Framework for building Integrated Policies regarding Forest Risk Management: Insights from Wallonia (Belgium)

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Abstract
The aim of this project is to develop a framework for analysing risks arising in the forest-based sector and building integrated risk management policies in order to alleviate their expected economic, environmental and social impacts on the long run. The project will first focus on a regional management scale, but the methodology could be extended afterwards to national or supra-national levels.

Context
European forests are facing manifold biotic and abiotic threats that may endanger forest-based economies as well as goods and services provided by woodlands (Thom et al., 2013). In addition, market and climatic uncertainties may lead to conflicting behaviours (Petr et al., 2014) and enhance mistrust between forests' users (Blennow et al., 2014). However, due to the complexity of those topics and diversity of stakeholders, there are nowadays few forest-related policies considering risks and their interactions as drivers of strategic decisions (Riguelle et al., 2016).

Goals
The ultimate goal of this project is thus to build a regional risk management policy that will be able conciliate bioeconomic purposes and ecosystems' services, whilst taking in account long-term challenges and uncertainties and interrelations with other decisional levels (supranational, national). The intermediate objective will be to develop an analytical framework for adressing each individual forest-related risks and defining a common decisional scale.

Methodology
For those purposes we choose to implement an integrated risk management approach, which allows considering simultaneously, at each level of decision, every component of the risk management processes together with external constraints, expectations and beliefs of various stakeholders (Orazio et al., 2014). Such global vision also enables diversifying the portfolio of adaptation and mitigation measures and reducing the overall residual risk for forest economies. The implementation of such methodology lies on the one hand on appropriate methodologies (i.e. system analysis, participatory processes) and on the other hand on policy-supporting tools such as model-based decision-support systems (Riguelle et al., 2015).

In a first step, every individual risk will be assessed, encompassing biotic (i.e. pest outbreaks, game) and abiotic (i.e. wind, drought, fire) threats, industrial issues and external drivers (i.e. legal or societal constraints). At this level, the main challenge is to identify which are the goals of the stakeholders facing those risks, what are the implemented or planned strategies for reaching those objectives, and what are the potential impacts of these strtategies on forest functions (figure 1). In a second step, we'll try to integrate individual strategies into a common framework. This integrated framework will be crucial to highlight what are the consequences of individual actions on the whole system.

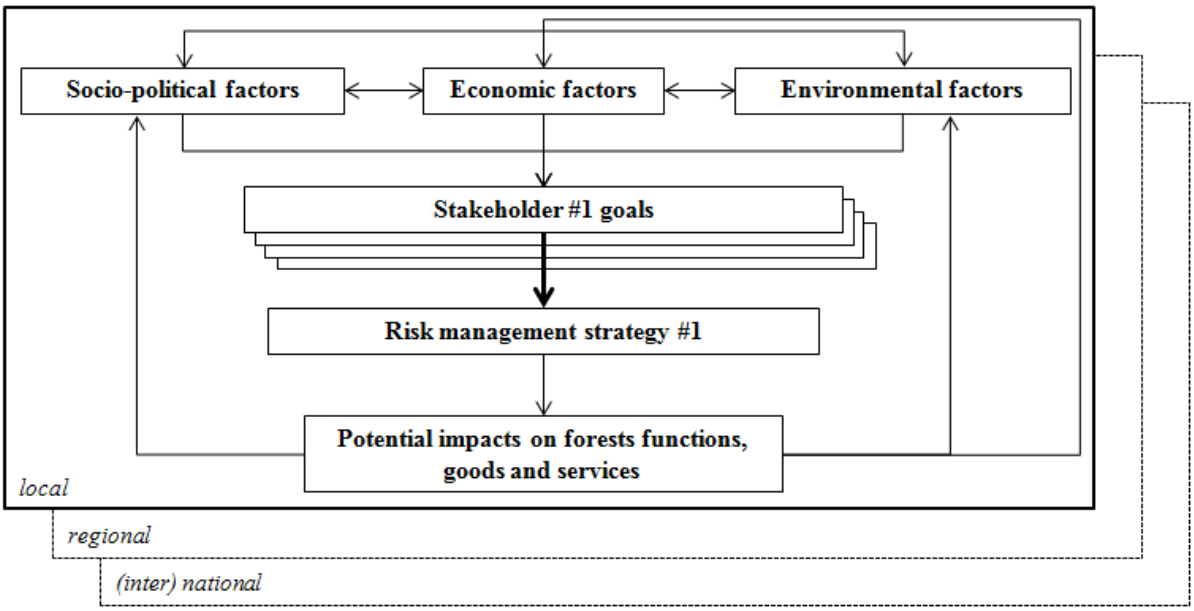

Figure 1. Generic framework for orchestrating integrated forest risk management at several decisional levels (Riguelle et al. (2016), adapted from Campbell et al. (2002))

Outputs

The expected output of this exploratory research is a framework for assessing, defining and implementing integrated risk management policies at the regional level, based on the case study of Wallonia (Belgium). This framework will be discussed with private and public stakeholders and could be the basis for active risk management at the regional level.

Outlook

As a regional strategy could not be totally effective without considering other decisional levels, further developments should take into account at least the supra-regional level. These should take place within european initiatives and networks.

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