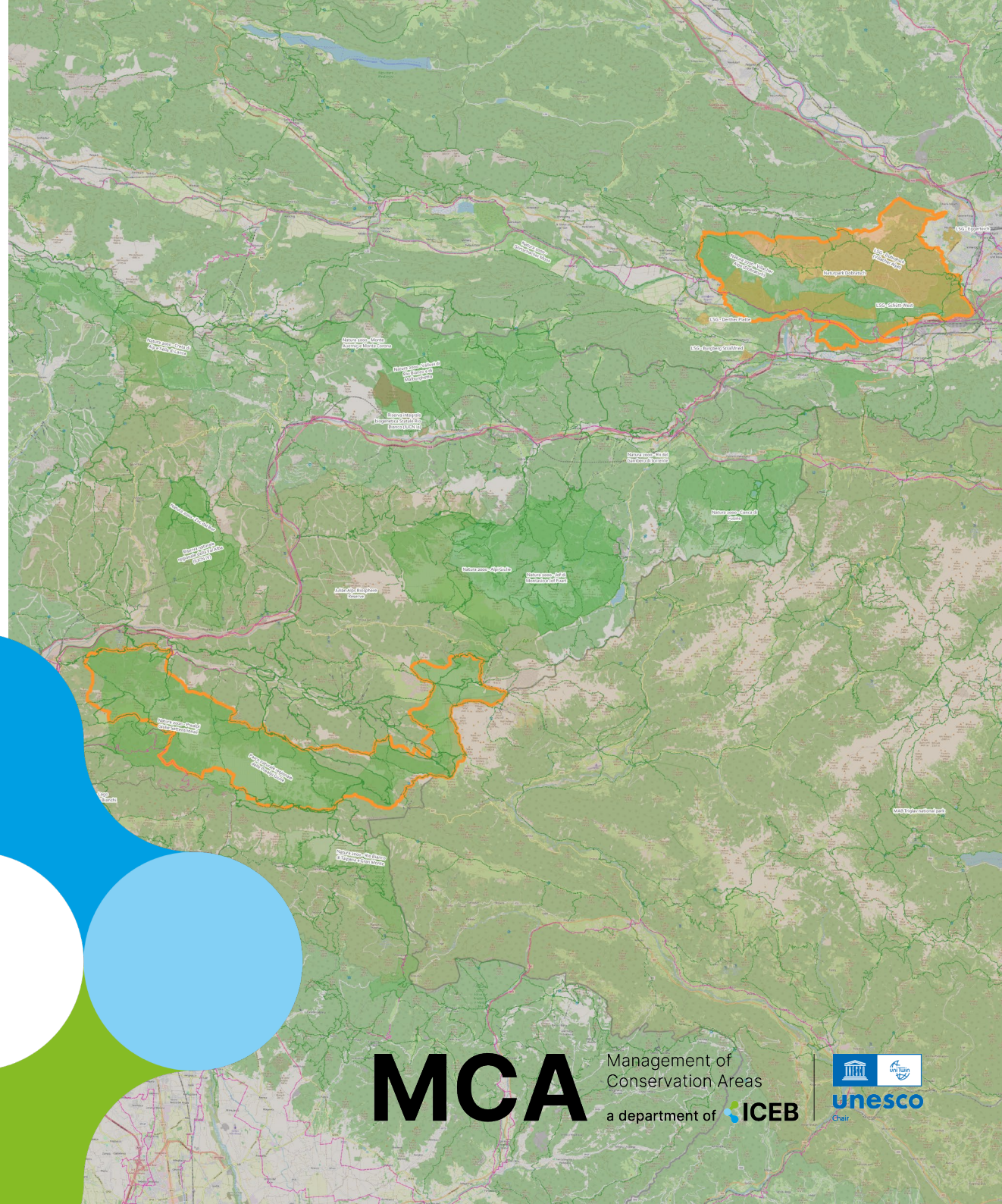


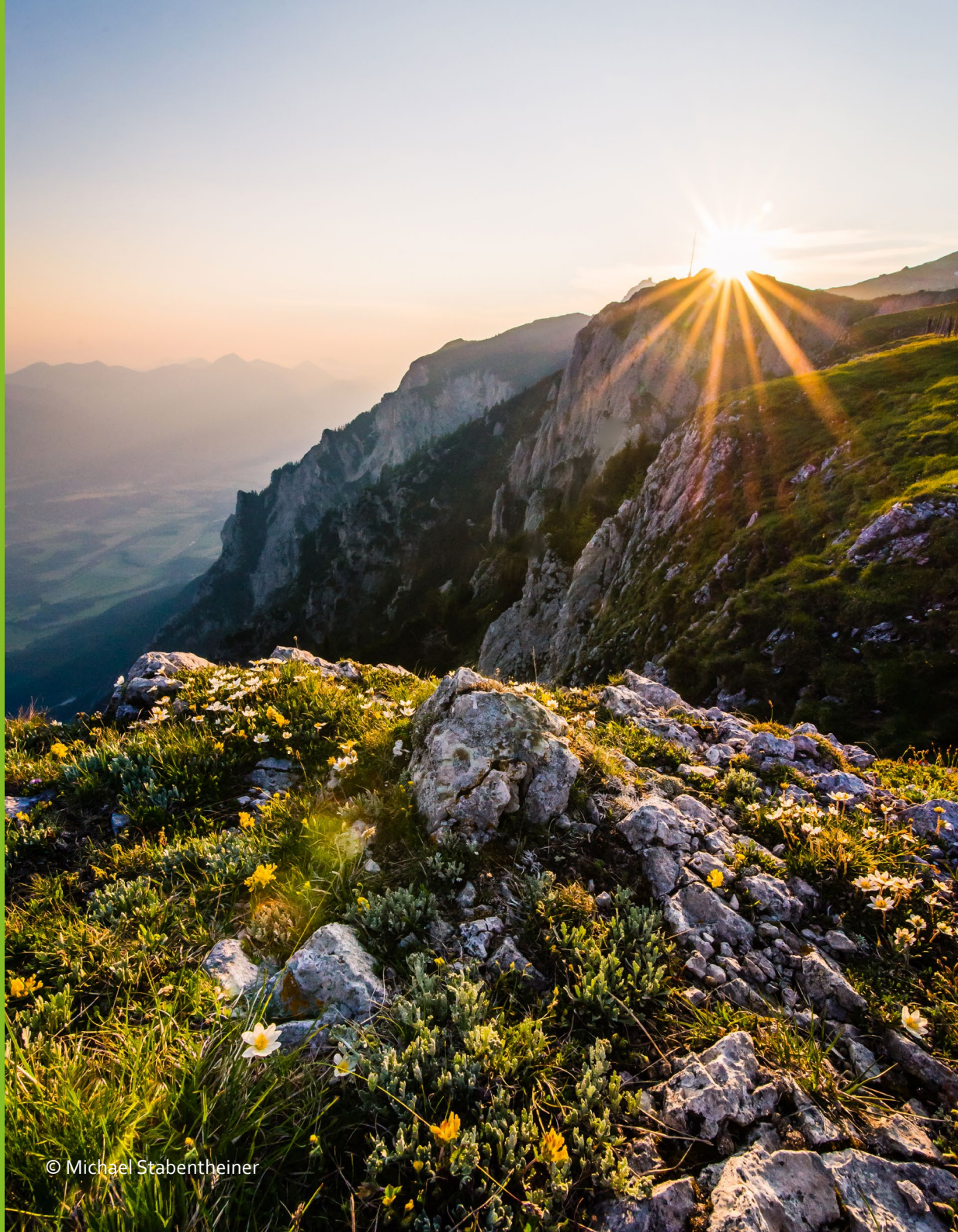
## INDIALPS

# Towards a Shared Visitor Management System in the Alpe-Adria Region

*The case study of  
Dobratsch Nature  
Park.*

*Policy briefs for  
stakeholders and  
decision makers.*





