ERASMUS+ project

"EUMA - improvement of good governance of climbing and mountaineering in Europe"

No. 612970-EPP-1-2019-1-CZ-SPO-SCP

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Greeting EUMA

This Erasmus project "Good Governance of Climbing and Mountaineering in Europe" enables the EUMA - European Mountaineering Associations - to implement the principles of good governance in hiking, mountaineering, climbing and their infrastructure, already 2 years after its foundation.

The project provides for the first time a comprehensive data collection in Europe concerning the location, number and equipment of huts, the type, length and marking of trails, as well as the number and rules of climbing areas

Based on these data, goals are identified and strategies are developed to achieve these goals. The Charles University of Prague has shown ways and measures how the mountaineering associations can get along and pursue their interests towards the political leadership and administration of the EU in Brussels.

The representatives of the partner associations in this Erasmus project including 12 European countries can thus make a significant contribution to living and cohesion in Europe. Mountaineering and hiking not only contribute to physical and mental health, they also bring people together and increase cross-border tourism, improving the economic power especially in sparsely populated areas.

The EUMA with its 32 member associations from 26 countries can make a contribution with the results for the more than 3 million organised mountaineers, which improves the quality of the infrastructure, increases the safety in mountaineering and gives nature and environmental protection an even broader scope.

I would like to thank all the associations, especially ERA, that contributed to the success. This work is the best possible prerequisite for advancing the implementation of the defined measures.

Roland Stierle
President of EUMA

ERASMUS+ project

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✓ **Chapter I - Erasmus+ Project, General Presentation**

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Chapter I - Erasmus+ Project, General Presentation

Erasmus+ Project, General Presentation

The main objective of the Erasmus project is to promote and support hiking, mountaineering and climbing and their facilities and infrastructure at EU level. The project splits up in three working groups on huts, trails and rock climbing areas.

Mountain huts

We intend to create a mountain hut database as a Jack-of-all-trades-device.

This means:

- first of all, the database will contain a minimum of all relevant data that are unlikely to change, such as name, geographical data, link to the webpage, embedded image, and the hut owning organisation
- provide further information about huts:
    - How is a mountain hut defined?
    - What are the essential functions of mountain huts?
    - How should minimum standards of comfort be achieved while fulfilling ecological requirements?
- the information shall also serve as promotional material for underlining the importance of huts in order to find sources of financial support in the EU.

We want to create a Europe-wide quality label for huts administered by EUMA.

We want to identify problems and find solutions at an EU-level.

Trails

We intend to create a visualisation of the European trail network.

This means:

- create recommendations for trail management
- define different trail types and difficulties
- emphasize the importance of trails in respect of alpine tourism, human health and nature protection
- guarantee free access to mountains in a responsible manner, considering legal aspects, such as liability
- demonstrate that mountain trails are THE infrastructure to achieve the goals mentioned above. They are the lifeline for mountain huts, yet mostly maintained by volunteers.

We want to analyse problems and find solutions.

We want to establish a fair financing model supported by the EU to be able to maintain trails in the future

Rock Climbing Areas

We intend to create a “database of databases” for rock climbing areas.

This means:

- provide an overview of climbing areas as well as local climbing communities
- analyse best practice examples
- define standard guidelines for climbing ethics regarding environment, safety and interests of involved people

We want to guarantee free access to climbing areas, as long as climbing ethics are respected.

We want to emphasise the importance of regulating rock climbing with common sense.

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✓ **Chapter II - EU Policy Analysis**

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Chapter II - EU Policy analysis

Anna Lukešová, Vít Havelka, Eliška Tomalová, Ivo Šlosarčík, Tomáš Weiss

Introduction

This document represents an outcome of the first phase of the EUMA Erasmus+ project, run between 2020-2022. It aims to offer a comprehensible analysis of policies of the European Union that are relevant for mountaineering activities. The analysis shall be applicable in the long term to any EUMA representative in the future as it provides an overview of general principles of EU functioning as well as its policy-making processes. At the same time, the document contains detailed information of policy areas identified as relevant to mountaineering, as of January 2021, for the project's immediate use.

The analysis was prepared by the team of researchers from the Department of European Studies at the Faculty of Social Sciences at Charles University in Prague (CUNI), embodied in three project's Working Groups (WGs) Huts, Trails, and Rock Areas. Its content evolved gradually together with the work of individual WGs during the first project's phase and was adapted to issues identified in each group as the most important. The here presented document serves as a first draft version of the EU Policy Analysis to be given feedback by the Working Groups.

The document's structure is the following: in its first part, the analysis brings an overview of basic information about the European Union, its functioning, institutions, legislation, and budgeting. In order to successfully assert EUMA at the EU level, its representatives firstly need to get familiar with the basic principles of the EU operation and to understand its policy-making processes. The second part clarifies the lobbying question when speaking about the EU policymaking and its relevance for EUMA. It also offers direct examples of possible EUMA activities to influence the EU policy agenda-setting. The third and last part of the document provides a more detailed analysis of EU policies relevant to issues identified by the project's WGs. Each section contains a description of the issue and the related EU policy, as well as information about current EU contact points or EU funding opportunities. Suggestions of possible EUMA actions are also incorporated where relevant.

1 European Union: Basic Overview

1.1Treaties and Legislation

The functioning of the European Union (further EU) stands on international agreements signed and accepted by its member states (further MS). Such treaties are also called founding treaties. As an international organization, the European Union was founded by the "Maastricht" Treaty on European Union, coming into force in 1993. Since then, the legislative framework provided in this treaty has been reformed several times. For this project's purpose, the subsequent analysis will build on this last version of the Treaties, known as the Lisbon Treaty, which came into force in 2009.

The founding treaties, namely the Treaty on European Union (TEU) and the Treaty on the Functioning of the European Union (TFEU), represent the basis of how the European Union functions. Thus, they are referred to as **primary EU law**. The **secondary EU law** is a corpus of legal acts that follow from the founding treaties' principles (i.e., primary law). It includes binding "hard law" such as regulations, directives, decisions, and non-binding "soft law," such as recommendations and opinions. However, the EU can also promote its agenda in a **non-legislative** way (under specific rules)[1] or through **indirect soft tools** such as EU funding, enabling the EU to implement its regulatory preferences through the funds' conditionality.

1.2Institutions

The action of the European Union is carried out by its institutions. The main decisions and EU priorities are decided by the **European Council**, a forum of all national and EU-level leaders meeting together at a summit (usually quarterly). It is chaired by a permanent president (currently Charles Michel). The European Council thus represents

[1] For more details, see: Official Websites of the European Commission, 'Types of EU Law', accessed 29 October 2020, https://ec.europa.eu/info/law/law-making-process/types-eu-law_en.

the highest level of political cooperation between EU member states.[2] With regards to its power and competences, the European Council is not expected to deal with mountaineering, which is a far more relevant policy topic for other EU institutions.

The **European Commission** is the EU's executive body, which acts in the interest of the EU as an organization. The Commission is responsible for designing legislative proposals and for the implementation of adopted EU policies (in conferred policy areas). Also, it allocates and supervises the EU funding (together with the European Parliament and the Council of the EU). It consists of 27 Commissioners – one from every EU MS – led by the Commission President (currently Ursula von der Leyen). The Commission's cabinet is set after the elections to the European Parliament. Therefore, its term of office usually lasts five years.[3] The current cabinet shall execute its powers from 2019 to 2024.[4]

The **Council of the European Union**, informally referred to as the Council,[5] acts in the interest of the individual member states. It gathers government ministers of every MS and their representatives to discuss relevant policy issues. The label "the Council" often refers not only to the meetings of 27 ministers but also to more than 150 preparatory bodies at lower levels where always all member states are represented. Together with the European Parliament, it is the main EU's legislative power as these two bodies decide about the EU legislation to be accepted, amended, or rejected. Apart from a few exceptions, the Council is chaired by a rotating presidency, lasting six months and transferring among the EU MS.[6]

The **European Parliament** (further EP), composed of 705 members (further MEPs), acts in the interest of EU citizens as MEPs are directly elected by EU voters every five years. Together with the Council, EP represents the main legislative power, deciding about the acceptance, amendment, or rejection of a proposed EU law. It also exercises a supervisory role, e.g., in electing the Commission President and approving the Commission as a body, as well as a budgetary role as it establishes the EU budget (together with the Council).[7]

1.3Legislative Procedure

For this project's purpose, the **EU legislative procedure** can be summarised as follows: The European Commission designs a legislative proposal (this applies only to the "hard law") as the only EU institution with the right of legislative initiative. However, the original initiation for the Commission can come from a request of the European Parliament or the Council, as well as from a European Citizens' Initiative. The initiation can also come from consultation platforms run by the Commission or lobbying activities of diverse stakeholders. After its submission, the legislative proposal is discussed and voted in the European Parliament and the Council in its first or second reading, possibly resulting in a conciliation procedure and a final third reading, if not accepted or rejected before.[8]

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[2] Official Websites of the European Union, 'European Council', accessed 30 October 2020, https://europa.eu/european-union/about-eu/institutions-bodies/european-council_en.

[3] Official Websites of the European Union, 'European Commission', accessed 30 October 2020, https://europa.eu/european-union/about-eu/institutions-bodies/european-commission_en.

[4] The structure varies with each cabinet in office. For current composition of the Commission always consult the official websites of the European Commission, e.g. at: Official Websites of the European Commission, 'Departments and Executive Agencies', accessed 30 December 2020, https://ec.europa.eu/info/departments?field_core_topics_target_id_entityreference_filter=All&field_core_ecorganisation_value_i18n=All&field_department_tasks_tid_entityreference_filter=All.

[5] Do not confuse the Council of the European Union with the European Council, which refers to the EU institution gathering national and EU leaders, neither with the Council of Europe, which is another separate international organization, not related to the European Union.

[6] Official Websites of the European Union, 'Council of the European Union', accessed 30 October 2020, https://europa.eu/european-union/about-eu/institutions-bodies/council-eu_en.

[7] Official Websites of the European Union, 'European Parliament', accessed 30 October 2020, https://europa.eu/european-union/about-eu/institutions-bodies/european-parliament_en.

[8] For a more detailed overview and explanation, see: Official Websites of the European Parliament, 'Ordinary Legislative Procedure', accessed 30 October 2020, https://www.europarl.europa.eu/infographic/legislative-procedure/.

1.4Policy Competences

The power of the EU is, however, limited. According to the **principle of conferral**, "the Union shall act only within the limits of the competences conferred upon it by the Member States in the Treaties."[9] Competences that are not conferred on the EU remain with the member states. In such a case, the **principle of proportionality** applies, which means that "the content and form of Union action shall not exceed what is necessary to achieve the objectives of the Treaties."[10] In addition, under the **principle of subsidiarity**, "the Union shall act only if and in so far as the objectives of the proposed action cannot be sufficiently achieved by the Member States (…) but can rather (…) be better achieved at Union level."[11] This is why the EU often cannot perform or acts only through soft policy tools, such as recommendations or funding.

Following these three principles, the Treaties distinguish between three types of EU policy areas competences: exclusive, shared, and supporting. Within **exclusive competences**, "only the Union may legislate and adopt legally binding acts,"[12] while the MS's role is limited to the application of the law. In the **shared competences**, both EU and MS can legislate and adopt legally binding acts; however, the "Member States shall exercise their competence to the extent that the Union has not exercised its competence" or "has decided to cease exercising its competence."[13] In this sphere, As for the **supporting competences**, "the Union shall have competence to carry out actions to support, coordinate or supplement the actions of the Member States, without thereby superseding their competence in these areas."[14] The following table summarizes policy areas of each category of competence.

Table 1: Areas of EU Action[15]

Exclusive Competences[16]	Shared Competences[17]	Supporting Competences[18]
customs union	single market[19]	public health
competition rules for the single market	employment and social affairs	industry
eurozone monetary policy	economic, social, and territorial cohesion	culture
trade and international agreements	agriculture	tourism
marine plants and animals under common fisheries policy	fisheries	education and training, youth and sport
	environment	civil protection

[9] 'Consolidated Version of the Treaty on European Union' (Official Journal C 326, 26 October 2012), para. 5.2, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:12012M/TXT.

[10] 'Consolidated Version of the Treaty on European Union', para. 5.4.

[11] 'Consolidated Version of the Treaty on European Union', para. 5.3.

[12] 'Consolidated Version of the Treaty on the Functioning of the European Union' (Official Journal C 326/47, 26 October 2012), para. 2.1, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:12012E/TXT&from=EN.

[13] 'Consolidated Version of the Treaty on the Functioning of the European Union', para. 2.2.

[14] 'Consolidated Version of the Treaty on the Functioning of the European Union', para. 2.5.

[15] For more detailed information about individual areas, see: Official Websites of the European Commission, 'Areas of EU Action', accessed 30 October 2020, https://ec.europa.eu/info/about-european-commission/what-european-commission-does/law/areas-eu-action_en.

[16] Defined in the Art. 3 of TFEU.

[17] Defined in the Art. 4 of TFEU.

[18] Defined in the Art. 6 of TFEU.

[19] This policy area includes the „Four Freedoms" of the EU: free movement of people, goods, services and capital.

	consumer protection	administrative cooperation
	transport	
	trans-European networks	
	energy	
	security and justice	
	public health	
	research and space	
	development cooperation and humanitarian aid	

The EU can also take measures in areas of its special competences, lying between shared and supporting competences. These are assigned to the coordination of MS economic, social, and employment policies at the EU level and to the definition and implementation of a common foreign and security policy.[20]

1.5Budget and Funding

The **EU budget's guiding principles** are set in the articles 310-324 of the Treaty on the Functioning of the EU (TFEU). Among these belong the principle of funding the budget from own resources (mainly the MS contributions), setting a multiannual financial framework for at least 5 years, the schedule for the financial year, and budget implementation and control procedures.[21]

Multiannual financial framework (MFF) is the base for every single EU annual budget. It is introduced and adopted in the form of a regulation under a special legislative procedure by the Council after obtaining the European Parliament's consent. It determines the maximal size of each annual budget as well as general spending categories, including allocations for each member state. In other words, the MFF pre-determines where EU money will go and who will receive it. Traditionally, the MFFs are enacted for a 7-year period. As of January 2021, the EU starts adopting a new MFF 2021-27, which will expire at the end of 2027.

