

LIVIGNO (ITALY) FREERIDE PROJECT

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ABSTRACT: In Italy, the ambiguities in national laws regarding personal liability make managing backcountry activities difficult. Livigno is a village in the middle of the Italian alpine range where, until the winter season 2013-2014, off-piste skiing was prohibited by local laws if the regional avalanche danger was at Considerable or higher. With the start of the winter season 2013-2014, the municipality decided to open the backcountry for all activities by providing a daily local avalanche bulletin for the area of Livigno (200 km²) with the same quality standards as of the national one. Due to the terrain characteristics it would have not been possible to manage the complete area by artificial avalanche release. At weekly public meetings interested recreationists were informed about the current conditions and activities. Especially intended for beginners, marked trails for freeriding, skitouring and snowshoeing were created and maintained throughout the season. Additionally, heli-skiing was offered as a new service in the Livigno area. The permanent availability of the helicopter also facilitated the artificial avalanche release without conventional explosives (e.g. daisy bell). Already after one operational season the feedback was very positive and the number of freeriders evidently grew. In a next step the communication of the relevant information will be improved. Additionally, a freeride map with a terrain difficulty classification in combination with the avalanche bulletin will be published. The same map will be the first step for a structured plan for an environment protection plan (e.g. wildlife protected areas).

KEYWORDS: Avalanche education; Risk management; Backcountry skiing, Out-of-bounds skiing

1. INTRODUCTION

Livigno is a municipality located in the middle of the Italian alpine range, at the boarder with Switzerland and South Tyrol (Fig. 1). Its location, topography and touristic infrastructures has made Livigno an attractive and popular ski resort. During winter season, about 7000 tourists access the ski resort daily. About 65% of them are coming from countries of the North or North-East of Europe (data from Livigno Tourist Office).

The interest in off-piste / backcountry snow sports had gained popularity in the last 10 to 20 years. Thus, lately, managing and promoting these kind of activities became important and strategic for tourism in Livigno. In Italy practicing activities out of the managed areas in terms of avalanche risk is complicated due to several factors: i) The legislation treats skier-triggered avalanches as a crime; ii) Ski resorts are only responsible for ski slopes and lift safety, thus they are not organized with snow-patrollers for managing the nearby areas;



Fig. 1: The Livigno municipality is located in the middle of the Italian alpine range, at the boarder with Switzerland and South Tyrol at 1816 m a.s.l..

iii) artificial avalanche release by using traditional methods, i.e. explosives, is complicated by a strict legislation. Alternative methods, e.g. propane gas mixtures are expensive and often not really suitable for managing this kind of problems; iv) the mayor of a village is the final responsible for the safety of the people in the municipality area and needs to act in case of a "evident" danger situation (however the "evident" case is not really defined).

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Until the winter season 2013-2014, local laws prohibited off-piste activities if the regional avalanche danger at Considerable or higher was issued. The possibility of practicing and promoting backcountry activities was thus completely prohibited during these periods. Starting from winter season 2013-2014, the municipality therefore decided to support a solution which facilitates 1) the opening of the backcountry for all activities and 2) the risk management of snow avalanches by the municipality. Therefore, the “Livigno Freeride Project was initiated which is presented in this work.

2. METHODS

The “Livigno Freeride Project” is a three-years project and is based on a simple principle: providing the best information possible on snow stability conditions and simultaneously awareness that backcountry skiers are fully responsible in what they are doing in unmanaged areas. In Fig. 2 the milestones of the project are summarized. The core of the project consists of three points: snow stability information (2.1), regulations of the municipality (2.2) and terrain classification (2.3). These elements are related to all the provided/promoted activities: Avalanche risk management (3.1); avalanche education (3.2); recreational activities (3.3); environmental protection activities (3.4); communication (3.5).

