

Guideline: How to use the risk assessment sheets

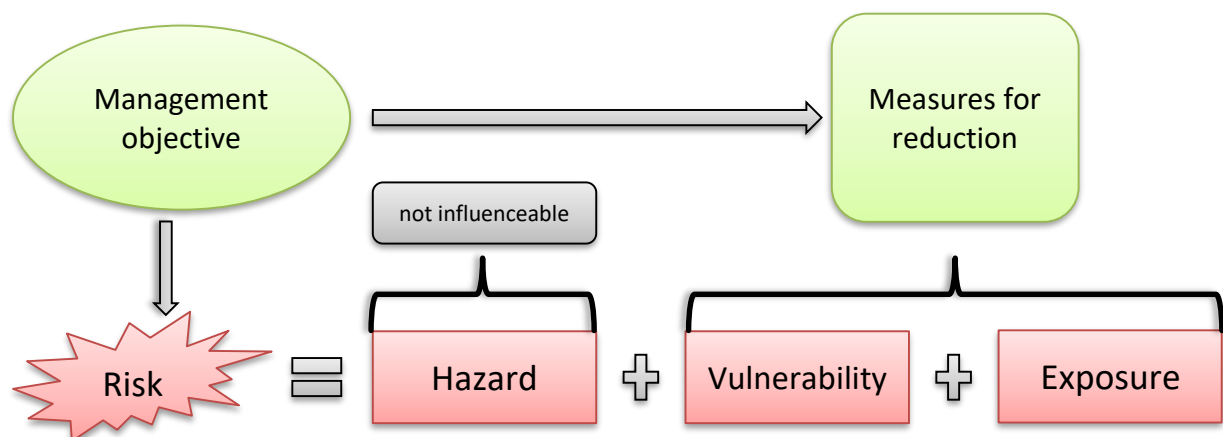
Purpose of risk assessment

The main objective, as described in Task C is to analyze different forest risks (wildfire, storms, avalanches, and floods) and to identify present and potential interactions between these hazards. However, the level of actual knowledge and available tools for risk assessment varies greatly between the types of risk. A harmonized risk assessment methodology has been developed and is reflected in the risk assessment sheets. To achieve risk comparability, the assessment has to remain at an abstract level. At a later stage, the analysis can be deepened and applied in detailed case studies.

The overall assessment follows two steps:

1. According to Action C.1 systematic single-risk assessments are conducted for each forest risk. Subsequently, the results are grouped under several transverse risk management topics and common challenges and achievements are reflected.
2. Action C.2 aims to better understand multi-risk interactions, particularly in a climate change context. The risk interaction sheet developed for this purpose builds on the previously filled single-risk assessment sheets. This enables identifying new types of risk and understanding interlink relations of risk.

Goal-oriented risk management approach



In general, risk management aims to minimize potential harm and loss defined by the management objective. Since hazards (in this case storm, fire, flood and avalanche) themselves are usually not influenceable, measures for reduction aim to reduce the **vulnerability** and **exposure** of an element (see diagram above). Understanding **factors** that have influence on the vulnerability and exposure is crucial for risk assessment and risk management.

Following this logic, the risk level is mainly driven by the predefined management objective. Consequently, all natural and human influences have to be considered in the light of the objective or, in other words, the purpose of the site. This perspective provides a general overview on the risk situation caused by different hazards and ensures comparability across various types of risk. Additionally, conflicts and tensions between different management objectives and measures (human influence) or natural influences can be revealed.

Filling the risk assessment sheets

The goal of the risk assessment sheets is to identify and understand factors and measures that influence vulnerability and exposure. Depending on the management objective, a factor can have both, positive and negative effects.

A separate risk assessment sheet is prepared for each management objective and every type of hazard. This constitutes a “case”. The level of detail of factors should remain at an abstract level, which allows a subsequent generalization and identification of commonalities between hazards and management objectives.

Filling the sheets is a delicate balance between being specific enough to be able to identify driving factors and remaining as general as possible to allow drawing common conclusions.

Definitions:

Exposure refers to the *inventory of elements in an area in which hazard events may occur* (Cardona, 1990; UNISDR, 2004, 2009b). *Hence, if population and economic resources were not located in (exposed to) potentially dangerous settings, no problem of disaster risk would exist. While the literature and common usage often mistakenly conflate exposure and vulnerability, they are distinct. Exposure is a necessary, but not sufficient, determinant of risk. It is possible to be exposed but not vulnerable (for example by living in a floodplain but having sufficient means to modify building structure and behavior to mitigate potential loss). However, to be vulnerable to an extreme event, it is necessary to also be exposed.* (SREX, 2012)

Vulnerability refers to the *propensity of exposed elements such as human beings, their livelihoods, and assets to suffer adverse effects when impacted by hazard events. Vulnerability is related to predisposition, susceptibilities, fragilities, weaknesses, deficiencies, or lack of capacities that favor adverse effects on the exposed elements.* (SREX, 2012)

Tutorial for filling the single-risk assessment sheet

The **General Information** box of the assessment sheet sets the “case” to be analyzed. Our experience shows that filling this part thoroughly, will help you in identifying measures and factors that influence vulnerability and exposure.

In the following each field of the sheet is explained:

Author: Indicates the name and institution of the person filling the form

Management objective: Selecting the category of management objective is necessary to apply the goal-oriented risk assessment approach. When filling the form, keep in mind how a factor or measure impacts the achievement of the management goal. Some factors or measures may only be relevant for a certain management objective.

Make use of the specification box to describe the management goal in more detail, such as elaborating the expected outcomes. This will help you identifying factors or measures that help or hinder reaching this goal.

Hazard type: Select a hazard type. It determines the general impact on the forest ecosystem.

Specifying the characteristics of the analyzed hazard scenario helps to make the expected impact more tangible. Specifications could be the areal extent of damage zone, intensity of impact, duration of impact, rate of onset of the event, or predictability of the event.

Area of applicability: Describe regional limitations, which link the assessments to a specific context, such as geographic region, climate zone or cultural context. This will facilitate the comparability of risk assessments from different regions.

Impact on vulnerability: “Vulnerability refers to the propensity of exposed elements such as human beings, their livelihoods, and assets to suffer adverse effects when impacted by hazard events. Vulnerability is related to predisposition, susceptibilities, fragilities, weaknesses, deficiencies, or lack of capacities that favor adverse effects on the exposed elements.” (SREX 2012). It can be influenced by both natural factors and human action; both can **increase** or **decrease** the vulnerability of the element assessed. It may also be **unknown** if the factor leads to an increased or decreased vulnerability.

Natural influence: These are factors influenced by the natural context (e.g. geography, topography, climate) and cannot be influenced by humans, yet affect vulnerability.

Human Influence: Human measures that actively alter vulnerability. Check out the [*“Tools and best practices on risk planning and management for fire, storms, floods and avalanches”*](#) for inspiration.

Impact on Exposure: “Exposure refers to the inventory of elements in an area in which hazard events may occur.” (SREX 2012) These elements vary largely by the set management objective. E.g. for the goal “protection” the value of standing timber is neglectable and trees are not part of the exposure. Whereas for the management objective “income”, the value of standing timber is highly relevant and plays a major role on exposure.

Natural influence: These are factors that are influenced by natural context (e.g. geography, topography, climate) and cannot be influenced by humans.

Human Influence: Human activities, that actively alter the exposure, i.e. the inventory of elements that are exposed to a hazard. Check out the [*“Tools and best practices on risk planning and management for fire, storms, floods and avalanches”*](#) for inspiration.