The **actual annual EU budget** is agreed for one calendar year and always corresponds to the pre-agreed multiannual financial framework. It contains concrete expenditures and revenues and must be approved by the Council of the EU and European Parliament. If the EU institutions fail to approve a new annual budget, the EU uses the budget from the previous year until a new budget is adopted.

With its budget, the European Union offers a wide range of funding opportunities for various projects. Only about 18 % of the funding is directly managed by the European Commission, mainly through grants for specific projects helping the Commission pursue its policies, or by public contracts (tenders), used by the Commission to purchase services for its internal use.[22] Another 8 % is managed indirectly by international organisations, decentralised agencies, third countries, etc. The most significant share of the EU budget, **74 %**, **is managed by the Member States**

[20] Defined in the para. 2.3 and 2.4 of TFEU.

[21] Official Websites of the European Commission, 'EU Treaties', accessed 29 December 2020, https://ec.europa.eu/info/strategy/eu-budget/how-it-works/budget-law/treaties_en.

[22] Official Websites of the European Commission, 'Types of Funding', accessed 29 December 2020, https://ec.europa.eu/info/funding-tenders/how-eu-funding-works/types-funding_en.

themselves (e.g., relevant ministries) in cooperation with the European Commission. This procedure is called **shared management.**[23]

There exist a diverse range of EU funds. However, over half of the EU funding is provided through the 5 biggest funds known as **European Structural and Investment Funds (ESIF)**. Here belong 1. European Regional Development Fund (ERDF), promoting balanced development in different EU regions; 2. European Social Fund (ESF), focusing mainly on employment-related issues; 3. Cohesion Fund (CF), supporting large infrastructure projects in countries with a gross national income (GNI) per habitat below 90 % of the EU average;[24] 4. European Agricultural Fund For Rural Development (EAFRD), focusing on agricultural issues and rural areas; and 5. European Maritime and Fisheries Fund (EMFF), helping to implement sustainable fishing practices and supporting coastal communities.[25] The official websites of the European Commission offer the full list of EU funding programmes available.[26]

Before any EU member state can retrieve euros from the above-listed funds, it must sign a "**partnership agreement**" with the European Commission. The agreement determines how an EU member state will use EU funding and what measures it will employ to ensure that the distribution of EU resources is protected against fraud. The partnership agreement also contains a description of so-called "programmes," under which national institutions distribute money from EU funds.[27]

The distribution of EU funds under the shared management is the responsibility of EU member states. Their public administration evaluates applications for grants as well as award them to successful applicants. The funding opportunities are published in "calls for projects," and the evaluation process is managed according to a programme scheme as agreed in partnership agreements. The European Commission only controls whether all legal requirements were fulfilled.

In December 2020, the Council adopted the new multiannual financial framework regulation **for 2021-2027.** It consists of a long-term budget of €1 074,3 billion for the EU27, divided into 7 spending areas: 1. Single Market, Innovation and Digital (€132,8 billion); 2. Cohesion, Resilience, and Values (€377,8 billion); 3. Natural Resources and Environment (€356,4 billion); 4. Migration and Border Management (€22,7 billion); 5. Security and Defence (€13,2 billion); 6. Neighbourhood and the World (€98,4 billion); and 7. European Public Administration (€73,1 billion).[28] In addition to this, a plan called NextGenerationEU accounts for another €750 billion for the same period with the

[23] Official Websites of the European Union, 'EU Funding', accessed 29 December 2020, https://europa.eu/european-union/about-eu/funding-grants_en; European Commission, 'The EU Budget at a Glance', May 2019, 22, https://ec.europa.eu/info/sites/info/files/about_the_european_commission/eu_budget/budget-brochure-a5-17-05_interactive.pdf.

[24] In the current 2014-2020 period, these were Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia and Slovenia.

[25] Official Websites of the European Commission, 'European Structural and Investment Funds', accessed 29 December 2020, https://ec.europa.eu/info/funding-tenders/funding-opportunities/funding-programmes/overview-funding-programmes/european-structural-and-investment-funds_en.

[26] Official Websites of the European Commission, 'Overview of Funding Programmes', accessed 29 December 2020, https://ec.europa.eu/info/funding-tenders/funding-opportunities/funding-programmes/overview-funding-programmes_en.

[27] Official Websites of the European Commission, 'Partnership Agreement', accessed 29 December 2020, https://ec.europa.eu/sfc/en/2014/quickguides/PA#-partnership-agreement-0; 'Regulation (EU) No 1303/2013 of the European Parliament and of the Council of 17 December 2013' (Official Journal L347/320, 20 December 2013), 130, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R1303; Official Websites of the European Commission, 'Glossary: Shared Management', accessed 29 December 2020, https://ec.europa.eu/regional_policy/en/policy/what/glossary/s/shared-management; Official Websites of the European Commission, 'Financial Management', accessed 29 December 2020, https://ec.europa.eu/regional_policy/index.cfm/en/funding/financial-management/.

[28] Official Websites of the Council of the EU, 'Multiannual Financial Framework 2021-2027 and Next Generation EU (Commitments, in 2018 Prices)', accessed 29 December 2020, https://www.consilium.europa.eu/media/47567/mff-2021-2027_rev.pdf.

intention to support the recovery from the COVID-19 pandemic.[29] Under the new multiannual framework, only 4 ESIF funds will be executed under the shared management principle: ERDF, ESF+, CF, and EMFF.[30]

The recent adoption of the MFF 2021-27 means that there is currently a transition period from the previous MFF, and as a result, there will be only a limited number of calls that EUMA could take advantage of. The EUMA member organizations will have to wait until their respective governments sign a partnership agreement and launch programmes. First calls could be expected to be published as soon as mid-2021 depending on partnership agreements' ratification process.

2 EUMA's Influence

The European Union can be understood as a governance system composed of various decision-making levels, actors, and processes. It is a relatively open governance system where external actors can enter the decision-making process at various stages and address various actors. While it is the EU-level institutions that have the most significant influence on the EU legislation, the Commission, Council, and Parliament, the national level plays an important role in setting the agenda and evaluating adopted regulation.

Policymaking in the EU can be described using the same policy cycle as in other governance systems (see picture 1 below). The role of individual actors differs across the stages, and the role of external influence changes too. For example, the decision-making phase depends a lot on bargaining within the Council, between the Council and the Parliament, and generally on the politics of the moment. The formulation and the evaluation phases, by contrast, are more technical and evidence-based, with the Commission actively inviting external actors into the process in order to provide expertise and feedback. The policy cycle in the EU is different from the national policy cycles because it is not dependent on national elections (even though it could be in specific cases).

Successful interest representation, or lobbying, at the EU level needs to adjust to the institutional characteristics of the issue at hand (how the decision is made and by whom), the issue itself (how salient and how political it is) as well as to the motivation (is an EU decision to be promoted or prevented). Broadly speaking, two main strategies are available: inside and outside advocacy. **Outside advocacy** influences the decision-maker indirectly through the public. The influencer may raise public awareness, politicise certain issues and engage in a grassroot campaign in the individual decision-maker's constituency. This is a suitable strategy for the agenda-setting stage and/or decision making to engage with the member states' politicians and members of the European Parliament. There is a clear constituency for these actors and direct contact with voters. Usually, this type of activity will take place within the national political debate. It may be a bit more problematic to influence the formulation phase this way where the debate gets too technical for a public campaign.

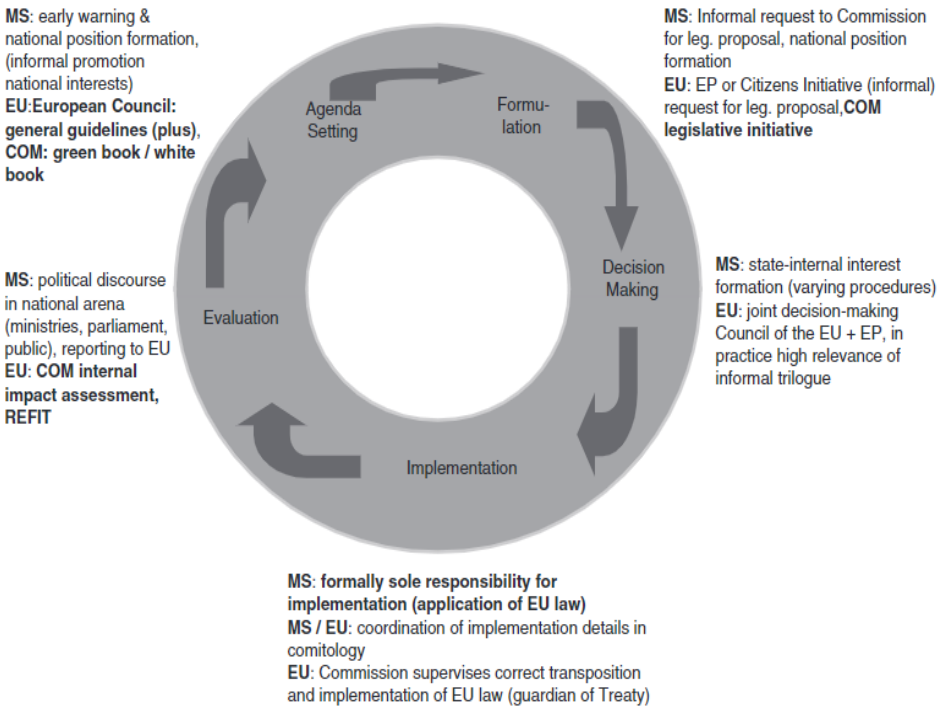
Inside advocacy relies on direct contact with the decision-makers. The lobbyists use arguments (technical or political, or normative) to persuade the individual decision-makers why their specific regulation idea is superior and worth promoting. They may even help draft legislation for the decision-maker. Inside advocacy opportunities may be initiated from both sides. Naturally, it is the lobbyists who are more interested in a meeting because they have a vested interest at stake. But decision-makers of all types need to consult interest groups and experts, too, because they often are expected to legislate on a topic where they lack the necessary information and because they want to find a broadly accepted solution. In the EU context, inside advocacy is possible at all levels of governance - national as well as European - in order to influence various stages of the policy cycle. Lobbyists are expected to register at the EU institutions for transparency purposes.[31] The European Commission has built inside advocacy into

[29] Official Websites of the Council of the EU, 'Multiannual Financial Framework for 2021-2027 Adopted', accessed 29 December 2020, https://www.consilium.europa.eu/en/press/press-releases/2020/12/17/multiannual-financial-framework-for-2021-2027-adopted/.

[30] Ministry of Regional Development of the Czech Republic, 'Preparation of the Partnership Agreement', accessed 29 December 2020, https://www.dotaceeu.cz/en/evropske-fondy-v-cr/kohezni-politika-po-roce-2020/s.

[31] European Commission and European Parliament, 'Transparency Register', accessed 12 January 2021, https://ec.europa.eu/transparencyregister/public/homePage.do?locale=en#en.

the policy-making process. It actively invites public opinion in the form of public consultations[32] and invites stakeholders to direct talks about planned legislation.



Picture 1: Policy Cycle in the European Union[33]

Lobbying literature suggests[34] that there are several critical factors that increase the chance of **success in lobbying**. Firstly, lobbyists need to have a clear understanding of their own goals and pursue them consistently. That is a particularly important issue for advocates representing larger groups (such as EUMA) and coordinating activity at various governance levels. A clear definition of the objective allows for promoting the same issue across EU institutions as well as both at the EU and member state levels. For EUMA, this means a clear definition of priorities and objectives shared by all member organisations and promoted jointly by the EUMA office in Brussels and the member organisations in their respective countries.
Secondly, the lobbyist needs **to be recognised as a relevant stakeholder**. While there is always the option of spamming decision-makers with policy briefs and suggestions, a more effective way is to become one of the actors who are approached by the decision-makers themselves. It can be achieved through maintaining a visible public profile as well as increasing own legitimacy. For EUMA, this means presenting itself as the representative of the mountaineering interests at the EU level with a clear backing of the member organisations.

Thirdly, the lobbyists serve **as a source of expert information** for the decision-makers. The more useful and reliable source of information lobbyists are, the more likely they will be invited for consultation. For EUMA, this means being able to provide superior knowledge about mountaineering and the impact of current and planned legislation,

[32] See: Official Websites of the European Commission, 'Have your say', accessed 12 January 2021, https://ec.europa.eu/info/law/better-regulation/have-your-say.

[33] Heidbreder, E.G. and Brandsma, G.J. The EU Policy Process. In: Ongaro, E. and van Thiel, S. (eds) The Palgrave Handbook of Public Administration and Management in Europe. London: Palgrave Macmillan, pp. 805-821, p. 807.

[34] For more detail on lobbying see, for example, Coen, D. and Richardson, J., eds., 2009. *Lobbying the European Union: Institutions, Actors, and Issues*. Oxford: Oxford University Press; van Schendelen, R., 2010. *More Machiavelli in Brussels. The Art of Lobbying the EU*. Amsterdam: Amsterdam University Press; Joos, K., 2011. *Lobbying in the new Europe: Successful representation of interests after the Treaty of Lisbon*. Weinheim: Wiley-VCH; Zetter, L., 2011. *Lobbying: The Art of Political Persuasion*. Petersfield: Harriman House.

as well as information about the mountaineers, the mountains, and the infrastructure involved, including the huts, trails, and rock areas.