2.1 *Snow stability information*

A local avalanche danger bulletin is provided daily for the area of Livigno (200 km²) with the standards according to EAWS regulations. For the avalanche forecasting activity, manual snow pits combined with stability tests (i.e. rutschblock and compression test) and direct snow stability observations are systematically collected. Data from five automatic weather stations within and in the surroundings of the Livigno municipality are available due to collaborations with both nearby Regional Avalanche Centers: ARPA of Bormio (Italy) and the WSL Institute for Snow and Avalanche Research SLF, Davos (Switzerland). Every morning, before 8.30 a.m., the avalanche bulletin is issued both in Italian and in English and communicated in multiple ways: i) mailing list; ii) published on the website of the municipality (www.livigno.eu); iii) posted at the entrances of the ski lifts; iv) broadcasted at the local television. The information within the local avalanche bulletin (Fig. 3) is organized following the guidelines of the EAWS, adopting the European Danger Scale (Dennis and Moore, 1997), the elevation/vegetation bands (i.e. below treeline, treeline and alpine) as done by the Cana-

dian Center, the icons for avalanche problems as done by the Utah Avalanche Centre (Tremper et al., 2006). For each elevation band, the avalanche danger is provided in combination with an advice similar to the ones provided by the Avaluator decision support tool (Haegeli et al., 2006). This helps the users to discriminate within the conditions of a single danger rate (i.e. the often discussed avalanche danger “3 plus/minus”) and for helping the integration of the avalanche bulletin contents to the terrain classification maps.

2.2 *Regulations of the municipality*

A new regulation was prepared in order to replace the existing one. In the new regulation the jurisdictions of the different tools for managing the avalanche risk were defined: The local avalanche bulletin is made for recreational activities, whereas the regional avalanche bulletin and the civil protection alerts are designed for infrastructure. For decisions related to infrastructure the local avalanche bulletin only aids as a supporting tool in the decision making processes. Then, within the municipality regulations, rules for the off-piste / backcountry snow sports, i.e. heliski, safety equipment, are defined.

2.3 *Terrain classification*

Starting from the second year of the “Livigno Freeride Project”, a map with the classification of the exposure to avalanche terrain will be provided. This map will be based on the Canadian exposure scale (CAA, 2007; Statham et al., 2006; Statham et al., 2010). On the map the most important information for off-piste / backcountry activities will be reported (e.g. protected wild life areas, main backcountry routes). The maps will be not only printed but implemented in a mobile app.

3. RESULTS

3.1 *Avalanche risk management*

Beside the infrastructures, i.e. roads, village, ski-piste, the avalanche risk is managed for two snowshoes trails, two skitouring routes and two freeride skiing areas which can only be approached by defined entrance gates. The goal of these facilities is to allow the beginners to approach the out of the bounds terrain in a safe and easy way. In addition, all the data collected for assessing the local avalanche danger are valuable information for professionals, e.g. mountain guides and ski instructors, to gain a better knowledge of the stability conditions in the area.