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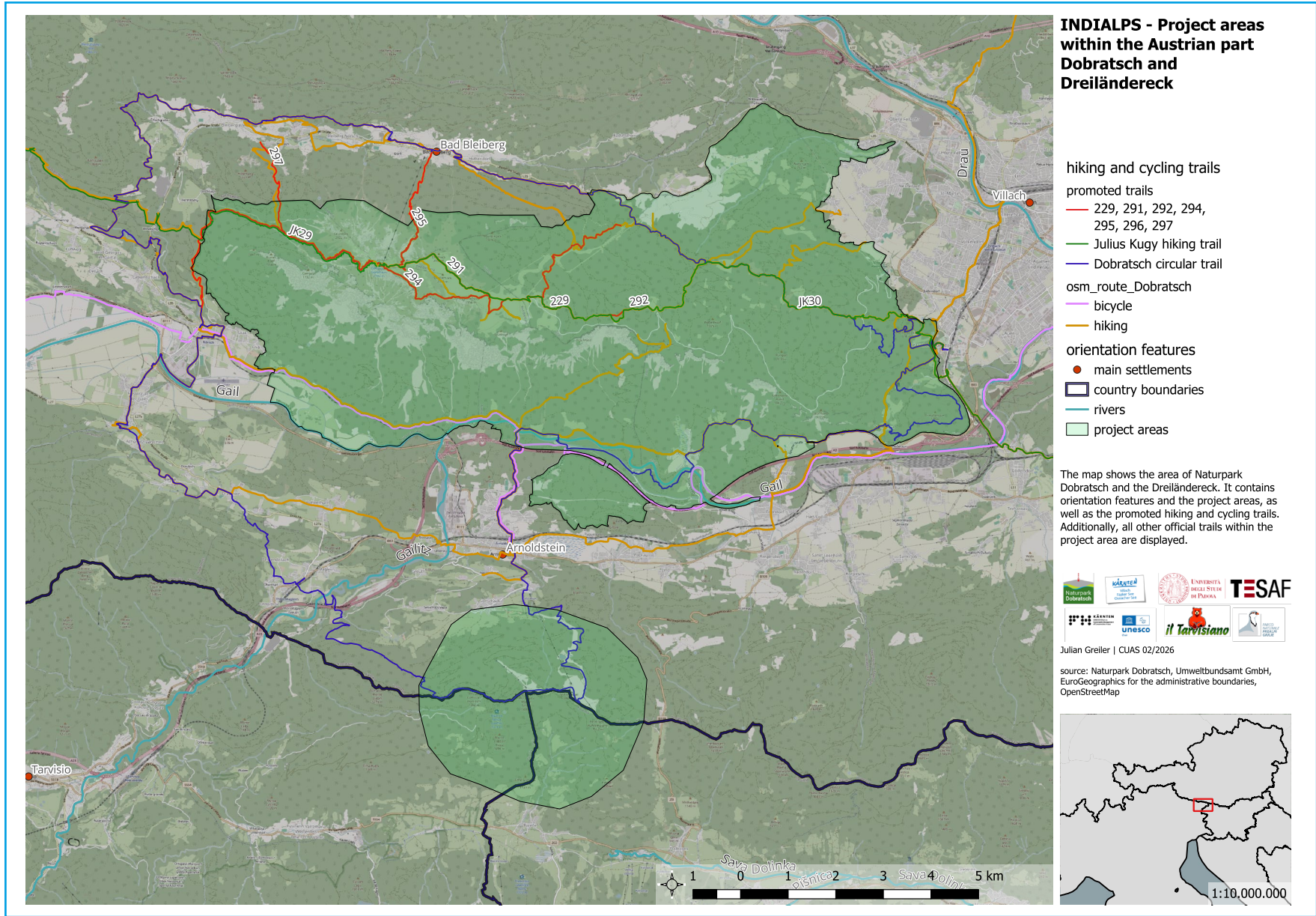
# Introduction

The INDIALPS project is an Interreg Italy-Austria initiative co-funded by the European Union. Launched in September 2023 under the title Innovative and Sustainable Tourism Development in the Alpe-Adria Region, the project aims to strengthen trilateral cooperation for nature conservation and tourism development between Dobratsch Nature Park (AT), Prealpi Giulie Nature Park (IT), and Triglav National Park (SI).