EUMA will need to adjust its activities to the particular objective and the stage of the policy cycle. Where **new mountaineering policy agenda** should be set, for example, it can engage in both inside and outside advocacy activities. First, **EUMA can launch** a Citizens' Initiative, which requires, in order to be successfully submitted for consideration to the European Commission, 1 million signatures from at least seven member states within one year.[35] It can also lobby individual MEPs or submit a petition to the European Parliament,[36] which can result in an EP's request on legislation. Third, EUMA can lobby the MS representatives to engage with the Commission. Depending on the type of decision-making, EUMA may need to engage the Commission directly, for example, when the Commission is expected to adopt implementing or delegated acts.[37] However, in this process, cooperation with or lobby to MS representatives working in the comitology committee shall be beneficial. Finally, EUMA certainly plays its role in the European Commission's consultation platforms through which the Commission regularly seeks citizens and other stakeholders' views while designing new policy or legislation.[38] It should also be in regular contact with the relevant Commission DGs and units to become a recognised stakeholder in agendas relevant for mountaineering. However, the association always has to keep in mind the division of competences between the EU and MS in policy areas, as explained here above, and maintain a unified position between EUMA and the member organisations.

To establish its position, maintain its influence at the European level, and strengthen its brand, EUMA also gains more visibility and credibility as a partner organization in **EU-led symbolic initiatives**. The relevant areas for cooperation and participation in EU events are (as listed and explained below) tourism and sport. More specifically, the relevant projects are the European Year of Cultural Heritage[39] and the European Week for Sport,[40] where European, regional and local partners joint their effort to highlight the European dimension of their activities.

EUMA can also help national associations to **reach EU funding**. As the majority of the EU budget is implemented through the shared management, i.e., the MS are responsible for the design of the spending programmes and their subsequent management in each country, individual associations need to take part in negotiations of partnership agreements concluded between individual MS and the Commission for the whole multiannual financial framework, if they wish to influence the form of the final agreement's version. EUMA shall have the role of supervision of the processes at the EU level to inform national associations on proper timing to engage in such negotiations as well as to reflect on possible future projects needed well in advance. After the partnership agreement is accepted, individual associations have to search for funding opportunities within the financial framework set nationally, and thus differently in each country. Next, EUMA shall help national associations design joint projects across borders and possibly with its management. In addition, EUMA itself can also apply for direct EU funding through responding to the Commission's calls for proposals (obtaining a grant or subvention) or calls for tenders (obtaining a contract), if relevant, for mountaineering activities.

To find relevant contacts on EU or MS representatives, consulting official websites of the relevant institution is necessary, as departments' structure can vary significantly across time. In **the European Commission** case, there currently exist 27 Directorate-Generals (DGs), each consisting of several departments focused on various topics

[35] For more details, see: Official Websites of the European Commission, 'European Citizens' Initiative', accessed 30 October 2020, https://europa.eu/citizens-initiative/home_en.

[36] For more details, see: Official Websites of the European Parliament, 'Petitions', accessed 30 October 2020, https://www.europarl.europa.eu/at-your-service/en/be-heard/petitions.

[37] For more details, see: Official Websites of the European Commission, 'Implementing and Delegated Acts', accessed 17 November 2020, https://ec.europa.eu/info/law/law-making-process/adopting-eu-law/implementing-and-delegated-acts_en.

[38] For more details, see: Official Websites of the European Commission, 'Public Consultations and Other Consultation Activities', accessed 30 October 2020, https://ec.europa.eu/social/main.jsp?catId=333&langId=en.

[39] For more information, see: Official Websites of the European Commission, 'Selected Themes', accessed 22 January 2021, https://ec.europa.eu/culture/policies/selected-themes.

[40] For more information, see: Official Websites of the European Commission, 'European Week of Sport', accessed 22 January 2021, https://ec.europa.eu/sport/week_en.

relevant to the main issue that the DG tackles with.[41] To get detailed information on the organisation chart of each DG, official websites of the DGs provide their organigramme. As for **the Council** of the EU, the agenda put on the table is first discussed and prepared by Council's Working Parties of the relevant issue, before being reexamined by the Permanent Representative Committee (COREPER), a body of permanent representatives of each MS. With material prepared in this manner, official representatives of the governments (ministers or state secretaries) meet as the last Council's decision level, working under 10 different "configurations", depending on the subject being discussed.[42] For possible lobby, EUMA shall first approach the permanent representation to get more information on individual MS stance on the issue in question. Regarding **the European Parliament**, its 705 members (MEPs) currently sit in 7 political groups, divided according to their political affiliation, and work in 27 committees according to the issue being discussed. These committees prepare the work for Parliament's plenary sessions. The EP's websites contain detailed information on the affiliation of MEPs to committees, political groups, or countries, which differ across time as well.[43]

In a case where the official websites do not contain information on the composition of personnel and its contact details, the EU's search engine "**Whoiswho**"[44] offers a structured overview of organizational units of all EU institutions, as well as a possibility to search for concrete persons. As for the email addresses, a common rule of *firstname.lastname@institutionname.europa.eu*[45] applies to all EU institutions.

In case of the member states' permanent representations to the EU, the responsible official following the issue at stake for his or her country in Brussels can usually be found through the permanent representation's website.

3 Mountaineering Issues

The next part focuses on the analysis of mountaineering issues while connecting them to relevant EU policies. With each issue, a framework of existing EU policies with relevant hard and soft law tools is presented, together with possible funding and contact points.

3.1Sport

Sport and physical activity are closely linked to mountaineering. Here as well, **harmonisation of legislation is directly prohibited** by the TFEU in the case of sporting issues[46] or vocational training,[47] and the EU can only complement the action of MS within its supporting competences with soft, non-binding tools. The main instruments EU has activated in the area of sport are the European Union Work Plan for Sport (currently The EU third Work Plan for Sport 2017-2020),[48] the White Paper for Sport[49] adopted in 2007, as well as plans to develop a European

[41] To search for a relevant DG with a certain topic in question, see: Official Websites of the European Commission, 'Departments and Executive Agencies'.

[42] For more information about the current structure of the Council's preparatory bodies and configurations, see: Official Websites of the Council of the EU, 'The Council of the European Union', accessed 29 December 2020, https://www.consilium.europa.eu/en/council-eu/.

[43] For more information about the current composition of MEPs, political groups, and committees, see: Official Websites of the European Parliament, 'European Parliament', accessed 31 December 2020, https://www.europarl.europa.eu/portal/en.

[44] Official Websites of the European Union, 'EU Whoiswho', accessed 31 December 2020, https://op.europa.eu/en/web/who-is-who.

[45] For the European Commission, this is *@ec.europa.eu*; for the European Parliament, *@europarl.europa.eu* applies. For the Council and its representative bodies, email addresses derive from national government structure and thus need to be searched individually.

[46] 'Consolidated Version of the Treaty on the Functioning of the European Union', para. 165.4.

[47] 'Consolidated Version of the Treaty on the Functioning of the European Union', para. 166.4.

[48] Council of the European Union, 'Resolution of the Council and of the Representatives of the Governments of the Member States, Meeting within the Council, on the European Union Work Plan for Sport (1 July 2017 - 31 December 2020)', 24 May 2017, https://data.consilium.europa.eu/doc/document/ST-9639-2017-INIT/en/pdf.

[49] European Commission, 'White Paper on Sport', 11 July 2007, https://data.consilium.europa.eu/doc/document/ST-9639-2017-INIT/en/pdf.

Dimension in Sport.[50] However, recognition of qualifications or the need to be a member of a local professional association can be regulated even by a binding EU law as they are understood as related to the single market and free movement of workers and services.
For EUMA, a **contact point** for the sporting issues, education, and youth are a European Commission's DG for Education, Youth, Sport and Culture (EAC)[51] and Education, Audiovisual and Culture Executive Agency (EACEA),[52] managing Erasmus+ fund (among others), which represents the most relevant EU funding available for sport and education.

Within the Erasmus+ fund,[53] the **Erasmus+ Sport Programme** offers many possibilities to promote the role of sport and increase its role in society. In the context of EUMA activities, both professional sport and recreational sport activities fall under the sport category and can receive funding and other forms of support from Erasmus+. The programme does not offer only educational opportunities for individuals but also operates at the level of organisations. On top of that, it covers a special "sport actions category"[54] tailored for activities promoting participation in sport, physical activity, and voluntary activities. The specific actions are (1) Collaborative partnerships, (2) Not-for-profit European Sport Events, and (3) Small Collaborative Partnerships. All above-mentioned categories represent an opportunity for EUMA to both gain support and to enlarge its expertise and network at the European level. In addition to that, the Erasmus+ label can give more visibility and positive branding to EUMA and its partners' activities.

The sport agenda also includes symbolic events and activities that represent a potential asset for EUMA and its partner organizations. The most prominent event organized at the EU level is the **European week of sport**[55] – a European Commission-led initiative taking place every year in late September. Its main purpose is to raise awareness about the importance of physical activity in society. It is an umbrella action covering "a wide range of activities – at the European, national, regional and local levels – around the themes of Education, Workplace, Outdoors, Sport clubs, and Fitness centres".[56] The Outdoor category can be of particular interest to EUMA. It can give symbolic value to its events not only in EU countries but also in the countries of Western Balkans and Eastern Partnership (Belarus, Ukraine, Moldova, Georgia, Armenia, and Azerbaijan).

Besides the European week of sport, the European Commission has designed five other **flagship initiatives in sport**, such as the Be Active Awards, EU Sport Forum, Erasmus plus Sport Info Day, and the SHARE Initiative (relevant in the context of regional and local development - applicable for huts and trails).[57] Becoming a partner organisation of these symbolic events and actions can strengthen the actorness of EUMA at the EU level.

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[50] European Commission, 'Communication from the European Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Developing the European Dimension in Sport', 18 January 2011, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52011DC0012. Other sport policy documents can be found online at: European Commission, 'Sports - Documents', accessed 4 January 2021, https://ec.europa.eu/competition/sectors/sports/policy.html.

[51] For more information, see: Official Websites of the European Commission, 'Education, Youth, Sport and Culture', accessed 4 January 2021, https://ec.europa.eu/info/departments/education-youth-sport-and-culture_en.

[52] For more information, see: Official Websites of the European Commission, 'Education, Audiovisual and Culture Executive Agency', accessed 4 January 2021, https://ec.europa.eu/info/departments/education-audiovisual-and-culture_en.

[53] For more information, see: Official Websites of the European Commission, 'Erasmus+', accessed 22 January 2021, https://ec.europa.eu/programmes/erasmus-plus/.

[54] For more information about sport actions under Erasmus+ programme, see: Official Websites of the European Commission, 'Sport actions', accessed 22 January 2021, https://ec.europa.eu/programmes/erasmus-plus/opportunities/sport_en.

[55] For more information, see: Official Websites of the European Commission, 'European Week of Sport', accessed 22 January 2021, https://ec.europa.eu/sport/about/initiatives/ewos_en.

[56] Official Websites of the European Commission, 'European Week of Sport', accessed 22 January 2021, https://ec.europa.eu/sport/about/initiatives/ewos_en.

[57] For more information, see: Official Websites of the European Commission, 'About sport initiatives', accessed 22 January 2021, https://ec.europa.eu/sport/about/initiatives_en.

3.2Tourism

Tourism represents an essential policy area that is involved in mountaineering activities generally. It stretches over several EU policy areas - tourism, single market, anti-discrimination, environmental protection, free movement, etc. - and in each of those fields, the EU has different competences. It is therefore difficult to fully describe in detail the impact of EU legislation on tourism. For the sake of simplicity, we describe only areas that are relevant to EUMA activities.

Tourism policy in general

Generally speaking, the tourism policy area falls into the sphere of **supporting competences**, where the EU only supports the measures taken by individual MS, if needed or asked. TFEU even explicitly prohibits an EU-level harmonisation of legislation connected to tourism.[58] On the other hand, the EU shall support, supplement or complement the MS's action within the limits of its competences, which means with non-binding, soft law tools. Also, the EU rule on non-discrimination, as defined in article 21 of the Charter of Fundamental Rights of the European Union,[59] is superior to national regimes. The contact points for tourism policy in the European Commission are the DG for Internal Market, Industry, Entrepreneurship and SMEs (GROW),[60] where you can find more information about the current organisation chart,[61] as well as about the EU tourism policy and its tools.[62] Regarding the funding possibilities, the DG prepared a Guide on EU funding for the tourism sector, which describes available funds in detail.[63] Through a large variety of funding opportunities, responding to the diverse needs of tourism stakeholders, the EU supports the economic growth, employment, and social development brought by tourism, which represents the third largest EU economic sector.[64]

Like in other areas with a strong cultural dimension, tourism-related activities of individual or collective actors that aim to **foster the European cultural heritage** or highlight Europeanness may gain EU support and funding. In this context, all relevant EUMA efforts in huts, trails, and rock areas are closely related to the landscape (cultural) heritage, and they do generate (physical, sightseeing, and educational) activities that form the joint European experience. All relevant EU-led initiatives in the tourism sector favour touristic itineraries or routes linking several EU Member states.

EU tourism policy stakeholders are also active in promoting **Europe as a tourist destination**, including European mountaineering areas. The European Commission cooperates in particular with a non-profit organisation - the European Travel Commission (ETC) that is raising awareness about EU travel destination(s) to non-EU countries.[65] The ETC is also responsible for the official travel portal of Europe – VisitEurope.com.

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[58] 'Consolidated Version of the Treaty on the Functioning of the European Union', para. 195.2.

[59] 'Charter of Fundamental Rights of the European Union' (Official Journal C 326, 26 October 2012), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:12012P/TXT.