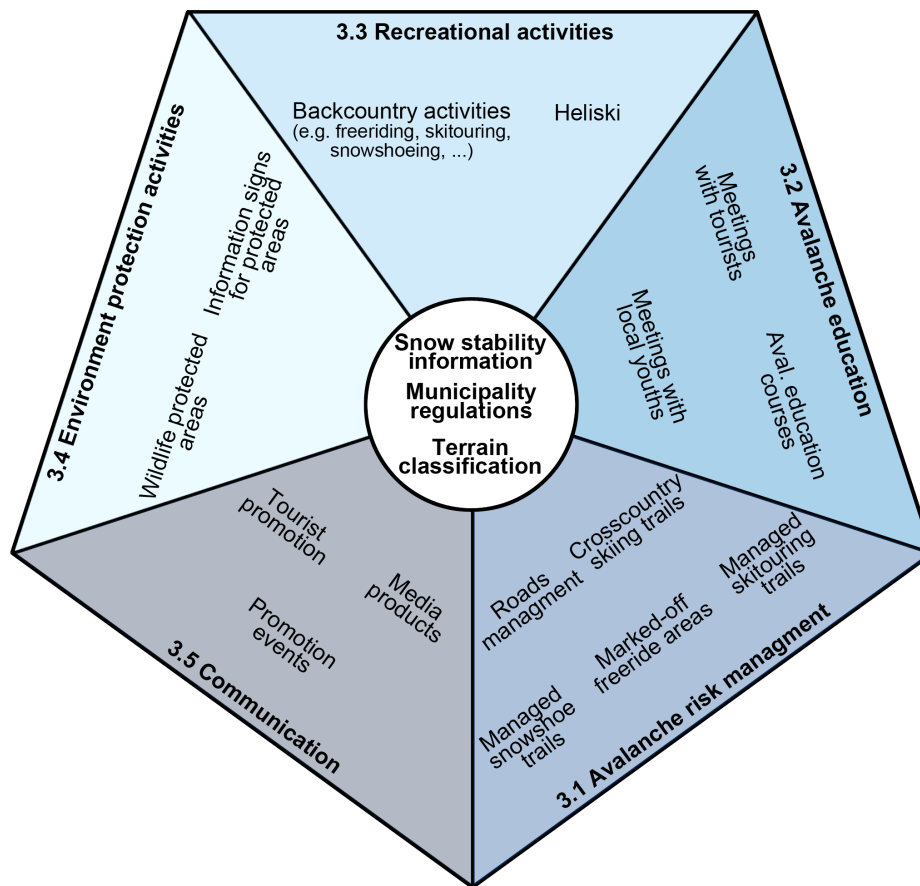


Fig. 2: Schematic overview of conducted activities within the Livigno Freeride Project.

3.2 *Avalanche education*

Avalanche education is a fundamental part of the project. Since most people are novices, it is not only important to provide information about snow stability conditions, but it is necessary to explain how to use and interpret them. For this purpose, a weekly meeting has been organized with tourists and educational videos were broadcasted on the local television channel.

Since the youth of Livigno regularly practices off-piste / backcountry activities they were particularly addressed with meetings and courses before and during the winter season. Finally, avalanche educational classes are organized at a regular basis, collaborating with the local mountain guides and mountain equipment shops.

3.3 *Recreational activities*

One of the goals of the project is to establish a continuous exchange of information related to

snow stability between all stake holders. For improving the service, it is not only important to provide the snow stability information they require, but also to obtain feedback on the actual conditions. With the local mountain guides and local experts this information exchange started with the beginning of the project. However, further improvements are required in order to involve the tourists as well.

Within the project also freeriding by heliskiing was now feasible. The continuous presence of the helicopter in Livigno represented a vital role for the general risk management of the entire municipality: In case of high avalanche danger, the helicopter was used to obtain a broader picture on avalanche activity and helped to manage notoriously dangerous avalanches paths by artificial release with gas triggered systems.

Since the heliskiing activity has quite a large environmental impact, especially to a small alpine valley, restrictive rules were defined and 5% of the

profit are contributed to activities related to the local environment protection.

In Italy clear and specific regulations regarding heliskiing activities are not defined. Thus we defined a guideline in collaboration with the Regional Mountain Alpine Desk for environmental protection to increase the safety and standardize the service. The risk management of the heliski activity is based on the model suggested by Gamba (2013).