The project addresses cross-border challenges such as unbalanced tourism between Dobratsch Nature Park, where certain areas experience temporal overcrowding, and Prealpi Giulie Nature Park, where an increase in tourism could support regional development. The goal is to promote lesser-visited areas through joint events and cross-border awareness-raising activities, fostering sustainable tourism across all areas. In collaboration with the scientific partners (Carinthia University of Applied Sciences, University of Padua), the protected areas implement a multi-method visitor monitoring approach, installing and testing visitor counting devices, collecting information about visitors' digital traces and interviewing them about their recreational preferences. The information serves as a solid basis for informed visitor management decisions. Through close cooperation with tourism partners (Tourism Region of Villach, Tourism Region Tarvisiano, Sella Nevea and Passo di Pramollo) the protected areas aim to adopt an innovative long-term touristic approach grounded in the values of conservation, culture, and peace. An important focus is on the development of a cross-border tourism strategy strengthening the cultural and linguistic diversity of the Alpe-Adria region. To help redistribute tourism flows, joint digital tools, information services, and coordinated activities have been designed to contribute to the sustainable development of tourism.

In this policy brief, we present a summary of results of our multi-method visitor monitoring approach implemented in Dobratsch Nature Park, Austria. The brief illustrates how these data supports evidence-based management decisions and enable a wide range of targeted management actions. It further outlines the overall process and methodological framework, providing a transferable example that can be readily adapted by other protected areas as a foundation for strategic and adaptive visitor management.





# Multimethod Visitor Analysis

The project covers two touristic areas in Austria: Dobratsch Nature Park and Dreiländereck. Dobratsch Nature Park is integrated into a network of regional and international hiking and cycling routes such as the Dobratsch circular trail, the Alps-Adriatic and the Julius Kugy hiking trail, or the Gail and the Alps-Adriatic cycle path. The Dreiländereck, where Austria, Italy, and Slovenia meet, offers activities like the GRENZgänger hike, the Three-Countries hike as well as the Southern Alpine trail. Both areas are easily accessible, Dobratsch Alpine Zone can be reached via the Villacher Alpine Road and the Dreiländereck summit via the chairlift from Arnoldstein (Seltschach).

The visitor analysis includes data from four different sources:

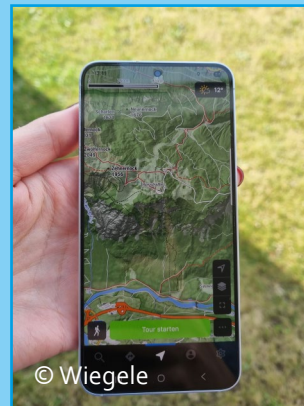
- (1) A visitor survey was conducted to understand visitor satisfaction, mobility behavior, the use of digital tools for planning and navigation and perceptions of visitor pressures.
- (2) Data from outdoor and fitness apps Bergfex, Komoot, Outdooractive and Strava were analyzed in order to identify official and unofficial user activities.
- (3) Nine visitor counting devices were installed in the region for the purpose of monitoring the frequency of pedestrians and cyclists along selected trails.
- (4) Mobile phone data were acquired to account for visitors' daily distributions, and related socio-demographics information.

## Survey

The image shows a survey form with the following sections:

- Socio-demographische Daten:** Includes questions about gender, age, and whether the respondent is a resident or a visitor.
- Annäherung:** Asks how the respondent reached the location (e.g., car, bicycle, on foot).
- Besuchermenge:** Asks how many other visitors they saw and if they were accompanied.
- Wiederholungsfrage:** Asks if they would return to the location.

## Outdoor and Fitness Apps



## Counters



## Mobile Data



# Summary of Results

## Visitor Survey

The visitor survey included 202 respondents. Among the 40% of respondents visiting Dobratsch on the day they took the survey, 85.2% travelled by private car. The majority of visitors (57.9%) were familiar with Dobratsch because they live within the region, primarily perceiving it as a local attraction. On the other hand, around 34% of respondents visited Dobratsch for their first time.

Digital tools such as internet searches, digital maps and social media play an important role when planning outdoor activities within the area. Google maps and Bergfex are the most widely used tools for planning outdoor activities in the area with 30.90% of respondents using the tool "Searching for Tour Suggestions" regularly.