[60] For more information about the DG GROW, see: Official Websites of the European Commission, 'Internal Market, Industry, Entrepreneurship and SMEs', accessed 4 January 2021, https://ec.europa.eu/info/departments/internal-market-industry-entrepreneurship-and-smes_en.

[61] Official Websites of the European Commission, 'Internal Market, Industry, Entrepreneurship and SMEs - Organisation Chart', accessed 4 January 2021, https://ec.europa.eu/info/sites/info/files/organisation_charts/organisation-chart-dg-grow_en.pdf.

[62] Official Websites of the European Commission, 'Tourism', accessed 4 January 2021, https://ec.europa.eu/growth/sectors/tourism_en.

[63] Official Websites of the European Commission, 'Guide on EU Funding for the Tourism Sector (2014-2020)', accessed 4 January 2021, https://op.europa.eu/en/publication-detail/-/publication/e0707433-aa5f-11e6-aab7-01aa75ed71a1.

[64] Official Websites of the European Commission, 1.

[65] For more information, see: Official Websites of the European Travel Commission, 'Homepage', accessed 22 January 2021, https://etc-corporate.org/.

Tourism as part of the internal market and consumer policy

In a case where tourism collides with the EU internal market issues, EU regulation of these matters applies. Although the EU has only a supporting role in tourism policy, it has strong shared competences in regulating the single market. The largest bulk of EU legislation concerning tourism can be found in consumer protection laws and regulation of services within the internal market policy area. Below follows a list of the most relevant EU legislation with regard to EUMA activities.

The Directive 2011/83/EU[66] on consumer rights regulates business-to-consumer relations. It sets rules for fees for the use of certain means of payment (credit cards etc.), how a tourism service can be offered as well as what right consumers have when their service is not fully provided.[67] It is important to stress that the impact of this regulation may vary across the EU. It only stipulates minimum requirements, and Member States are free to strengthen the rules on the national level. For EUMA, the regulation is relevant predominantly where member organisations offer services similar to travel agencies.

Regulation (EC) No 66/2010[68] on the EU Ecolabel introduces a certification scheme for tourist services providers who conduct their business more environmentally friendly. Minimum requirements for Ecolabel application are provided on the official websites of the European Commission.[69]

Finally, there is the Directive (EU) 2015/2302 on package travel and linked travel arrangements, which regulates who is responsible for providing travel services, especially if a ticket is purchased through an intermediary or travel agency.

3.3Environment protection

Among the most important EU policy areas relevant to mountaineering activities belongs **environment protection**[70]. As this field falls in the category of shared competences between the EU and MS, there exists a set of EU legislation harmonising certain aspects of environment protection across the EU, while diverse national action compliant with these measures can be put into force as well. The acts the most relevant to mountaineering has been taken in the policy subarea of nature and biodiversity[71]. Here belong the following relevant legislative acts: the Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora[72]; Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment[73], Directive 2009/147/EC on the conservation of wild birds,[74] Directive 2014/52/EU on the assessment of the effects of certain

[66] 'Directive 2011/83/EU of the European Parliament and of the Council of 25 October 2011 on consumer rights' (Official Journal L 304, 22 November 2011), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32011L0083.

[67] European Commission, 'DG Justice Guidance Document', June 2014, accessed 22 January 2021, https://ec.europa.eu/info/sites/info/files/crd_guidance_en_0_updated_0.pdf.

[68] 'Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel' (Official Journal L 27, 30 January 2010), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32010R0066&qid=1611313106593.

[69] Official Websites of the European Commission, 'The EU Ecolabel for Tourist Accommodations', accessed 22 January 2021, https://ec.europa.eu/environment/ecolabel/documents/hotels.pdf.

[70] For all environment policy subareas, see: Official Websites of the European Commission, 'Topics', accessed 30 December 2020, https://ec.europa.eu/info/energy-climate-change-environment/topics_en.

[71] For more details on this policy subarea, see: Official Websites of the European Commission, 'Nature and Biodiversity', accessed 30 December 2020, https://ec.europa.eu/environment/nature/index_en.htm.

[72] 'Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora' (Official Journal L 206, 22 July 1992), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31992L0043.

[73] 'Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the Assessment of the Effects of Certain Plans and Programmes on the Environment' (Official Journal L197/30, 21 July 2001), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32001L0042.

[74] 'Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the Conservation of Wild Birds' (Official Journal L 20, 26 January 2010), https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1561459564543&uri=CELEX:32009L0147.

public and private projects on the environment;[75] and Regulation (EU) No 1143/2014 on the prevention and management of the introduction and spread of invasive alien species.[76] More publications related to the EU nature directives can be found at the European Commission's official websites.[77]
Besides these "hard law" measures, the EU also drives its environmental protection activities through soft policy tools, such as the EU Biodiversity Strategy for 2030[78] and the associated Action Plan adopted by the European Commission in May 2020,[79] Natura 2000,[80] or Green Infrastructure Strategy.[81] Among soft policy tools also belong the spending power executed through the EU funding. As the field of environment protection stands as one of the EU's primordial priorities in both financial cycles of 2014-2020 and 2021-2027, there exist a wide variety of funding possibilities. These can be found mainly within the EU's funding instrument for the environment and climate action called LIFE,[82] or through national operational programmes focused on environment protection, using the European Structural and Investment Funds (ESIF). At the EU level, environmental protection is currently executed at the European Commission's Directorate-General for Environment (ENV). Information on exact departments and detailed topics covered shall be provided with an organisation chart at the current DG's websites.[83]

Under the policy area of environment protection, a subarea of **waste management** appears on the list of issues related to mountaineering, too.[84] Even if there exist several binding legislative acts[85] as well as non-binding strategic documents,[86] the EU waste policy is primarily concerned with macro-regime (such as processing of waste and broad duty to recycle) rather than micro waste management (such as the duty to remove one's own waste/garbage) that is mainly executed at the local level. Thus, in the sense of micromanagement of waste, the EU can only support the action of responsible local actors or influence the question through soft, non-binding tools. Among these belongs possible EU funding available to develop relevant waste infrastructure, accessible again through national operational programmes financed by ESIF and managed by the Member States themselves. The EU can also act in the case of discrimination between locals and foreigners regarding possible sanctions.

The same principles apply to another issue related to environment protection, that of **sanitary facilities' management**. The provision of such services (e.g., a mobile toilet at the parking place or an appropriately designed

[75] 'Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 Amending Directive 2011/92/EU on the Assessment of the Effects of Certain Public and Private Projects on the Environment' (Official Journal 124, 25 April 2014), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014L0052.

[76] 'Regulation (EU) No 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the Prevention and Management of the Introduction and Spread of Invasive Alien Species' (Official Journal L 317, 4 November 2014), https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1417443504720&uri=CELEX:32014R1143.

[77] Official Websites of the European Commission, 'EU Nature Directive Publications', accessed 13 November 2020, https://ec.europa.eu/environment/nature/info/pubs/directives_en.htm.

[78] For more information, see: Official Websites of the European Commission, 'EU Biodiversity Strategy for 2030', accessed 30 December 2020, https://ec.europa.eu/environment/nature/biodiversity/strategy/index_en.htm.

[79] European Commission, 'EU Biodiversity Strategy for 2030' (COM(2020) 380 final, 20 May 2020), https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1590574123338&uri=CELEX:52020DC0380.

[80] For more information, see: Official Websites of the European Commission, 'Natura 2000', accessed 13 November 2020, https://ec.europa.eu/environment/nature/natura2000/index_en.htm.

[81] For more information, see: Official Websites of the European Commission, 'The EU Strategy on Green Infrastructure', accessed 13 November 2020, https://ec.europa.eu/environment/nature/ecosystems/strategy/index_en.htm; More publications related to EU soft policy measures can be found online at: Official Websites of the European Commission, 'EU Biodiversity Policy', accessed 13 November 2020, https://ec.europa.eu/environment/nature/info/pubs/biodiversity_en.htm.

[82] For more information about the LIFE programme, see: Official Websites of the European Commission, 'LIFE Programme', accessed 30 December 2020, https://ec.europa.eu/easme/en/life.

[83] Organisational chart of the current DG Environment is available online at: Official Websites of the European Commission, 'Environment - Organisation Chart', accessed 30 December 2020, https://ec.europa.eu/info/departments/environment_en.

[84] For more details on this policy subarea, see: Official Websites of the European Commission, 'Waste', accessed 13 November 2020, https://ec.europa.eu/environment/waste/index.htm.

[85] E.g. Directive 2008/98/EC on waste (Waste Framework Directive), Regulation (EC) No 1013/2006 on shipments of waste or Decision 2000/532/EC establishing a list of wastes. For more information, see: Official Websites of the European Commission.

[86] E.g. Thematic Strategy on the prevention and recycling of waste, Thematic Strategy on the sustainable use of natural resources, Integrated Product Policy or Sustainable Consumption and Production Action Plan. For more information, see: Official Websites of the European Commission.

site) is the best practice for mountain areas in general but used rather singularly. Mountaineers thus routinely perform their needs in nature, leading (and often leads) to fouling the environment, together with handkerchiefs or wet cleaning cloths that rot only with difficulty. More generally and for this issue specifically too, EUMA could set a guideline for mountaineering ethics regarding environment protection and ensure its promotion among mountaineers in cooperation with national associations. The association can also collect best practices regarding waste and sanitary facilities' management and share them cross-nationally through cooperation with national associations. These can also actively ensure proper waste and sanitary infrastructure where necessary, possibly helping individuals, local communities, or municipalities find relevant funding.

3.4Parking and camping

Parking management relates to the issues analysed above, too. Mountaineers often come to the destination by car and thus need to park their vehicles in their sport activity vicinity. Best practice shows that organised parking places are a sustainable solution (ideally providing sanitary facilities and recycling waste bins); however, not practiced very often, leading to vehicles left on sites not dedicated to parking. With relation to EU policies, parking management falls under the local regime, and the EU carries out only supporting competences in this sphere. Thus, the same principle as in the case of waste and sanitary facilities' management applies; the EU can only support responsible local authorities' action or influence the question through soft, non-binding tools, mainly EU funding for transport infrastructure. These could be found under funds such as Connecting Europe Facility (CEF), the European Regional Development Fund (ERDF), or the Cohesion Fund (for countries with GNI below 90 % of the EU average). Relevant contact points are the Innovation and Networks Executive Agency (INEA)[87] responsible for CEF funding, and the European Commission's Directorate-General for Mobility and Transport (MOVE). In addition, the principle of non-discrimination is guaranteed by the EU Charter of Human Rights, which can be applied in cases of possible different sanctions between locals and foreigners.

Another common issue represents **illegal overnight camping**. With their sport activity, mountaineers stay overnight in the mountain areas and their surroundings. However, many tend to avoid paid accommodation in the mountain huts or towns and camp illegally in the wild (and often protected) nature or use existing unmanaged shelters. This issue steps into the environment as well as tourism policy areas, which are, in this case, governed by local authorities responsible for the given site (e.g., natural parks, municipalities, etc.). The EU can interfere only in the case of discrimination between locals and foreigners regarding sanctions or through soft, non-binding tools. Therefore, EUMA shall again gather best practices and share them with national associations that shall actively search for sustainable solutions in relevant individual cases.

3.5Access

Concerning the issue of access to trails, mountain huts, or rock-climbing areas **through private estates**, the EU does not regulate the property regime (including the right of passage), as national rules regulate it. The only EU-level interference into the question of private property is article 17 of the EU Charter of Fundamental Rights,[88] warranting this right to everyone, the environmental legislation as well as the discrimination principle, being superior to the national rules. However, EUMA can also lobby for non-binding EU recommendations for states (or regions) within tourism policy areas. EUMA shall, again, gather best practices and offer support to national associations or concrete area management in searching for a compromise in case of conflict between mountaineers or associations and private owners of an area in question.

A similar principle applies to the question of easier **access into nature reservations or national parks** for mountaineers, as trails, huts, or rock-climbing areas are often part of such reservations with limited access. As national rules govern this issue, the EU can only act in its supporting role for national or local authorities through

[87] For more information about the agency and its current organisation chart, see: Official Websites of the European Commission, 'Innovation and Networks Executive Agency', accessed 31 December 2020, https://ec.europa.eu/info/departments/innovation-and-networks-executive-agency_en.

[88] 'Charter of Fundamental Rights of the European Union' (Official Journal C 326, 26 October 2012), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:12012P/TXT.

non-binding, soft law tools. Where national parks are located in a border region, a solution based on bilateral state agreements is possible. Further, if a national park is located on the internal Schengen border, the border regime can be liberal, but there is an exception regarding intra Schengen free movement based on private property rights. Also, the principle of non-discrimination accounts for the access to nature parks, and the EU could superiorly act in a case where nationals of one state would be treated more preferably.

Regarding possible EUMA's action in this question could be a provision of EUMA membership card enabling free access to nature reservations and national parks across Europe where such access is limited. National associations shall distribute these, possibly with their membership cards. Negotiation with individual parks' management would, however, be necessary in this case.

3.6Liability

Another mountaineering issue identified reveals the question of **liability**. In both cases, either the responsibility of individual mountaineers for their sport activity or the responsibility for installed climbing/via ferrata/trail equipment, national rules regulate this matter primarily as it falls within the area of internal security and justice. However, as this policy is located in the sphere of shared competences, there are EU rules concerning the determination of which legal system is used when several national regimes potentially collide (e.g., a Czech climber being injured in a Slovenian rock area due to old and poor bolting in a route made by an Austrian). In such a case, there exist mechanisms of judicial cooperation in civil matters (or civil cooperation in criminal matters if need be, but for the climbing activities, mainly civil liability applies, not the criminal one).

