

Climate Change Perceptions of Forest Managers and their Adaptation Intentions: Empirical Evidence from Eight Countries in Europe

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Climate change stands as one of the major global challenges of the 21st century, with extensive im-pacts on natural resources, economic sectors, societies, and human well-being. Addressing this chal-lenge requires socio-ecological transformations, including the adaptation of forests to rising average temperatures, changes in precipitation, fires, and more frequent extreme weather events. Although effective adaptation measures have been proposed for the forestry sector, knowledge of the socio-cognitive processes that influence forest managers' decisions to either pursue or refrain from innova-tive adaptation measures remains incomplete. Enhancing this knowledge could facilitate socio-ecological transformations as well as the design of appropriate public policies.

To address these gaps, we aim to: 1) Explore forest managers' perceptions of climate change, 2) Ana-lyse the socio-cognitive processes that shape their adaptation measures, 3) Assess their perceived im-pacts of climate change and the contribution of adaptation measures on forest ecosystem services (provisioning, regulation, maintenance, and cultural services) and 4) Reveal similarities and differences across eight European case studies.

The Model of Private Proactive Adaptation to Climate Change (MPPACC) developed by Grothmann and Patt (2005) guides our research on exploring the risk and adaptation appraisal of forest managers as well as their adaptation intentions and avoidance strategies. We have conducted 57 semi-structured interviews with forest managers in Norway, Lithuania, UK, Germany, Austria, Romania, Spain and Italy. Case study areas have been selected to cover most of the European Forest Types. The interview guide-line covered forest managers perceptions of changes in climate, impacts of climate change on forests and forest ecosystem services. It also elicited forest managers current and future forest management practices and their expectations of how climate change will impact and change forests in the future. Data analysis was supported by the text analysis software ATLAS.ti.

Preliminary findings reveal that climate change is perceived to negatively impact forests and the provision of forest ecosystem services in all case study areas. Forest managers report, for instance, increased pest pressure with adverse effects on the viability and health of trees. The threats associated with climate change include reduced vitality and viability of certain tree species and increased presence of invasive species, as well as changes in local fauna. These abiotic disturbances impact habitats and ecosystems, especially increasing vulnerabilities to forest wildfires, particularly in southern Europe (Spain, Italy). Prolonged vegetation periods are seen as potential climate change-related opportunities for increased forest yields in Lithuania and Norway. However, increased pest pressure, damages due to more frequent extreme weather events and decreased viability of certain tree species may offset any positive effects.

Interviews reveal that forest managers are pursuing various adaptation strategies, including natural regeneration, increasing structural diversity, or testing and introducing new species. However, a small group of forest managers denies anthropogenic climate change and chooses avoidance strategies which presents itself as a barrier to socio-

ecological transformations. The MPPACC, as a theoretical framework, has proven useful in gaining valuable insights into socio-cognitive processes underlying forest managers' decisions to implement innovative adaptation measures in a context of a changing environment.

References

Grothmann, T., and Patt, A. (2005). Adaptive capacity and human cognition: The process of individual adaptation to climate change. *Global Environmental Change* 15, 199-213.

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