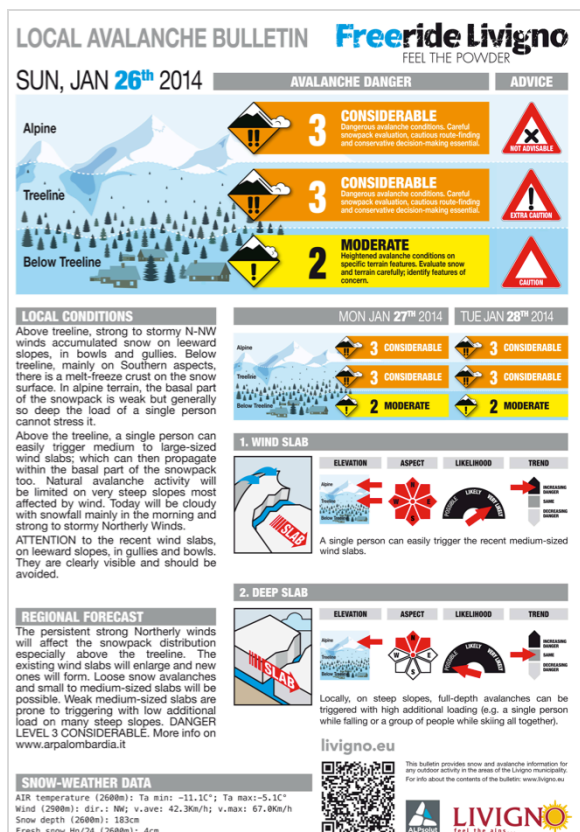


Fig. 3: Example of the local avalanche bulletin of Livigno

3.4 Environmental protection activities

A large part of the Livigno territory has restrictions related to environmental protection. The northern part of the municipality is inside the largest Italian National Park (Parco Nazionale dello Stelvio); additionally several areas are considered by the European Union as "Site of Common Interest" (SCI) mainly because of protected wildlife (e.g. ibexes, Alpine grouse). Within these areas, winter sport activities need to be monitored and a proper communication is needed to promote respect for

the associated limitations. Until today no signs are installed for point out these areas and no maps are available to allow the people to understand where the SIC borders are. Within the "Livigno Freeride project" we try to promote and communicate these environmental themes, trying to merge environmental limitations with tourism resources.

3.5 Communication

Within the "Livigno Freeride project" communication takes a key role and is delivered according to the needs of the different stakeholders: i) tourists (from novices to experts); ii) professionals (from mountain guides to ski-resort/roads safety managers); iii) media (from specialized to general). Currently, 675 people (including hotels, shops, etc.) receive direct daily information.

The information provided by the local avalanche danger bulletin is communicated as described in chapter 2.1.

Within the first three years, all the old signs spread in the municipality area and in the ski-resorts regarding avalanche risk will be replaced by a uniform and integrated communication (Fig. 4).



Fig. 4: Example of signs related to the Livigno Freeride project. The communication style is uniform and integrated.

The responsible persons of the project are in direct contact with the professionals in order to optimize the decision-making processes of crisis situations. Moreover, they actively participate to workshops organized in the region in order to promote, share and improve the supplied services. Particular attention is given to the contact with media, not only for advertising the project but for promoting a more general avalanche education culture.

Finally, the infrastructures, knowledge and information required for running the "Livigno Freeride

Project” also provide the background that is necessary to organize events related to background activities. In the winter season 2014-2015 the “European Freeride Festival” will be organized, an event that will include professional workshops, educational courses and a Freeride World Tour qualifier stop.

4. DISCUSSION AND CONCLUSIONS

A strong increase in backcountry recreational activities has been recorded in most areas of the Alps in recent years. In order to prevent accidents, this trend demands for an increased awareness of the people for avalanche related topics, e.g. snow cover stability and typical avalanche terrain.

In Livigno (Italy) we started a 3 years project, which aims to answers to this demand by integrating all the actions related to off-piste/backcountry activities.

Already after one operational season the feedback was very positive and the number of freeriders evidently grew. Moreover, the interest of outdoor companies in the project and consequent collaborations will help to further develop and promote the conducted activities. Improving the awareness and education of the people to avalanche hazards will be one of the most challenging parts of the project. In this regard, we will try to integrate our activities to other existing projects of our partners and to make the meetings with the tourist more attractive.

Another significant issue is represented by the environmental protection. Continuing the heliski activity, keeping it eco-sustainable and combining the environment protection limitations into touristic resources is a challenging task.

The service of the daily local avalanche bulletin was positively received not only by normal users but also by professionals. Thanks to the manageable area and the large number of available snow data, understanding the actual snow conditions was not the main challenge. The largest difficulties for the creation of the bulletin was having satisfac-

tory weather forecasts since professional information and support are hardly affordable for small private purposes.

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