3.7Employment

The following section is relevant mainly for stakeholders dealing with mountain huts' operation who need employees for its performance. Apart from national employees, there are two different categories of workers hired from abroad - EU citizens and non-EU citizens. The different regulatory framework applies to each group. While EU citizens' employment is regulated by EU legislation, access to domestic labour markets by non-EU citizens is predominantly regulated by national laws. The responsible body of the employment policy within the EU is currently the European Commission's DG for Employment, Social Affairs and Inclusion (EMPL).[89]

EU Citizens

The right to freedom of movement for workers is enshrined in Article 3(2) of the Treaty on European Union (TEU), and Articles 4(2)(a), 20, 26, and 45-48 of the Treaty on the Functioning of the European Union (TFEU). It abolishes any discrimination based on nationality with regards to employment, remuneration, and other conditions of work and employment. An EU citizen also has the right to move freely with the EU and to accept a job offer in any given EU member states. The treaty basis is further developed in several directives and regulations.[90]

In practice, employers can employ any EU citizen under the same conditions as if they were citizens of their own country. According to national legislation, the incoming worker will only have to register his or her residency at host

[89] Official Websites of the European Commission, 'Employment, Social Affairs and Inclusion', accessed 22 January 2021, https://ec.europa.eu/info/departments/employment-social-affairs-and-inclusion_en.

[90] 'Directive 2004/38/EC of the European Parliament and of the Council of 29 April 2004 on the right of citizens of the Union and their family members to move and reside freely within the territory of the Member States' (Official Journal L 158, 30 April 2004), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32004L0038. 'Regulation (EU) No 492/2011 of the European Parliament and of the Council of 5 April 2011 on freedom of movement for workers within the Union' (Official Journal L 141, 27 May 2011), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32011R0492. 'Regulation (EU) 2019/1149 of the European Parliament and of the Council of 20 June 2019 establishing a European Labour Authority' (Official Journal L 186, 11 July 2019), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R1149&qid=1606313997052.

member state authorities and apply to social security and health insurance. This process can vary across EU member states, and time limits for the conclusion of the registering procedure might be different.[91]

The aforementioned legislation applies only to standard employment. The movement of posted-workers (sent by a company to another state) as well as self-employed persons (who accept a contract in another member state) is regulated by the Directive (EU) 2018/957 on Posting of Workers.[92] This situation can arise, for example, if a hut keeper decides to hire a worker through a working agency - the agency will technically employ the individual, and the keeper will pay invoices issued by the contractor.

In this case, several rules must be followed. Firstly, an employer is obliged to respect minimum wage regulation, maximum work/rest periods, health, safety, hygienic standards, etc., according to the hosting country's national legislation.[93] Furthermore, an agency worker remains a contributor to his or her sending country's health and social security system, unless they are not posted abroad for more than a year. After that, the posted worker becomes subject to the host country's national social and health care system. This also applies to situations where an employer circulates agency workers on the same position (e.g., a cook). Under such circumstances, the total employment period is the sum of time over which the position was opened. More information regarding rules applied to posted workers and self-employed is provided in the EC's Practical Guide on the relevant legislation.[94]

Non-EU citizens

Working permits for non-EU citizens are predominantly regulated by national legislation. Every single EU member state imposes its own set of rules under which a non-EU citizen can be employed in the given country. There are two exemptions from this rule. The first rule applies to close family members of an EU citizen. In this case, the family members have the right to reside, work, and be educated in the country where the close family member lives.[95] The second exemption applies to the EEA citizens (Norway, Liechtenstein, and Iceland) and Switzerland. These countries are not technically members of the EU; however, their citizens enjoy the same access to the right of free movement as if they were EU members.
Furthermore, there are specific rules to minimum working conditions and prolongation of work-permit depending on the sending country. In general, it can be asserted that a non-EU citizen has the same right to working conditions as EU citizens in most cases. However, for specific employment conditions of non-EU nationals, consult the official websites of the responsible EC's Directorate-General.[96] Only Turkish citizens enjoy a special EU regulation with regard to prolongation of their working permits. If they are legally employed in an EU member state, they have the right to permit renewal after one year if the same employer offers them the same position. After three years of working in an EU state, they can freely change employers for the same occupation and passing further four years, and they enjoy the same rights as an EU citizen.[97]

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[91] EU member states can deny the right of entry and residence on the grounds of public policy, public security or public health, however, this always applies only to specific individuals and is not regularly used.

[92] 'Directive (EU) 2018/957 of the European Parliament and of the Council of 28 June 2018 amending Directive 96/71/EC concerning the posting of workers in the framework of the provision of services' (Official Journal L 173, 9 July 2018), https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32018L0957.

[93] Official Websites of the European Commission, 'Posted Workers', accessed 22 January 2021, https://ec.europa.eu/social/main.jsp?catId=471.

[94] European Commission, 'Practical guide on the applicable legislation in the European Union (EU), the European Economic Area (EEA) and in Switzerland', December 2013, accessed 22 January 2021, http://ec.europa.eu/social/BlobServlet?docId=11366&langId=en.

[95] Official Websites of the European Commission, 'Family Members', accessed 22 January 2021, https://ec.europa.eu/social/main.jsp?catId=463&langId=en.

[96] Currently at: Official Websites of the European Commission, 'Non-EU nationals', accessed 22 January 2021, https://ec.europa.eu/social/main.jsp?catId=470&langId=en.

[97] Ibidem.

3.8Hut Construction & Maintenance

As in other cases, the European Union does not regulate particular construction requirements but sets general rules of how member states should assess applications for construction permits. There are several directives and regulations[98] that have an impact on the national construction law, but in general, the processes and requirements for construction permits can significantly vary across the European Union.

The European Union law stipulates that if necessary, the member states should require the construction applicant to assess the new building's impact on the environment. Countries should also provide access to all construction requirements in a non-discriminatory way. All procedures with regard to construction permits should be comprehensible, and a contact-point must be established. Lastly, European Union sets standards for constructions and its building - e.g., there is a common standard for what walls are made of.

In case EUMA member organizations experience problems with construction permits, unnecessary requirements for accommodation facilities, these problems stem from national legislation and do not have a base in the EU laws. For example, basic requirements for hotel rooms and utilities in the Czech mountains are regulated by the Czech national regulation. Similarly, Austria, Slovenia, or Spain will have their own respective regulations.

Conclusions

The European Union is a very complex system of governance where various actors at different levels are responsible for particular decisions regulating mountaineering activities. Although the EU-level institutions may play an important role, many of the acute problems identified by the working groups (huts, trails, rock areas) need to be addressed at national or even regional and local levels. At the same time, EUMA has the potential to find its place as the representative of mountaineering organisations in Brussels. This analysis has attempted to briefly introduce the structure in which EUMA is going to operate, the logic of the EU decision-making and the division of responsibility between the EU and the member states' levels. It also reviewed some of the pressing issues in the three fields – huts, trails and rock areas – that are of interest to the project.
At the EU level, the European Commission and sometimes the European Parliament will be the most important institutions for EUMA. It depends on the issue of which DG or which committee will be responsible for the particular policy. But the presence in Brussels will provide EUMA the opportunity to influence the policy process's crucial phases - the agenda-setting and policy formulation. EU level may also serve as a source of funding to EU-wide or even Europe-wide activities. To establish itself at the EU level, EUMA needs to **become widely known as the representative of mountaineering associations** that have the mandate to represent its members, well-functioning communication channels back to the national organisations, and superior expertise all matters relevant to mountaineering. In such a case, EUMA will be consulted by decision-makers in the Commission and in the Parliament and will secure direct access to those officials who are relevant for EUMA's areas of interest.

The key precondition for EUMA's success will be **the ability of the member organisations to agree on common objectives and priorities**. To become a place to contact on all matters connected with mountaineering, EUMA needs to become a legitimate and recognised representative of the national organisations at the EU level. Only then, EU officials and MEPs will invite EUMA representatives for consultation and be interested in their input. Not only because of the superior information about the impact of the existing or planned legislation in various EU countries, but also because of the simplification that such direct communication substituting contacts with dozens of national organisations ensures. A common position between EUMA and the member organisations is important to communicate the same message at the EU level as well as in the member states. The most visible and successful lobbying makes use of various entry points to the decision-making process, and the more stakeholders adopt positions close to the EUMA stance, the more likely it is that the final result will be close to it too.

In addition, much change in the European Union takes place without the direct involvement of the EU law as a result of direct contacts of national representatives with each other through sharing of good practices and

[98] Council Directive 92/43/EEC, Directive 2001/42/EC, Directive 2009/147/EC, Directive 2010/31/EU, Directive 2011/92/EU, Regulation (EU) No 305/2011, Regulation (EU) No 347/2013, Directive 2014/52/EU.

incorporation of lessons learned in other countries. EUMA can play a significant role in developing these good practices together with its member organisations and share them with the decision-makers at all levels of government. The **combination of the top-down and bottom-up pressure** increases the chance for a change.

EUMA should become the **source of expert information and promoter of best practice**. Databases of trails, huts and rock areas, for example, do not only serve the mountaineers looking for a place to stay overnight or to climb. They will serve EUMA to construct a persuasive, evidence-based argument about the impact of existing and potential legislation. Accounts of good practice and codes of conduct may, in turn serve as the basis of future legislation that needs to be realistic in order to be successful. As long as EUMA can provide reliable information and examples of good practice, Commission and Parliament officials who need information to draft their proposals and argue their points will seek EUMA's input and advice.

The European Union can also serve as a **source of funding**. While some funds are available at the EU level, it is the national level that distributes the majority of resources. EUMA should start preparing for the negotiations over the next multiannual financial framework (2028-2034). It should strive to ensure that the priorities reflect mountaineers' preferences not only in the overall definition of objectives but also in the Commission's negotiations with the individual member states over their national programmes.

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✓ **Chapter III - Management of Mountain Huts Analysis**

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Chapter III - Management of Mountain Huts Analysis

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History of Huts in the Eastern Alps:
Excerpt from the two-volume book documentation of "HOCH HINAUS! Wege und Hütten in den Alpen", which was published by the German Alpine Club, the Austrian Alpine Club and the Alpine Club South Tyrol.

History of Slovakian Huts:
Research, Text and photos – Ladislav Gancarčík

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- Natália Mervartová – translation correction

History of Slovenian Huts:
Research and text: Miro Erzen

History of Greece Huts
Research and text: Olga Kotsina

Documentation of the history, data collection, evaluation and outlook of huts in the perimeter of EUMA members and Collaborative associations

1 Preface

The huts in the mountain areas were built as shelters. During more than 150 years, more than 2000 huts were built in the mountains and rocky areas of Europe as shelters for mountaineers and climbers.

The huts are located in mountain and climbing areas at all altitudes between 100m (Trieste) and 4500m (Monte Rosa) above sea level.

In their most important function, huts serve as shelters for overnight stays and in case of bad weather.

With the construction of these huts, a unique infrastructure has been created in extreme locations. The huts are exposed to great weather fluctuations. It is the most benefit for mountaineers to have a protective device, but also a benefit for the valley population to generate added value. In addition to their protective character, huts offer the possibility of serving as a base for on-site alpine training and as an educational facility for living together in a confined space and with simple catering.

In general, the huts are owned by mountaineering associations, but depending on the region, they also belong to national parks, ski resorts, companies, private people, municipalities, other NGOs. The huts are run by tenants or by caretakers only.

The architecture of a hut is usually adapted to the respective mountain area. Equipment and size of the hut is oriented primarily to the intensity of use.

The largest huts can accommodate about 341 mountaineers (Triglavski dom na Kredarici in the Julijske Alpe), the smallest huts, shelters, or bivouac boxes less than 10 people (Kieler Wetterhütte, Verwall with 2 places).

Most of the huts owned by mountain association are open in summer. A part of them is open in winter, too. If huts are closed there is the possibility to use a special shelter all year round, or only in certain months. In the unmanaged huts, cooking facilities and woolen blankets for sleeping are usually available. Huts serve as a rescue centre and a first aid equipment for injured people is usually available.

The further equipment of a hut, besides different fire protection and lightning protection devices, is characterized by the infrastructure found. Many huts can be supplied with spring water from the surrounding area, other huts have only rainwater, melt water from snow, occasionally visitors must bring their own water.

The fuel needed for cooking or heating is either obtained from the nearby surroundings or must be transported to the hut.
The energy is generated locally provided by solar or waterpower, and in many cases, gas or (bio-) diesel powered generators are used as a supplement. Rarely, the hut is connected to the public supply network.

In some cases, drinking water is treated at the hut and, depending on the tourist load and location, wastewater is treated. Waste and sewage sludge are disposed of in the valley.

The huts, depending on their location and equipment, require extremely high volunteers' commitment. The main burden of financing is mostly borne by the mountaineering clubs.

There are remote huts and such that establish a tight network of huts, each according to mountaineering goals.

Huts are attractive to mountaineers, huts perform a guiding function in the open countryside and provide a reliable source of income for the local population. This counteracts the exodus of people from remote areas and contributes to the preservation of the cultural landscape. Huts are meeting places for people from all population groups and nations, which favours cohesion within Europe.

2 Aim of the project

Huts are shelters in different mountain and rocky areas, mostly in extreme locations and therefore with different infrastructures.
The equipment of a hut depends on its location, and huts can be managed, guarded or unattended.

With the following analysis, it is necessary to examine the huts according to their function, their environmental standard, and the respective working conditions.

Significant differences in equipment, which ultimately lead to different requirements, will be presented.
The starting point for this analysis is a collection of data on geographic location, ownership, and homepage information

3 Overview of the history of the huts and how they came into being

The following chapter is an excerpt from the two-volume documentation of "HOCH HINAUS! Wege und Hütten in den Alpen", which was published by the German Alpine Club, the Austrian Alpine Club, and the Alpine Club South Tyrol. An insight is given on the history of the origin and development of mountain refuges in the Alps, using the example of the Alpine Clubs operating there.
This development is certainly transferable to the other refuges in other regions in Europe.