Dobratsch Nature Park is a recreational destination mainly used for walking/hiking (70.9%) and leisure activities (19.7%). Key attractions are the Villach Alpine Road, Summit Area of Dobratsch, and Viewing Platforms. Conversely the Cultural Hiking Trail in Arnoldstein and the Exhibition "The Bird World of Dobratsch Nature Park" require targeted marketing to make visitors more familiar with these offers. The chairlift at Dreiländereck is considered important by the majority of respondents (58.34%).

While 61% of respondents perceived the Dobratsch area as quiet and uncrowded during their visit 9% found the area to be very crowded, for some even to the point of being unpleasant. If informed about overcrowding prior to their visit, 50.5 % of respondents would be willing to change their destination.

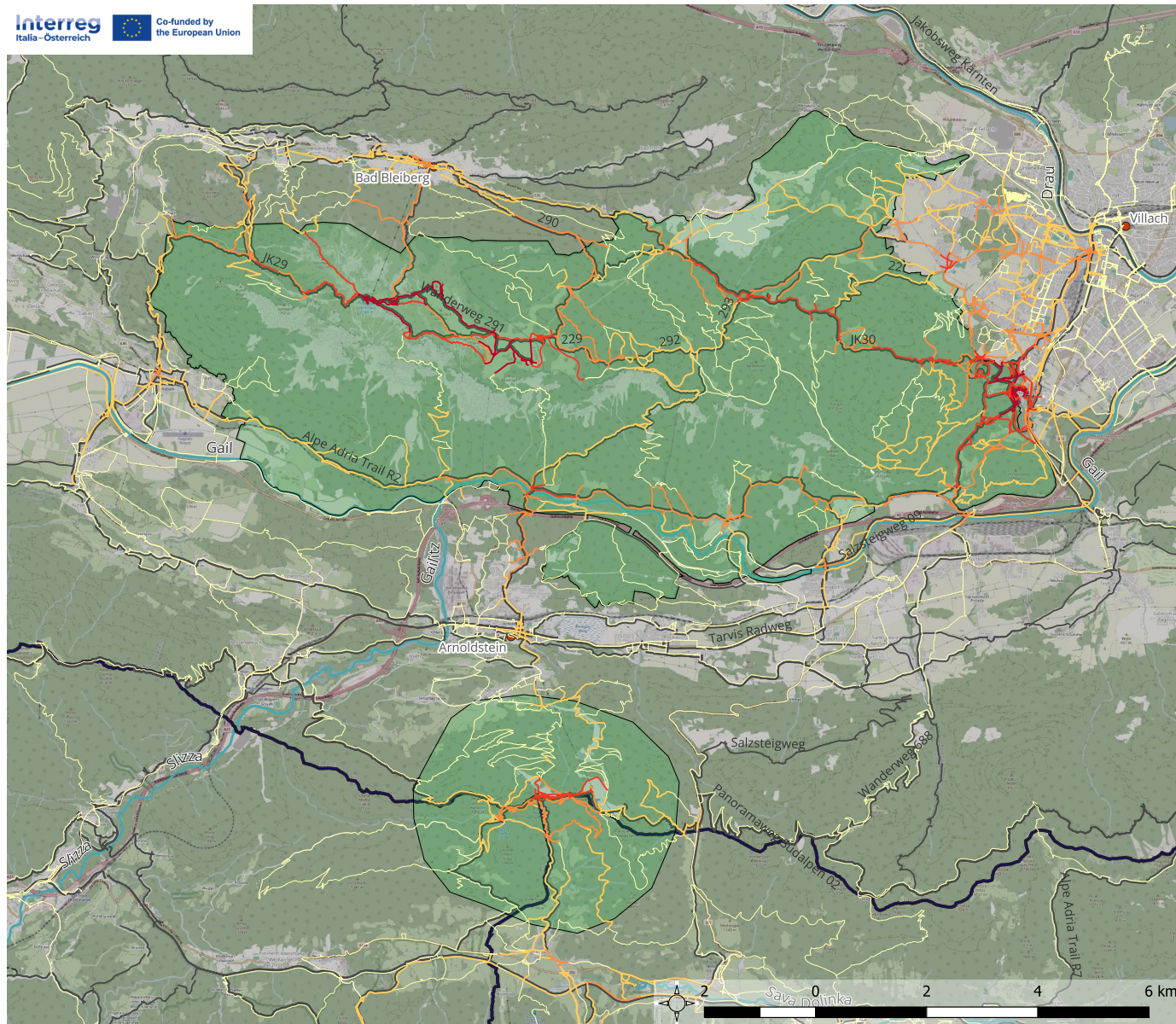
Dobratsch is particularly effective at fostering a deep connection to nature, with the highest proportion of respondents feeling "one with nature". Also, the idea of a transboundary protected area is well appreciated by 72.8% of respondents in favor of a "Cooperation between the three countries for the benefit of nature" and "Peaceful cooperation between neighboring states".

