

# Case studies database for testing ASFORESEE

WP4 - Deliverable D.T4.4.1



## Alpine Space Project 462: RockTheAlps

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## 1. Introduction

In previous deliverables of the Interreg Alpine Space project: "RocktheAlps", our working group (WP4) first investigated the topic of "Economic assessments of the rockfall protection service", referring to the Alpine Space (Deliverable D.T4.1.1 "State of the Art of Forest Protection Service Economic Assessment"). More than 20 case studies have been identified in the literature, which are however characterized by a wide inter-variability, both in terms of the economic method adopted for the evaluation and in terms of the form of expression of the result (Bianchi et al., 2018). This non-standardisation in the evaluation process raised the question of which was the most suitable economic method, easily reproducible, transparent and, above all, in which context.

In the second deliverable – D.T4.2.1 "Economic Concepts for Evaluation of Risk Mitigation Strategies" - therefore, Bruzzese et al. (2018) described economic evaluation methods present in the literature in order to highlight their pros and cons and provide, where possible, examples of case studies.

This report constituted the information base for the realization of the main product of WP4: the ASFORESEE model. The methods adopted, i.e. the Replacement Cost and the Avoided Damages, were found to be the most suitable for the aims of the evaluation, given their replicability and the easily understandable outputs. For further details on principles underlying the two methods and on the functioning of the model, see report D.T4.3.1 (Accastello et al., 2019).

In order to test and validate the ASFORESEE model, each project partner was asked to contribute selecting one or more case studies within their respective countries. These study sites had to be identified on the basis of three fundamental elements: the presence of a protection forest, of a rockfall risk and one or more exposed assets. Therefore, the objective of this report is to list the case studies selected by the ROCKtheALPS partners, their progress in data collection and the economic methods applied, in order to have an overview on the advancement of the ASFORESEE application over the whole Alpine Space.

## 2. Case studies Database

The case study database, presented below (Table 1), lists the main features of the case studies selected for the application of the ASFORESEE model. Last update: 01/09/2019.

**Table 1** - identification of case studies, the economic method chosen and their state of progress.

ID	Partner	Country	Case Study Name	Adopted Method	Input data	Protection Forest Area	Asset type	Monetary Value
1	IRSTEA	France	Kaysersberg	Replacement Cost	Completed	16.40 ha	road	106,492 €, 6,493 €/ha, 203 € /ha/y
2	BRGM		Massif du Jura	-		-	-	-
			Montpellier	-		-	-	-
3	Alp'Géorisques	France	-	-	-	-	-	-
4	SFS	Slovenia	Most na Soči	Avoided Damages	Still collecting	-	-	-
5	UL	Slovenia						-
6	SFI	Slovenia						-
7	TESAF - UNIPD	Italy	Auronzo di Cadore	Replacement Cost	Almost completed	20.20 ha	regional road	-
			San Vito di Cadore	Replacement Cost	Almost completed	16.53 ha	roads	-
			Colcuc	Avoided Damages	Almost completed	12,27 ha	mountain rail, local road and regional road	-
8	DISAFA - UNITO	Italy	Cesana	Avoided Damages	Almost completed	6 ha	primary road	-
9	ERSAF	Italy	Valdidentro	Avoided Damages	ERSAF/ETIFOR	-	-	-
			Cevo		ERSAF/ETIFOR	-	-	-
10	PAT	Italy	Cogolo	Avoided Damages	Almost completed	5.20 ha	road	-
11	POLITO	Italy	-	-	-	-	-	-
12	BFW	Austria	-	-	-	-	-	-
13	BLFUW	Austria	-	-	-	-	-	-
14	BLW	Germany	Seewände	Avoided Damages	Completed	1.67 ha	road	100,492 €, 60,211 €/ha, 1,880 € /ha/y
			Strailach	Replacement Cost	Completed	1.97 ha	forest road	567,682 €, 288,398 €/ha, 9,004 €/ha/y
15	HAFL	Switzerland	-	-	-	-	-	-

### 3. Database Description

The table in the previous section shows key elements useful for the implementation of this deliverable, below:

- ID: is the identification/unique code of each partner, as defined in the project;
- Project partner name;
- Country: origin of project partners;
- Case study name: location of the case study;
- Adopted method: the economic approach adopted to evaluate the forest protection service, alternatively Replacement Cost method or Avoided Damages method;
- Input data: indicates the state of progress of data collection, which can be "-", i.e. missing data, "still collecting" most of the data is still missing, "almost completed" if only few data are missing, "completed" whether all information have been collected.
- Protection forest area: indicates the extent of the protective forest section directly involved in the protection of the exposed asset;
- Asset type: define the typology of exposed assets, e.g. road, trail, railway, building, ...;
- Monetary value: the value of the rockfall protection service is reported in its various forms of expression – overall value (€), unitary value (€/ha) and income (€/ha/yr).

## 4. Discussions and Conclusions

As shown in the database, case studies completed or almost completed are eight, specifically: Kayzersberg (FR), Auronzo di Cadore (IT), San Vito di Cadore (IT), Colcuc (IT), Cesana (IT), Cogolo (IT), Seewände (DE), Strailach (DE).

French partners are working on the same case studies and two of them, out of three, are still in the process of collecting data. Slovenian partners are also in the same situation, a unique case study that is still in the data collection phase. The Politecnico di Torino was not asked to provide case studies, since they focused more on other aspects of the project; while no case studies were provided by the Austrian and Swiss partners.

The last part of the ROCKtheALPS project will mainly focus on the finalisation of the case study application, in order to acquire as many information as possible of the ability of ASFORESEE to perform the economic evaluation of the forest protection service.

Moreover, in parallel with the advancement of the application of ASFORESEE in the case studies, it is planned to integrate the results within the webgis platform created by the University of Ljubljana (*D.T1.5.1 - ROCK-EU : Harmonised GIS based rockfall release and runout models*). This will allow to couple relevant economic data with the information already attributed to the different rockfall sources located in the platform.

Finally, in order to test and validate the ASFORESEE model, the last deliverable required by the research project (*D.T4.5.1 - Approved examples of operational deployments of ASFORESEE*) will report a critical analysis of the model coming from its application on the case studies, where the outputs obtained feedback will be illustrated as well.

## 5. References

Accastello, C., Bruzzese, S., Blanc, S., Brun, F., 2019. ASFORESEE: an AS harmonized methodology for protection FOREst Ecosystem Services Economic Evaluation (No. D.T4.3.1), Interreg Alpine space Project “ROCK the ALPS.” DISAFA; University of Torino, Torino, Italy.

Bianchi, E., Accastello, C., Trappmann, D., Blanc, S., Brun, F., 2018. The Economic Evaluation of Forest Protection Service Against Rockfall: A Review of Experiences and Approaches. *Ecol. Econ.* 154, 409–418. <https://doi.org/10.1016/j.ecolecon.2018.08.021>

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