4 150 years of mountain hut history in Germany, Austria and South Tyrol

Preliminary note:
The text below has been translated from the above-mentioned book. The translated wording may be somewhat difficult or awkward to read. This is because the texts are from the past

"On 27 January 1867, Leopold Freiherr von Hofmann presented the idea of a hut to the Austrian Alpine Club (OeAV); Leopold Freiherr von Hofmann proposed the establishment of a hut. Soon, this idea of an association hut in the valley of Kaprun was discussed in more detail by the OeAV. In order to - according to the association statutes - " facilitate travel through the Alps", a stone accommodation hut was to be built" in which the tourist can spend the night without being bothered, as at present, by the smell and commotion of the inhabitants of the goat stable, and in addition, by the smoke from the cooker and without being occasionally disturbed by the raindrops falling from the damaged roof and in which, at the same time, thanks to the presence of a cooking facility, has the opportunity to cook the provisions he has brought with him or obtained from the nearby alpine huts, either by his own cooking skills or those of his guides". Soon, preparations were also made for the construction of another hut on the Schneeberg, the highest mountain in Lower Austria. Although the OeAV did not enter completely new territory with this - the very first documented alpine shelters, which in their function, corresponded to today's function in the broadest sense, were already built at the end of the 18th century (August 2, 1799 Salm hut near the Großglockner) and the The Swiss Alpine Club (SAC) and the Club Alpino Italiano (CAI), although founded at a later date, began building club huts somewhat earlier. The OeAV, however, was opening up a new field of activity for itself. Up to now, it has been content with selective subsidies for private building projects.
[……]

So much for the state of affairs in April 1868. Now action is quickly taken, A few months later, the Erzherzog Rainer Hut is ready for use. The Wiener Zeitung can report: "On 6 August the board of the Alpine Association, Mr. Section Chief [Leopold] v. v. Hofmann climbed the Wasserfallalm; he brought a tourist book with him and was the first to enter his name in it." The hut construction on the "Schneeberg" will be more modest and smaller, more the function of a "house of refuge", "so that the climbers, in the event of a storm that surprises them on the peak or in the vicinity, can find shelter and, as will certainly happen […] even on a clear day, and find a place to rest and recuperate". But it remains the project. In 1885, the Austrian Tourist Club erected the Fischer Hut. This idea drafted in 1867 with the essential features of two fundamentally different types of huts, the more comfortable "accommodation hut"

(Rainer-Hütte) and the spartan "refuge house" (Schneeberg project), can still be found today in variations of the buildings of the AVS, DAV and OeAV: furnished AV shelters, unmanaged or managed, on the one hand, and open shelters and bivouacs on the other side. "In the beginning there was still some uncertainty - there was a lack of experience with - the tasks as well as the paths to be followed. In general, people believed that the Alpine Club only should build in the high regions, and that a true tourist should be unpretentious. Support for valley paths or inns were to be ruled out," summarizes Secretary General Johannes Emmer after a quarter of a century of building experience.
Johann Stüdl, founding member of the German Alpine Club, envisages that Alpine Club accommodations "should not be tourist houses or alpine hotels" or alpine hotels" that "master builders or architects are called upon to build, but rather simple huts, such as huts that correspond to the actual purpose of our association". As a model: the Glockner Hut (the old Stüdl Hut), which he built himself in 1868. At the beginning, the OeAV and DAV, and from 1874 onwards, the German and Austrian Alpine Association (DuOeAV), which was formed by a merger built simple shelters in the mountains out of stone and wood. A ground-level building under a monopitch or gable roof, or gable roof, often leaning directly against the rock provided the basic needs of shelter from the weather, food and sleeping. [……..]

After only a few years, the simple accommodation propagated is no longer sufficient for the increasing demands, and so the original concept and ideal replaced by the desire to provide not only the tourist shelter, but also to offer tourists more comfort, i.e. to combine the useful with the pleasant - as it were, in a consistent further development of the motto "Utile Dulci", displayed above the entrance door of the first documented shelter built in the high alpine region, the "Hotel" of Charles Blair on the Montenvers near Chamonix. Apart from this, the experiences of the first years have shown that some locations and construction methods are unsuitable for refuge huts, because they have led to manifold damage through moisture, avalanches and weather avalanches and weather. In the early days of hut building, the principle of "trial and error" was often applied out of inexperience. Some shelters had to be abandoned as a result, while others remained in service despite all the hardships. The best example of this is the Schwarzenberg Hut, built in 1882, a hut south of the Wiesbachhorn, which has been damaged or destroyed countless times - mostly by avalanches and rebulilt. Existing huts are thus being further developed in both respects, safety and comfort. The first Carlsbad hut built by the Prague section (Höller hut) and the Untersberg house of the Salzburg section (Zeppezauer House) set new standards in 1883 with their "splendid and opulent" furnishings. Once again, the Alpine Club's hut ownership grows considerably so that the Central Committee, which changes every three years, is once again in danger of losing track of the situation. The progress of building activity leads to the establishment of a "Special Committee" for path and hut questions, which draws up the first hut building regulations in 1879. 1882 a new hut land register is drawn up and presented to the general assembly in Salzburg.
[.....]

Rapid increase in hut attendance
The provisioning of the huts and the careless way in which the supplies are handled is proving a need. On the other hand, the management of the huts by tenants is pushed. In 1894, 44 %of the 134 Alpine Club huts (without open shelters) were already managed, and only 15 years later, over 83% of the 242 huts were managed. The refuges now appeal to a broader public, so that the total attendance of all huts, according to the reported figures rises from 3,528 persons in the year 1878 to 232,176 in the following 3 years. The increased demand is met with extensions.
[.....]

The First World War and the consequences
So, while many sections push ahead with the construction of huts, the development is increasingly seen as problematic by some of the Alpine clubs for at present they are "not building for the high alpinists but for the masses of visitors, and are therefore striving to achieve this for economic reasons alone, choosing, if at all possible, the building site in such a way that the hut can be seen from the valley". The DuOeAV attempts, at first with moderate success, to cap the subsidies. The building activity soon becomes impeded by external circumstances, namely the First World War. The result was stagnation, and many Alpine Club huts can only be used to a very limited extent or not at all used as such, and the necessary renovation work could hardly be carried out. There is a shortage of staff, and some huts are temporarily inaccessible. In some cases, looting and the direct effects of the war lead to (wilful) destruction - as happened, for example, with the huts on the Dolomite front by military use. The Alpine Club

magazine of 1919 nevertheless lists 323 current refuges with a total of 8513 camps (beds, mattress camps, etc.) including 22 open shelter huts without camps, 49 huts with year-round camps (self-catering huts), 218 huts managed in summer and 14 huts managed all year round. The figures are approximated because the "now abroad" huts are also recorded which have been lost through expropriation. After the First World War, a number of huts in the Karawanksand the Bachmountains, in the Steiner Alps and in the Julian Alps to Yugoslavia, for example the Ursulaberg House of the section Klagenfurt near Slovenj Gradec (Vindischgrätz) and the Golica Hut of the section Carniola near Jesenice (Aßling).
[……..]

Above all, however, due to the territorial reorganization of Europe after the First World War, many of the huts of the DuOeAV were suddenly in Italian territory. They were confiscated, and in 1924 most of them were handed over to the Club Alpino Italiano (CAI). - The formal expropriation by the Italian state followed after the Second World War. The South Tyrolean sections, which in an effort to secure their continued existence as a whole in 1920/1921 were dissolved by the fascists in 1923.
After the Second World War, they were re-formed as the Alpine Club South Tyrol (AVS). and built new huts (e.g. Radlsee-Hütte opened in 1956). In 1970, a lump-sum compensation was paid for the expropriated hut property of the former South Tyrolean sections of the DuOeAV. The majority of the expropriated Alpine Club huts in South Tyrol and neighbouring Italian areas were built by German sections. For them, the loss of ownership initially meant bitter setbacks in their efforts to gain a foothold in the high alpine region. For some of them, they were subsequently compensated financially, and for some, they managed to compensate for the losses by building new refuges in Austria.
In 2000, 25 former huts of the DuOeAV were taken over by the province of South Tyrol and their allocation and management were reorganised in 2015. The Province of Bolzano, as the owner, grants the lease and is responsible for financing and management. The hut wardens for 17 of these huts are appointed by AVS sections, and for the others by the CAI. AVS and CAI have a joint advisory function.

Alpine Club Huts around the World
Geographically, the building activity of the Alpine Club - albeit very sporadic - is quite wide-spread. From 1899 the section Tsingtau, the easternmost branch of the DuOeAV, set up several Alpine Club huts in China. Today's metropolis of Qingdao (Tsingtau), located in the Chinese province of Shandong, was the center of the "German protectorate of Kiautschou" until 1914. The DuOeAV even reached out to Africa at the same time. For example, the foundation of a Section Cameroon was discussed, and in 1914 the section Hannover built an accommodation at the Kilimanjaro in 1914, which was, however, never inaugurated as an Alpine due to the outbreak of war. From the 1930s onwards, sections were also founded in South America. The section Peru builds a shelter in the Peruvian Andes, the Dr. Hans Kinzl Hut, and the section Chile even builds several huts. The latter Alpine Club branch is still alive today within the framework of the "Club Aleman Andino - DAV Chile" (German Andean Association Chile) and continues operation of one of its former Alpine Club refuges, the Refugio Lo Valdds..

Hostels and ski huts
In the 1920s, the association as a whole promoted - at first with moderate success - the establishment of so-called valley hostels, which were finally established in many places towards the end of the decade, in order to "provide cheap accommodation in the valleys for the Alpine Club members" and become increasingly populari. Located in valley villages, they are welcome bases on the way to the high mountains. In addition, during that time, the section. Austria, to "care for its own members and for those of other Alpine Club sections, Alpine Club hostels were established which receive a beautiful metal plaque with the edelweiss and the inscription: 'Alpenvereinsheim des Zweigs Austria des D. u. Ö. A. V. [Alpine Club hostel of the section Austria of the DuOeAV] The valley hostels sometimes also serve as Alpine Club youth hostels.
[…….]

When building new shelters, the association as a whole of that time [1922] take special care to meet the needs of both, summer and winter tourism. In addition, the winter opening of existing Alpine club refuges is recommended: "It will be to the advantage of the sections to open suitably situated huts in winter and to provide them with supervision. We are convinced that the all the members of the association enjoying winter tourism will support the

erection of freely accessible winter huts in popular skiing areas and would not see any contradiction to the Tölz guidelines." The General Assembly of the DuOeAV finally voted in favour of these guidelines in 1923. A clear demarcation against the hotel and restaurant industry by returning to the modesty and simplicity of the early Alpine Club accommodation is postulated.
[.....]

ÖGV and ÖTK join the Alpine Club
In the 1929 journal, 284 refuges are listed _- excluding the expropriated buildings _. With the accession of the Austrian Tourist Club (ÖTK), which has been independent again since 1945, and the Austrian Mountain Club (ÖGV), which now (again) belongs to the Alpine Club as a section, the number of huts owned increased considerably again at the beginning of 1931; high time for the DuOeAV to draw up a new overview. For this purpose, so-called "Standblätter" are drawn up in 1932. In the same year, the book "The Shelters of the German and Austrian Alpine Associations", edited by the Main Committee of the Alpine Club is published. The timing is considered favourable, as "in the near future there will be no substantial increase in the number of huts, because there is hardly any need for new huts, building huts has become very expensive, and the available funds must be used primarily for the maintenance of the existing huts." All in all, the book describes 429 Alpine Club huts, 170 of which, i.e. the vast majority, being at least temporarily managed, as well as 93 huts lost to the association as a result of the new borders". According to Josef Moriggl, the total number of huts owned of the DuoeAV and its sections at the time the book went to press amounted to 529. This also includes 25 weather protection huts and 75 section huts.

Despite the above-mentioned bitter losses of time-honoured huts, the number of visitors had risen to almost one million per year by the beginning of 1931, taking into account also the ÖGV and ÖTK huts. 20,266 sleeping places, divided into 6,591 beds, 10,951 mattress places and 2,724 emergency places are available. Moriggl estimates the number of places available in the excluded section huts to be well over a thousand, and the number of visitors to these club accommodation facilities to be 60,000 per year!
[.....]

Development after 1945
[.....]
Some of the accommodations have, of course - for example through provision of infrastructure, like roads or cable cars, the building of other huts and houses - lost their original purpose long ago, which is why, as in the case of the Alpincenter Glockner-Haus, a certain change of function has taken place. However, if the preservation is no longer in any reasonable relation to its usefulness, accommodations are sold or demolished. For example, in recent times the Erich Sulke Hut in the middle of the skiing region of Saalbach-Hinterglemm and the Rudolf Hut in the High Tauern National Park, now a mountain hotel, have been sold. Also, the Hofmanns Hut, which was built in its original form in 1834 by Archduke Johann on the Pasterze, was renovated in 1869/1870 by Stüdl and Carl Hofmann and subsequently repeatedly extended and modified; ehas been abandoned and its demolition is scheduled for 2016. As a result, the number of Alpine Club refuges in categories I-III has fallen slightly in recent years. Alpine Club huts are no longer built at new high alpine locations, and several huts have been declared historic monuments because of their cultural and historical significance, individual shelters, such as the Stüdl Hut, have been replaced by new buildings on the same site in recent decades. In this process, importance is increasingly placed on architecturally appealing solutions, sometimes even resorting to architectural competitions for quality assurance.
In the 21st century, the coverage of the Eastern Alps with Alpine huts - with the exception of one or two bivouacs, such as the Josef-Pixner bivouac near the Rauhjoch in the Ötztal Alps - can be regarded as complete."

