Summary

Adapting to climate change in Passy National Nature Reserve

VULNERABILITY ASSESSMENT AND ADAPTATION PLAN SUMMARY

CONTEXT

The LIFE Natur'Adapt project aims to develop a methodology to take into account climate change into the documents and practices of natural area management. In 2021, the Passy nature reserve joined the approach to test the method developed by 6 pilot sites in 2019 and the associated support and training tools (methodological guide, collaborative platform, online training). This test phase was shared with 14 other sites and several exchange sessions were organized and led by Réserve Naturelle de France, the project's coordinator.

The proposed methodology is divided into several stages:

- Climate analysis (past and present climate of the site and projections of future conditions);
- Assessment of the vulnerability and opportunity of the nature reserve;
- Adaptation plan for management measures.

CLIMATE ANALYSIS

The Passy Nature Reserve is located in the Northern Alps, an area already affected by the effects of climate change. The climatic analysis of the site was therefore based on existing studies carried out in the area. The use of online climate services made it possible to supplement this information with more precise climate projections.

Climate analysis has shown that the trends observed today will become more pronounced in the coming years. The rise in temperature, which is already very marked in the Alps, could reach **+2.3°C to +4.5°C by 2100 at 2100 m altitude**. Precipitation projections are uncertain, **but a 10-20% decrease in annual precipitation could be observed by 2050**, with a marked decrease in the summer period. The proportion of snow in winter precipitation is also expected to decrease, leading to earlier **snow clearance** and accentuating the phenomenon of **summer drought**.

Finally**, extreme climatic phenomena** (heavy rainfall, heat waves) and natural hazards (landslides, block falls, torrential lava, etc.) should be more frequent and more intense.

VULNERABILITY ASSESSMENT

Based on the existing management plan and the expertise of the in-house team, **28 representative components of the nature reserve were identified and assessed** with respect to the results of the climate analysis. For each component, its sensitivity to climate, its possible evolution, its capacity to adapt and the evolution of other pressures that influence it were determined. The results obtained for all these criteria made it possible to determine the vulnerability of the components of the nature reserve to climate change.

All natural environments will be impacted by climate change, some negatively, others positively.

High altitude environments (windy ridges, snowy combes) and wetlands will be the most affected. Early snow clearance, changes in the water regime and rising temperatures will disrupt the functioning of these particular ecosystems. The sometimes rare and endangered species of which they are composed will gradually be replaced by other more generalist but more competitive species. The long-term risk is therefore **the loss of environments specific to extreme conditions.**

The open environments, the most represented in the nature reserve, will also be impacted. The advancement of the vegetation season due to early snow clearance could make the grasslands more sensitive to late frosts and lead to **a time lag between the availability of resources and the needs of the fauna.** They should also be affected by the increasingly frequent periods of drought in summer.

More clement climatic conditions may **favour the development of moorland and forests**, particularly in the higher altitudes. However, this dynamic will be constrained by other factors such as the increase in gravity phenomena and the intensification of grazing pressure.

The rocky areas, which make up more than 25% of the nature reserve, do not seem to be very vulnerable. The rise in temperature on the south-facing rock faces could prevent some birds from nesting. Some scree areas could also be more easily colonised by vegetation.

However, **the increase in natural hazards** (debris flows, block falls, landslides) will allow dynamic sectors to be maintained.

Climate change will also affect human activities in the area.

The early clearing of snow from the mountain pastures and the expected droughts in the plains should lead to **longer summer pasture periods and larger herds**. The management of fodder and water resources will require careful herd management. Access to these two resources could be a limiting factor in the agricultural intensification of the site.

The search for freshness, the development of new four-season offers by tourism professionals, the extended accessibility period, etc., **should continue to increase the number of recreational visitors** to the site in the coming years, particularly in the shoulder seasons, which are ecologically sensitive periods. In summer, conflicts of use and environmental degradation, made even more sensitive by climate change, could increase.

The increase in the vulnerability of the environment and the intensification of human practices will lead to an **increase in the workload for the nature reserve's agents.** The annual organization will also be disrupted with more intense inter-seasons. Territorial anchoring and **partnerships with local structures and players will be essential to meet these new challenges.**

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ADAPTATION PLAN

The Natur'Adapt methodology enabled the Passy Nature Reserve team to approach the site through the prism of climate change.

Thanks to future projections, the issues identified in the management plan could be rethought and prioritised differently. The notions of **functionality and free evolution**, already mentioned in the 2010-2019 management plan, are now at **the heart of the strategy**.

The need to **reduce anthropic pressures, to develop partnerships and to continue efforts to raise awareness among as many people as possible** has been reinforced. This change in global perspective is the main development made possible by the application of the Natur'Adapt methodology.

The vulnerability analysis and the adaptation plan will serve as the basis for the construction of the future management plan for the Passy Nature Reserve.

ENTIRE DOCUMENTS AVAILABLE HERE:

Vulnerability assessment (FR)

Adaptation plan (FR)