## Outdoor and Fitness App Data

Data from the Outdoor and Fitness Apps were organized inside a geographical software (QGIS) in order to identify which outdoor activities are frequently promoted digitally within the area. The benefit of this approach is that all data is stored in a single project, which the park management can easily access. Future tourism potentials as well as unfavorable activities can be identified, and a direct connection to the platforms can be established to manage the contents efficiently.



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### INDIALPS - Results of the analysis from combined datat of Outdooractive, komoot and bergfex for the main areas of interest in Carinthia (pedestrian activities)

- Orientation features
- main settlements
  - country boundaries
  - rivers
  - official routes (OSM)
  - areas of interest

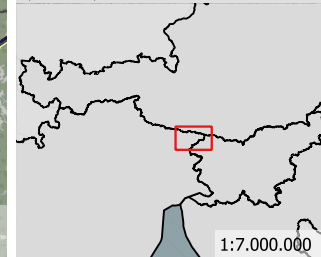
- mean tour count from outdoor apps
- 1 - 6,5
  - 6,5 - 16,5
  - 16,5 - 32,5
  - 32,5 - 57
  - 57 - 104

To compare the different data from the outdoor apps Outdooractive, komoot and bergfex, the provided tour content of each site was processed and interpolated onto the open street map road graph. The result is a mean amount of tours per road network segment. The result was categorized by Jenks.



Julian Greiler | CUAS 09/2025

source: bergfex, Naturpark Dobratsch, Umweltbundsamt GmbH, EuroGeographics for the administrative boundaries, OpenStreetMap



## Visitor Counting Devices

A total of 9 visitor counting devices were installed in the area of Nature Park Dobratsch and its surroundings. A total of 55,000 visitors were counted hiking towards the Dobratsch peak over the course of one year along the Gipfelweg and Jägersteig. Visitor counter data reveal clear seasonal differences in visitation patterns. The highest number of visitors were recorded during the summer season (Jul-Aug) with a total of 22,550 visitors, 24% of them using the Jägersteig. Although total visitor numbers are lower in winter (14,340 recorded visits), use is far more concentrated on weekends. Average weekend visitation in winter (481 visitors per day along the Gipfelweg) is nearly double that of summer weekends (247 visitors). This indicates that winter visitors tend to concentrate their visits within shorter time periods, particularly on weekends, whereas summer visitation is more evenly distributed throughout the week. Peak use further illustrates this pattern: the highest winter day, Sunday 2 February, recorded 1,350 visitors, compared to the summer peak on 15 August with 682 visitors. These findings highlight the importance of seasonally differentiated visitor management strategies, particularly to address high-intensity winter weekend use.

In the summer season (July – September) 2025 36,000 individual visitors were recorded at the Rosstratte hiking towards the alpine zone from the main parking area. In the same period 14.000 cyclists and 8.800 pedestrians passed the Gasthaus Almwirtschaft along the Schütt in Arnoldstein and around 8.000 visitors hiked towards Dreiländereck peak via the hiking trail from Maria Schnee.

## Mobile Phone Data

Mobile phone data provide detailed insights into visitor distribution, origin and socio-demographic patterns. The analysis shows that Zehner Nock attracts slightly more visitors than the Dobratsch peak area, receiving around 5% more visitors in summer and approximately 11% more in winter. Age patterns also vary by location: the Gipfelhaus records the highest share of younger visitors, while P6 and Alpengarten are particularly popular among older visitors.