The two-volume publication with the title "HOCH HINAUS! Wege und Hütten in den Alpen"*, published by Böhlau-Verlag, is available in bookshops at € 49.90 or in the DAV shop .*
https://www.dav-shop.de/productdetails.aspx?id=10000134&itemno=312030

4.1 History of Huts in the High Tatras

View of the High Tatras from Kežmark

The oldest predecessors of the huts were simple shelters made of natural material, in which the prehistoric settlers from the Tatra settlements protected themselves from the night and bad weather on longer expeditions. Lumberjacks and coal miners contented themselves with shelters made of spruce bark, shepherds built wooden huts, and built moss-sealed stone huts near the mines. In the 16th century, members of local intelligence - priests, doctors, some landowners, but above all professors of the Lyceum in Kežmarok - began to be interested in exploring the area of the High Tatras. These were the beginnings of scientific exploration of the High Tatras and the activities that we now call tourism.

The students of the lyceum in Kežmarok went on excursions to the High Tatras with their professors, collected plants for their school cabinet and also had a lesson in the construction of emergency shelters from dwarf pines.

In the alpine zone, there were rocks from which treasure hunters and gold diggers, later tourists, built protective walls under massive overhanging boulders, so-called fire pits. The name comes from ancient times, when fires were burning at their entrances to protect the people from the cold and wild animals. To make the places around the fireplaces more comfortable, visitors gradually lined them with dwarf pine twigs, grass, and moss. They gradually insulated the stone protective walls on the sides. In the pioneering Tatra literature, shelters with fires are mentioned mainly in connection with the expeditions of scientists who explored and described the High Tatras in the 18th century. Even the authors of significantly newer works, in the context of the first ascends to the Tatra Mountains, often mentioned the nights spent under the protection of fires. We can rightly call these shelters the predecessors of today's alpine huts.

A significant event for the development of tourism, mountaineering and making mountain terrain accessible was the founding of the Hungarian Carpathian Association on August 15, 1873, in Stary Smokovec. The headquarters of the association became Kežmarok. Its existence lasted until 1945. One of its main contents was the layout, appearance, and capacity of the designed cottages. The association was also an investor to a large extent. The financial means, thanks to which the basic network of tourist cottages grew up, were collected mainly from various donations and collections. In the 1870s, simple, one-room buildings without housekeepers were designed. Hikers collected the keys in hotels in Tatra settlements or from the officials of the Hungarian-Carpathian Association in

Kežmark. Fees for overnight stays were not set, but hikers were happy to contribute with a voluntary donation or purchase of a "brick", a symbolic action for the maintenance of existing huts and the construction of more new cottages. The first huts were not managed, later retired mountain guides became their seasonal managers.
Under the patronage of the Hungarian Carpathian Association, the Club of Czechoslovak Tourists and Skiers and, especially in the interwar period, even private owners built a relatively dense network of cozy cottages and cottages grew up even in places where they no longer exist, either because of improved communication conditions or ecological criteria. Most of the cottages were extended due to current needs.
After the Second World War, the cottages were nationalized and came under state administration. The former hut manager gradually became employees of several companies: Slovakotura, Turist, Tatra Hotels, Interhotels, Restaurant and Dining Halls and the Tatra Administration of Special Purpose Facilities of the Slovak Organization of the Czechoslovak Association of Physical Education.
On May 1, 1991, the succession associations (Club of Slovak Tourists, Slovak Mountaineering Association JAMES, and Slovak Ski Association) of the former Club of Slovak Tourists and Skiers founded the company Slovenské Karpaty s.r.o. /Ltd./, which took over the management of cottages: Chata pod Rysmi, Zbojnícka chata, Téryho chata, Chata pri Zelenom plese and Zamkovského chata. Later, Zamkovský's cottage was returned as part of restitution to the heirs of Štefan Zamkovský. In 2005, the Slovak Tourist Club bought all shares from the Slovak Ski Association which occurred in financial need.
The Slovak Tourist Club and the Slovak Mountaineering Association JAMES, when signing new lease contracts with tenants in 2005, decided to manage their property together, directly through a joint property commission, which decides on all important issues related to the management of alpine huts, while rents are paid directly by the tenants on behalf of the owners based on valid rental agreements. Expenses are covered by the owners according to their property conditions.
Each of the cottages experienced a different fate. They were created under different circumstances, their appearance, use, sometimes even their name has changed, and some were even relocated. All of them had to withstand demanding climatic conditions and natural elements.

Chata pri Zelenom plese (The Hut near Green lake) – 1,551 m.a.s.l. Vysoké Tatry – Dolina Kežmarskej Bielej vody (High Tatras - White Water Valley Kežmarská)

In the 16th century, the surroundings of Green lake were known not only to shepherds, poachers and treasure hunters, but also to tourists. The professors from the Lyceum in Kežmarok took their students here on educational excursions, and in June 1565 they were probably the guides for the lady Beata Lásky-Koščelecka from the Castle of Kežmarok, the first non-anonymous visitor to the White Water Valley. In 1876 already, near the access road to the Green lake in Predné Meďodoly, the Hungarian Carpathian Association in Kežmark, under the chairmanship of Egid Berzevicky, built the first shelter, the so-called Egid's cottage at an altitude of 1,520 m. Its existence was very short, the herdsmen from the surrounding shepherd huts damaged it, so the management of the association dismantled it and moved it to the northern bank of Green lake. It served tourists for three years, but finally it burned down. During the year, the Hungarian Carpathian Association built a new cottage with two rooms and some utility rooms on the mountain. It was soon moved to the southern shore of the lake, where the climatic conditions were better. After two consecutive fires in 1890, this cottage also disappeared. From 1894, for almost three years, under the patronage of the Hungarian Carpathian Association, they built a luxurious building with a kitchen, a warehouse and five rooms, and named it Friedrich's cottage after Archduke Friedrich, who also supported it financially.

High Tatras - White Water Valley Kežmarská

After the First World War, the number of visitors to the High Tatras increased, so in 1926 the hut was repaired and expanded, and it received a permanent lodger and staff for year-round operation. In the summer, it was supplied with the help of horses, in the winter the goods were brought by porters from the Tatra villages of Rakúsy, Mlynčeky and Lendak.

Until 1945, the cottage belonged to the Karpathenverein, a tourist organization of Spiš Germans, which rented it exclusively to its members.
After 1945, the cottage became the property of the Club of Slovak Tourists and Skiers.
The cottage near Green lake was nationalized in 1948 and the newly created organisation Tatranské hotely became its owner. In 1950, it was renamed to Brnčal's hut, in memory of Albert Brnčal, the former chairman of the Slovak Mountaineering Association, who died that year while descending the tower Jastrabia veža. In 1992, the name of the cottage returned to its original name Chata pri Zelenom plese.
After the restitution in 1991, the cottage was taken over by the Slovak Tourist Club, the Slovak Mountaineering Association JAMES, and the Slovak Ski Association.

Téryho chata (Téry's hut) – 2,015 m.a.s.l. Vysoké Tatry – Malá Studená dolina (High Tatras – Small Cold Valley)

Small Cold Valley was often visited by treasure hunters, herbalists, hunters, but also by travellers. The first tourists came here only accompanied by guides and some even riding horses. The first hiking trail was built in 1875, following the routes of older farm roads.
An important pioneer of Tatra mountaineering, a doctor from Banská Štiavnica and later a health advisor at the Ministry of the Interior in Budapest, Dr. Ödön Téry proposed in 1889 at a committee meeting of the Budapest branch of the Hungarian Carpathian Association (UKS) to build a cottage near Five Spiš lakes.

In May 1898, a construction commission was created under the leadership of Dr. Ödön Téry, composed of professor Ľudovíta Petrík, engineer Jozef Pfinn, builder Gedeon Majunke and representatives of Stará Lesná village, which owned the valley at that time.

Soon after inspecting the site, the builder Gedeon Majunke presented a construction project adapted to the given conditions and terrain configuration. There were no reservations against the project, the association also agreed to the necessary funds for its construction, and construction began already in mid-June 1898.
The construction of the highest located chalet in the High Tatras at that time was also associated with a lengthy and arduous hauling of material. All material was brought from Poprad to Hrebienok by horse-drawn carriages. Workers from Veľký Slavkov, Stará Lesná and a few Roma from distant villages had to carry the material from Hrebienk on their own backs, it was an extraordinary performance.
Many workers took turns on the construction site, the builder Majunke wrote down their names in his memorial book, however, it's a pity that it has not been preserved. If the builder's presence at the cottage was needed, the workers signalled it by reflecting sunlight off a mirror. Alike, Majunke also signalled to his wife in Spišská Sobota that he had arrived safely at the construction site.
On August 21, 1899, the cottage was ceremonially handed over to the public. Despite the unfavorable weather, many people attended the opening ceremony. According to the proposal of the secretary of the Hungarian Tourist Association, the cottage was named after its creator - Téry's cottage. They made the right decision, no one has tried to change the name so far. The original budget was exceeded in the interest of safety, quality, and durability of the building, so that it would not have to be constantly modified and repaired. Part of the costs associated with the construction of the cottage was covered by Gedeon Majunke out of pocket.
Since it was put into operation, the cottage has had a permanent tenant - a hut keeper.
Téry's cottage was gradually modernized. After the summer season in 1935, solid fuel central heating was installed. In 1936, the cottage received a telephone connection, in 1937 the accommodation was improved, and since then, year-round operation began. During the reconstruction in 1955, the interior spaces were modified and the exterior architecture was supplemented. It was expanded with a wooden extension in front of the entrance.
Over the last years, Téry's cottage has undergone various modifications. With significant financial assistance from the owners of the cottage, the Club of Slovak Tourists and the Slovak Mountaineering Association JAMES, many improvements were made, a photovoltaic island system and a water tank were built there, which also significantly influenced the reconstruction of sanitary facilities for visitors to the cottage. Reconstruction of the central heating meant that the solid fuel boiler was replaced by a more ecological pellet boiler.

Zbojnícka chata (Robber´s hut) – 1,960 m.a.s.l. Vysoké Tatry – Veľká Studená dolina (High Tatras – Large Cold Valley)

Large Cold Valley somehow stayed away from the attention at the time of the construction of cottages by the Hungarian Carpathian Association. In 1901, the Hungarian forest property became the owner of the valley, and it built a hunting lodge there in 1907, which, after certain modifications, was handed over to the tourist public free of charge three years later. After 1918, the owner of the land in Large Cold Valley changed and the Czechoslovak state rented the cabin for a symbolic rent to the Club of Czechoslovak Tourists. However, the cottage was still cold and staying in it was extremely unpleasant in bad weather. Polish climbers therefore called it "morgue". The new operator improved the technical condition of the building and built an extension in the same year. The cottage got a permanent tenant. Since poachers were considered to be a kind of bandits and Veľká Studená dolina was a well-known poaching terrain in the past, they named the group of meadows on the upper terrace Robbers lakes and the name Zbojnícka chata – Robber´s hut was given to it in 1924, and the cottage has retained this name to this day.
In the spring of 1983, the reconstruction of the cottage began. It was terminated in June 1985. The grand opening took place on November 8, 1986.
After the reconstruction, the Robber's cottage had a large dining room, a spacious kitchen, comfortable accommodation for guests and staff, storage rooms, a boiler room and central heating. After the reconstruction, the cottage became the best equipped cottage in the High Tatras.
The renovated cottage did not last long. On the night of June 14-15, 1998, it was completely destroyed by fire. Already on the following day, the representatives of Slovenské Karpaty, s.r.o. /Ltd./ along with the hut keeper and other enthusiasts arranged everything necessary for the restoration of the cottage. It was not an easy task, many enthusiasts helped selflessly. A year after the fire, on June 30, 1999, after all the formalities had been completed, the construction began on the old foundations. The project documentation was prepared by engineer Bruno Boroš from Poprad and the main construction contractor was engineer Ľubomír Malina from Kežmark.
At the end of 1999, the cottage was roofed and put into trial operation on December 21, 1999, before approval. In December of the following year, the approval was held, which allowed partial operation, including guest accommodation. The full approval was held on August 20, 2001. The ceremonial opening of the cottage on the old foundations was on October 20, 2001.

Chata pod Rysmi (Hut near the peak of Rysy) – 2,250 m.a.s.l. Vysoké Tatry – Mengusovská dolina – Dolinka pod Váhou. (High Tatras – Mengusovská Valley – Valley near Váha.)

The discussion about the need for a hut near the peak of Rysy began at the end of the 19th century, when the Austrian mountaineer Ubald Felbinger started promoting it, who also decided to financially support this project. In 1929, the Poprad branch of the Czechoslovak Tourists' Club decided to build the tenth jubilee chalet according to idyllic ideas and models from the Alps right in the saddle of Váha. The concrete proposal for the construction of a cottage in the saddle of Váha came out in 1930 during the Tatra Exhibition in Veľká. The cottage project underwent several changes. The proponents and supporters of the construction were not even united in the location of the cottage. The area around Frog lakes was also considered as an alternative. Shortly before the beginning of the construction of the cottage in the saddle of Váha, the Ministry of Education ordered, in view of one of the points of the Krakow Protocol on the creation of the Polish-Czechoslovak National Park, according to which it was not allowed to build in the border zone, the cottage to be located in the Valley near Váha, about 100 meters below the saddle, on the south-eastern slope of Rysy. The main initiators of the construction were engineer Róbert Vosika and Lt. Col. Václav Dusil, members of the Poprad branch of the KČST. The idea was supported by other important individuals and organizations.

They planned the construction for three years. In the first stage in 1930, they modified the hiking trail with the cooperation of the Second mountain brigade up to the Váh saddle. The construction was entrusted to the construction company Šašinka from Poprad, which started the construction in the spring of 1931.

