PFFN participants representing Finland, Sweden, Norway, Latvia, and Italy who attended the PFFN in-person workshop in Uppsala in January 2026. The views expressed were informed by five webinars and two workshops that PFFN organised between 01/2025 and 01/2026, featuring 49 researchers and 7 stakeholders from 10 European countries. The contents below may inform upcoming activities.

2. Overall Research Objectives

1. **Identify barriers and enablers of inclusive participation** in forest planning from the perspectives of owners, professionals, visitors, marginalised groups, and public audiences.
2. **Develop and examine digital and playful tools** (games, apps, visualisations) that simplify complex forest data and *"ease the users' problems"*, enabling fair access to information.
3. **Explore how playful engagement and gamification** can motivate participation, support codesign, and facilitate dialogue among groups with differing knowledge levels or interests.
4. **Ensure accessibility, usability, and affordability** of participatory technologies so that all stakeholder groups, not only the digitally skilled or well-resourced, can participate effectively.
5. **Generate cross-country evidence** on how sociocultural contexts influence inclusive tool design and participation dynamics.



3. Core Methodological Approaches

3.1 Inclusive Stakeholder Research

- Surveys and interviews with forest owners, professionals, visitors, and *underrepresented or marginalised groups* to understand needs and participation barriers.
- Open dialogues about “*what works and what does not*” in current tools and planning practices.

3.2 Participatory & Co-Design Methods

- Inclusive co-creation of digital prototypes and playful applications with diverse stakeholders.
- Designing for *sustainable inclusivity* and ensuring results are communicated in “*easy and understandable ways*.”

3.3 Game Studies and Playful Interaction Design

- Prototyping and testing **serious games**, playful decision tools, and scenario-based planning games that help participants explore alternatives.
- Integrating ecological models into game environments to allow a realistic representation of forest outcomes.

3.4 Digital Usability, Accessibility & Human-Centred Design

- Usability testing focused on *affordable, easy-to-use technology* with clear visualisations of forest data.
- Accessibility audits that account for literacy levels, languages, disabilities, and differences in digital proficiency.

3.5 Comparative Mixed-Methods Across Countries

- Cross-country testing of the same games or tools to understand contextual differences in participation, motivation, and fairness perceptions.
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4. Thematic Focus Areas

Theme A — Understanding Participation Barriers & Needs

Aim: Map the landscape of who participates, who does not, and why.

Tasks:

- Explore “current needs” and motivational factors across stakeholder groups.
- Identify accessibility barriers to technology use among marginalised participants.

Expected results: Participation personas, barrier typology, design requirements.

Societal benefit: More equitable involvement and recognition in planning processes.

Theme B — Designing Inclusive Digital Interfaces & Visualisations

Aim: Make forest information comprehensible through intuitive, inclusive interface design.

Tasks:

- Test alternative visualisation styles to ensure understanding across varied audiences.
- Create “easy and accessible techs and apps” that reduce cognitive load.

Expected results: Visualisation design guidelines; accessibility toolkit.

Societal benefit: Reduces information asymmetry and increases informed participation.

Theme C — Gameful Tools for Participation, Dialogue, and Reflection

Aim: Harness games and playful interactions to enhance engagement and mutual understanding.

Tasks:

- Develop playful tools for participatory planning (e.g., scenario games, role-playing experiences).
- Study how games can clarify trade-offs and encourage empathy across stakeholder groups.
- Provide ways for game developers to access ecological models.

Expected results: Playful participation methods; validated prototypes.

Societal benefit: Lower barriers to participation; more democratic planning dialogue.



Theme D — Ensuring Fair Access: Affordability, Usability, and Support

Aim: Guarantee that inclusive participation is technologically and economically possible for everyone.

Tasks:

- Study low-cost digital solutions and mechanisms to maintain affordability.
- Explore offline-capable technologies and materials for low-connectivity areas.

Expected results: Guidelines for affordable tech; cost–benefit cases for implementers.

Societal benefit: Fair access irrespective of socio-economic background.

Theme E — Inclusive Learning and Capacity Building

Aim: Enable people with diverse backgrounds and varying levels of forestry knowledge to participate meaningfully.

Tasks:

- Develop playful technologies that help *schoolchildren* and *immigrants* learn about forests.
- Test apps and gather user feedback on learning curves and digital guidance.

Expected results: Learning modules, onboarding guides, “explainers.”

Societal benefit: Expanded forestry knowledge across society; stronger civic engagement.

Theme F — Cross-Country Replication to Understand Contextual Fairness

Aim: Understand how fairness and inclusion play out in diverse cultural, institutional, and forest ownership contexts.

Tasks:

- Test identical prototypes in each country.
- Compare participatory behaviours, comfort levels with games, and trust in technology.

Expected results: Cross-country participation datasets; cultural insights into fairness.

Societal benefit: Scalable designs adaptable to regional differences.



5. Expected Network-Level Outcomes

- A **design framework** for fair and inclusive digital participation in forest planning.
 - A library of **tested prototypes**, from playful planning games to accessible visualisation tools.
 - **Cross-country evidence** of what promotes fairness and inclusion in technological participation.
 - A strengthened academia–practice interface with advisory services and community stakeholders.
 - Educational resources that increase forest literacy and long-term engagement.
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6. Overall Societal Impacts

- Enhanced fairness in forest decision-making processes.
- Greater legitimacy of forest plans through broader, better-quality participation.
- Reduced conflict and increased trust among stakeholders.
- Improved understanding of forest trade-offs for future generations.
- More inclusive digital innovation partnerships for the forest sector.

More information: <https://sites.uef.fi/playfairforest/>