The data further highlight clear differences in visitor origin. Areas along the Villacher Alpenstraße attract a high proportion of international guests, especially in summer. For example, 60.7% of visitors at Rosstratte were international in summer 2024, whereas in winter three out of four visitors were Austrian. Similar patterns are observed at Gams and Gipfelblick. In contrast, the peak areas show a lower share of international visitors, with 29.4% at the Dobratsch peak in summer and 12.4% in winter. Overall, the top five international source markets are Germany (42.9%), followed by the Netherlands, Czech Republic, Italy and Hungary. Nearby recreational areas such as Napoleonwiese (Warmbad), Oberschütt and Hundsmarhof are visited predominantly by domestic guests.





© Pirker

**PYRO Nano Sensor**



© Muscolino

**TRAFx Infrared Trail Counter**



© Schmalzl

**MULTI Evo Nature bike sensor**

# Recommendations for Visitor Monitoring, Guidance and Management

In relation to the pressures emerged in the visitor analysis a range of actionable recommendations were put forward.

## Recommendation for Further Monitoring:

- Ensure long-term and comprehensive visitor monitoring by integrating continuous visitor counter data, mobile phone data collected every five years and regular visitor surveys to assess trail use and visitor preferences;
- Introduce the role of a digital ranger to regularly monitor information on commonly used outdoor and fitness apps as well as social media platforms to manage the information, interact with users and inform visitors about rules within nature;
- Use monitoring data to develop targeted offerings such as real-time hotspot reporting (i.e. live webcams to broadcast peak days on social media), visitor direct feedback option on crowding perception, parking management, annual park program, nature education programs, cultural and learning trails, soft recreation activities, etc.

## Other Recommendations:

- Intercept visitors before they reach the summit by implementing targeted marketing strategies that highlight alternative attractions (e.g. Stollenwanderweg, Grenzgänger-Weg, Bergbaumuseum, "Spazierwege in den Gemeinden"), increasing awareness of these sites and reducing pressure on the summit area;
- Actively promote alternative low spot destinations such as Bad Bleiberg, Schaubergwerk Terra Mystica, Museum Nötscher Kreis, Klosterruine Arnoldstein, Römerweg Warmbad Villach, Greifvogelwochen Thörl-Maglern, and the Stollenwanderweg in Bad Bleiberg through dedicated communication efforts. This could include daily "Shots" on social media with a stronger focus on cultural highlights.
- Strengthen the visibility of Dobratsch regional partners, clearly position them as Nature Park partners, offering branded products such as Nature Park drinks and dishes so visitors can directly experience the identity.
- Improve visitor information services, both through an increased number of on-site info points and by enhancing digital access to up-to-date maps, trail conditions, and site rules.

Together, these integrated measures aim to distribute visitor pressure more evenly, elevate service quality, and ensure that tourism contributes positively to the region's environmental, social, and economic sustainability.

## Recommendation for Cross-Border Cooperation:

- Connect the three countries and their POIs through a Shared Digital Visitor Guidance platform and harmonized social media channels including the mutual promotion of events and news;
- Develop a Joint Corporate Identity to create a strong visual connection and market the parks collectively as a model region for sustainable cross-border tourism;
- Establish a Joint Cross-Border Steering Body and strengthen Participatory Governance by actively involving local communities and residents in planning and decision-making processes;
- Create a Sustainable Tourism Forum across the three countries, along with an annual rotating cross-border forum dedicated to biodiversity, sustainability, and cultural heritage;
- Communication of multilingual behavioral guidelines both online and on-site, supported by unified signage across all three countries;
- Implement Joint Cross-Border Activities, such as a culinary hiking route connecting the three countries; the extension of the Peace Trail and the Juliana Trail to develop guided cross-border tours at the tripoint;
- A unified Tourist (Park) Pass covering public transport and nature-based activities across the three countries is suggested, ideally issued digitally as a QR code to reduce production costs and simplify use.
- For tourism organizations: Strengthen Cross-Border Public Transport connections by better coordinating bus and train schedules, positioning the region as a seamless and easily accessible destination. This approach would further emphasize the importance of choosing public transport over private cars. Also, upgrading train infrastructure to better accommodate bicycles would support environmentally friendly mobility and make the countries more attractive.





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