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Private forest owners facing climate change in Wallonia: Adaptive capacity and practices

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ABSTRACT

To understand and guide present and future adaptation to climate change, in-depth field studies are required in many sectors. The forestry sector, with its long time lags between decisions to plant and harvesting stands, is among the most relevant to investigate in this respect. This contribution analyzes the results of a survey conducted in Wallonia (Belgium) among private forest owners (PFO) and an array of organizations, both public and private, that influence these owners' actions. The objective of our research is to investigate already implemented or envisaged practices of climate change adaptation as well as the adaptive capacity of these PFOs. In this respect, adaptive capacity is defined as “the ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences (of climate change)” (IPCC, 2014, p. 2).

The results show that different ways of (not) integrating climate change in forest management are visible in the sample of PFOs that can be divided into different profiles of (non) adapters. Analyzing these profiles reveals the influence of multiple objective and sociocognitive factors contributing to the PFOs adaptive capacity. The way climate change adaptation is conceived and implemented by other forest and timber actors has also repercussions on adaptive capacity as some adaptive measures are promoted and facilitated while others are hindered. These results bring fruitful aspects for understanding concrete adaptive processes and are relevant for decision-making as they point out some strengths or weaknesses in terms of adaptive capacity.

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1. Introduction

Facing alarming climate change projections, despite multiple mitigation efforts, there is no way avoiding choices and action on adaptation to climate change effects. Theoretical concepts around adaptation are flourishing in the scientific literature, international institutions are discussing adaptation finance, and (infra)national governments have started to place the issue on their agenda by developing adaptation plans and policies

(Biesbroek et al., 2010; Ford and Berrang-Ford, 2011). However, assessments of the concrete implementation of adaptation to climate change remain scarce, because of the relative novelty of this phenomenon and also because the climatic driver always acts in strong interaction with many other societal changes (van Gameren et al., 2014). It is crucial nevertheless to investigate such adaptive processes to better understand their dynamics. Tracking the existing adaptive initiatives constitutes a core element of monitoring and evaluation as policies start to be designed in order to support adaptation (Ford et al., 2013).

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In this respect, this contribution offers a field-based research in forestry in Wallonia, a sector that is vulnerable to ecological and economic impacts of climate change (Lindner et al., 2008; Standing Forestry Committee, 2010; Keskitalo, 2011; Kolström et al., 2011; Hanewinkel et al., 2012) and in which forest management decisions have long-term repercussions, confronting forest managers to a new challenge in their decision-making (Lawrence and Gillett, 2011; Schoene and Bernier, 2012).

2. Research questions and state of the art

In order to investigate adaptation in the forest sector, we focus on one particular kind of actors: private forest owners (PFOs), which are numerous in Wallonia (more or less 100,000 people) as half of the regional forest is privately owned, with lots of very small properties¹. Besides this numeric importance, we are interested in PFOs because they constitute economic actors, as timber producers, but they also attach other expectations on their forest than only its economic value, such as, for example, familial heritage, environmental protection, or landscape beauty. As forests provide a series of economic, ecological, and social services, PFOs individual actions have collective implications for society, at a scale which is larger than the forest itself. Adaptation to climate change by PFOs in Wallonia has never been analyzed, while a few studies in other countries bring some interesting inputs. Among these results, it seems that adaptive actions are starting out (Lawrence and Marzano, 2014), with some dominant practices such as tree species diversity (Blennow, 2012; Milad et al., 2013). Another important feature is that individual perceptions of climate change and risks are quite different from one another and influence forest managers' decisions related to adaptation (Blennow and Persson, 2009; Blennow, 2012; Blennow et al., 2012).

According to our research design, we explore which practices are implemented by Walloon PFOs in their forest management and which factors can influence adaptive processes. In addition, as adaptation constitutes an issue of multilevel governance, we also investigate how adaptation is defined and implemented by other economic or political actors, both in the public and in the private sectors. This encompasses governmental agencies, raising awareness non-profit organizations, professional associations, and companies in forest management and timber processing, all of which can have a potential influence on the adaptation actions made by PFOs.

Judging if and how adaptation is occurring is a complex matter as there is no consensus about a set of measurable indicators of adaptation progress (Ford et al., 2013), contrarily to climate change mitigation which may be associated with a quasi-universal quantitative metric (i.e. reduction of greenhouse gas emissions). Moreover, adaptation goals differ according to the values of institutions, communities, and individuals that implement and evaluate adaptive actions (Adger et al., 2009; Brooks et al., 2011), and they vary also with time lags and spatial scales. It seems crucial to recognize that

adaptation is a social phenomenon, in which interactions between actors, governance systems, and social representations play a great role (Pelling, 2011). In this article, based on field research, we intend to identify current PFOs actions contributing to adaptation, but also the decision-making context in which these measures are implemented. By paying attention to this point, we aim at understanding the functioning of adaptation as a process, rather than only measuring its actual effects. In these dynamics of adaptive processes, adaptive capacity stands as a core concept and is central in our theoretical framework.

Adaptive capacity can be defined as “the ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences (of climate change)” (IPCC, 2014, p. 2) or, more precisely, as “the combination of the strengths, attributes, and resources available to an individual, community, society or organization that can be used to prepare for and undertake actions to reduce adverse impacts, moderate harm, or exploit beneficial opportunities” (IPCC, 2012, p. 556). In particular, it determines the ability of an organization or individual to recognize and assess its vulnerability, make decisions on adaptation, and implement measures in anticipation or in response to climate change (Berkhout et al., 2004). Adaptive capacity may also be seen as a component of vulnerability which is defined in the latest IPCC report as “the propensity or predisposition to be adversely affected” (IPCC, 2014, p. 28). More specifically, it refers to the fact that climate risks are not only dependent on the physical exposure to climate change but also on the characteristics of human societies. Therefore, vulnerability and adaptive capacity are dynamic and evolve depending on changes in the climate system, but also on economic, political, cultural, social changes, etc.

The literature mentions many determinants of adaptive capacity of systems, organizations, and individuals. These are related to natural, technological, economic, and knowledge resources, infrastructure, as well as policy, social, and cognitive factors (Fankhauser et al., 1999; Yohe, 2001; Smit and Pilifosova, 2003; IPCC, 2007; Gupta et al., 2010). They are context-specific and differ according to the scale of a country, a social community or an individual (Smit and Wandel, 2006). Some factors that contribute to adaptive capacity are inherently local, whereas others depend on socioeconomic and political structures at higher levels. In addition, levels of adaptive capacity are interdependent: a household's adaptive capacity depends partly on the community's adaptive capacity, which in turn may depend on the resources of the region or country, etc. Therefore, individual factors and the institutional context interact (Smit and Wandel, 2006; IPCC, 2007; Urwin and Jordan, 2008; Gupta et al., 2010; Johnston and Hessel, 2012), and this justifies our choice of approaching both PFOs within their individual forest management and in the broader regional context of the forest and timber sector.

In theoretical approaches from social and cognitive psychology, “cognitive” or “sociocognitive” factors of adaptive capacity are considered critical (Grothmann and Patt, 2005; Bleda and Shackley, 2008; Adger et al., 2009; O'Brien, 2009). These include beliefs about climate change, risk perception (interpretation of certain observations as signs of climate change, perception of future risks, etc.), and representations of

¹ About 70% of the Walloon PFOs have maximum 1 ha of forest.

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