Due to the poor financial situation, the KČST headquarters asked companies for financial or material assistance. Material and workers were transported by the railway Tatranská vicinalna železnica to Popradské lake stop for free. Further transportation was provided by the army to Popradské lake by horse-drawn carriages, from where the material was carried by soldiers and civilian workers. Cement was donated by the cement factory Slovenské cementárne. Stone was quarried right next to the construction site, sand in the Váha saddle, and water was obtained mainly from the snowfields.

The construction itself began on August 3, 1931. The workers came from Spiš and Liptov. They lived in a makeshift hut and fed on the supplies they had brought for the whole week. The workers were not only troubled by the difficult terrain, but also by the bad weather. After two years of construction under difficult, almost dramatic conditions, Poprad builder Jozef Šašinka could announce the fulfillment of these ideas.

On July 15, 1933, with the ceremonial opening of the cottage, its history began to be written. The hut was ceremoniously opened by the chairman of the Smokovec branch of the KČST, Gustáv Nedobry.

In 1948, the cottage was severely damaged by an avalanche for the first time. Also in 1962 and 1982, the cottage was repeatedly damaged by avalanches.

Despite the efforts to operate the cottage year-round, it was only open in summer. With minor modifications, it served until 1977, when, especially during mass ascends to Rysy, all the shortcomings became apparent. The Tatra administration of ÚZ ČSZTV closed it down and did a complete reconstruction within one year.

After some time, it was again confirmed that the decision on the construction site was not correct. Sometime at the turn of January and February 2000, a snow avalanche destroyed a significant part of the cottage. Already in spring, part-timers helped the hut manager with the collection of material and its gradual restoration and operation. At the end of February 2001, a snow avalanche tore off the roof again. The cottage building was temporarily repaired again, but at the same time, a debate arose about whether to restore it properly in its original place, or to move it to a safer place. The staff of the Avalanche Prevention Center in Jasná recommended building a hut outside the avalanche tracks.

In its opinion, the TANAP report recommended the reconstruction of the cottage in its original location with the requirement to build effective anti-avalanche protection.

On June 15, 2010, after the end of the winter closure of the trails, the owners of the cottage KST and SHS JAMES handed over the construction site to the competitive construction contractor - the company Stavunion s.r.o. /Ltd./ from Tatranská Lomnica. This moment came after ten long years of various meetings, negotiations and discussions, the conclusion of which resulted in its current form. The new cottage provides a high level of comfort for guests and staff. The cost of rebuilding the cottage was approximately €630,000.00. Part of it, €265,000.00, was a state subsidy, and other costs were covered by investors (KST and SHS JAMES). We cannot forget the voluntary contributors, their contributions paid for the tiled stove in the dining room, furniture, and equipment of the cottage. Although the appearance of the cottage may not be to everyone's liking, the sheeting serves its purpose. A visitor who enters the cottage gets a different feeling. The furniture is dominated by wood. The cottage is equipped with a photovoltaic system for the production of electricity, which is enough to operate the necessary equipment. The whole cottage has a central heating and a modern pellet boiler for central heating with programming.

The atmosphere of the old cottage is difficult to replace, but the current cottage owner and his team do everything to ensure that the cottage continues to have a unique atmosphere.

Conclusion

A lot has changed since the time when the first tourists began to discover the High Tatras. The mountain huts have changed beyond recognition with their equipment. The generations of tourists and climbers who visit them have something in common. They like to spend evenings in their premises discussing their experiences and dreams together.

Even today, the supply of alpine huts is largely carried out traditionally by alpine porters. The work of a high-altitude porter is registered in the List of Cultural Heritage of the Ministry of Culture of the Slovak Republic and there is an effort to register it in the UNESCO World Cultural Heritage.

Carrier with supplies.

A typical inhabitant of the High Tatras - endemic Rupicapra rupicapra tatrica.

4.2 A brief history of mountain huts construction in Slovenia

Until 1893, when the Slovenian Mountaineering Society (SPD) was founded, the first huts in the Slovenian mountains were built by the Carniola branch of DuOeAV, as Slovenia was an integral part of the Austrian monarchy at that time. The branch was founded in Ljubljana in 1874 but was soon revived in 1881. During its operation, Deschmannhütte (today's Staničev dom) was built on Gubah above Pekel - Kot valley, a year later Maria Teresiahütte under Triglav (present Planika), in 1897 Zoiss hut (now Cojz's cottage on the Kokrško sedlo) and in 1900 Vosshütte (today's Erjavčeva koča na Vršič pass.) was built. In addition to the Carniola branch of the DuOeAV, the Austrian Tourist Club (ÖTC) was also active in Slovenia. This club also built some mountain huts. Some of them are gone today, among the most famous ones were (Frischauf's home in Okrešelj) and a cottage on Korošica.

Due to the distinctly pro-German activity of the mainly Carniolan branch of the DuOeAV, the Slovenian mountaineering association was established in the ranks of the nationally conscious Slovenian mountaineers. After several previous experiments in 1893, the Slovenian Mountaineering Society was founded in Ljubljana. One of the first tasks of the newly formed society was to build huts to resist German dominance in the mountains. Therefore, a year after its establishment, the Orožnova hut under Lisec and the Kocbek cottage under Ojstrica was built. In 1895, the famous priest from Dovje Jakob Aljaž bought the top of Triglav from the Municipality of Dovje Jakob Aljaž and set up a shelter-Aljaž turret, which is still one of the most recognizable symbols of Slovenes. In 1904 he built the first Aljaž cottage in Vrata valley and in the following year the first hut on Kredarica, in 1904 the first Aljaž home in Vrata valley (it was demolished by an avalanche in 1907), so in 1910 a new Aljažev dom was built, which still stands today.

Until the beginning of the First World War, the ethnic struggle between Slovenes and Germans continued in the Slovenian mountains, which was also shown in the competition in the construction of huts and the fight to take over the mountain trails.
After the First World War, the political map of Europe changed significantly and the Slovenian territory became part of the Kingdom of Yugoslavia, while the Western part fell to the Kingdom of Italy under the Rapallo Treaty, and Carinthia fell to Austria after the plebiscite. 15 of the huts were destroyed after the end of the war and 5 remained in foreign territories under the new state regime. The total assets of DuOeAV and ÖTC were purchased by the SPD. All this caused the SPD to work very intensively on the construction and renovation of huts, rather than developing other activities - which were at the forefront in other Alpine countries – alpinism, mountaineering, ski mountaineering, mountain photography, etc. As a result, in 1921 there was the establishment of a second mountaineering organization, which was engaged in precisely these activities – the Slovenian Tourist Club Skala. Therefore, during the interwar period among the top Slovenian mountaineers we find mainly members of this association, some of whom were also members of the SPD at the same time.

The aftermath of the Second World War was similar in the area of mountain huts, many of which were burned and demolished during the war by German occupiers to ensure that they did not offer place to resistance partisans. The general conception of the restoration of the demolished homeland also included mountaineers who, under the auspices of the Alpine Federation of Slovenia -PZS (thus renamed SPD) with a great deal of enthusiasm, voluntary work and with modest material possibilities, and with great ingenuity began the renovation and construction of mountain huts. In the decades after the Second World War, mountaineering was the main sports and recreation activity in addition to skiing, so much attention and material support was received by both, administrative and political authorities at the level of the State of Yugoslavia and the Government of the Republic of Slovenia. For the period until Slovenia’s independence in 1991, the number of mountaineers and, consequently, the number of mountain huts (mainly in the lower areas) rapidly increased, since each new society was built as an external sign of the success of the association' performance. As a result, there are now over 290 associations operating 165 huts under the PZS.

Since 2000, the situation in the area of material support for the country has changed significantly and has only been reduced to the occasional minimum support from EU cohesion funds. However, major changes in the economy resulting from changes in social order, privatization and globalization have also resulted in significantly less donor support - as mountain huts are not exactly facilities for promoting them. Generations of mountaineers who have

operated mountain huts for years on the basis of volunteering are also leaving. Adding to this, climate change and ecological requirements can also be expected in the future in the management of mountain huts in Slovenia.

4.3 Greek Huts History

In the late 1920s, when the nature-loving and mountaineering movement began to grow and the nature-loving and mountaineering associations were founded one after the other, the first proposals for building mountain hostels or shelters in Greek mountains began to be formulated. Until then, Greek and foreign climbers spent the night in houses of mountain settlements, or in monasteries, or in hospitable valleys, or in tents, while in the winter months or overnight was quite difficult and problematic, due to the minimal means of transport, but also condition of the road network.

From the beginning, the need of shelters, mountain hostels, mountain tourism, became clear to everyone, as well as the various mountain sports, such as e.g. skiing with the creation of respectively ski resorts.

In September 1927, on Mount Olympus peak, 24 Greek, French and Swiss mountaineers decided to establish a Mountaineering Association in Greece. Thus, on March 7, 1928, the Athens Mountaineering Association was created by the unofficial mountaineering club «The Cuckoos». Soon afterwards, on June 27, 1928, the Patras Mountaineering Association was established. Those 2 mountaineering associations proceeded to the establishment of the Hellenic Mountaineering Association on February 20, 1930, which initially acted as a federation of the new mountaineering associations being established throughout the country at that time.

The E.O.O.A. (the Hellenic Federation of Mountaineering and Climbing) expanded its activities and the popularisation of skiing and mountaineering and also supported the protection mountain areas. Moreover, the E.O.O.A. recommended to governments in power the need to build mountain refuges so as to facilitate access to mountains for mountaineers and skiers, and all the efforts made at that time resulted in the building of refuges in the 1930s. The first mountain refuge was built on Mount Olympus between 1930 and 1931. The Hellenic Federation owns 11 mountain refuges and another 70 are owned by member associations.

The first mountaineering shelters which were built in Greece in order to serve climbers and skiers, such as Mount Olympus (1930), Parnassos (1931), Panacheikos (1931), Helmos (1932), Oiti (1932), Ziria (1933), Parnitha (1937), Taygeto (1937), Panachaiko (1937), Mitsikeli (1937), Olympus (1938), Chortiatis (1938), Paggaio (1939) and Ossa (1939).

In the line of mountaineering activities since 1935, the E.O.O.A. organised expeditions to great mountain ranges and trained climbers in high mountain camps. From 1956 and onwards rock climbers were trained abroad and later they took part in alpine camps organised for them. The members have been trained in ski mountaineering, alpinism, and mountain rescue since 1964. At the same time, rock climbing seminars and mountaineering seminars were organised throughout the country from 1959 and 1963, respectively.

4.4 Project phases and working group

The project is divided into three phases, which build on each other:
Initial phase:
The purpose of this phase is to describe and analyse the actual situation for huts. That means identifying the EU scale of the issues, experience, good and better practice, identify possible ways of solution.

Strategy phase:
The aim of this phase is to define a policy and strategy plan for improvement of governance of huts as well as communication and decision-making structure.

Implementation phase:

Make strategy and policy plan widely known, among EUMA members as well as among other important stakeholders and make it also functional. That is why it is important to establish a basic structure for committees /working groups which will continue to be active in the concrete issues.

EUMA members are working on the topic of huts under the leadership of DAV. They are supported by a representative of Charles University in EU policy analysis. In detail, these are (in alphabetical order):

Chairman

Mair, Hanspeter	DAV	German Alpine Club

Members

Aschaber, Andreas	OeAV	Austrian Alpine Club
Erzen, Miro	PZS	Alpine Association of Slovenia
Gancarčík, Ladislav	JAMES	Alpine Association of Slovakia
Havelka, Vit	CUNI	Charles University Prague
Kotsina, Olga	ERA	European Ramblers' Association
Nikoloski, Goran	FPSM	Mountaineering Federation of North Macedonia
Stierle, Roland	EUMA	European Union of Mountaineering Associations
Temelkovski, Zivko	FPSM	Mountaineering Federation of North Macedonia
Trpevska, Snezana	FPSM	Mountaineering Federation of North Macedonia

5 Definitions

5.1 Definition of hut (shelter)

Huts differ from ordinary accommodation mainly by limited accessibility or their location in remote areas. They primarily serve the needs of mountaineers usually as a starting point for mountain tours. The huts may offer food, accommodation, or a temporary place to stay overnight. Remote accessibility limits the ability of staff to maintain and supply a hut and to use public utility networks.

There are different categories of huts depending on how accessible they are, who the owner is, and the type of operation.

5.2 Different types of shelters

5.2.1 Accessibility

5.2.1.1 Huts accessible on public roads

In valley locations, a small number of huts can be reached by vehicles on public roads. But these huts are **still called** hut because they were not connected to the road when they were built. And a hut is a building not connected by public road

5.2.1.2 Huts accessible only on paths or forest tracks

The vast majority of EUMA members' huts are only accessible via trails, non-public paths, and forest roads. Thus, the huts can only be reached on foot, by ski or by mountain bike.

5.2.2 Ownership

5.2.2.1 Huts of Alpine clubs

Most huts in the perimeter of the EUMA are owned by the national mountaineering associations or their clubs (sections). The Alpine associations in the European states are predominantly organized in such a way that

independent mountaineering associations (clubs) have been founded in towns across the country over the last 150 years or more, joined in the Alpine clubs.
The support of the huts, for example the planning of building measures, repairs, maintenance, negotiations with authorities, etc. is characterized by the fact that this activity is carried out by volunteers from the clubs.

5.2.2.2 Privately owned huts

In addition to the large number of huts owned by the Alpine clubs, there are also some privately owned huts. The owners are either valley residents, mountain farmers who manage their alpine pastures, or mountain guide associations of the valley communities or other organizations.

5.2.3 Types of operation

For the huts in the mountain regions, there are basically two different types of hut operation or management. On the one hand there are the managed huts and on the other hand the unmanaged huts. The characteristics and differences are described in detail below.

5.2.3.1 Managed Huts

The main characteristic of managed huts is that one or more responsible persons appointed by the owner section are present at the hut on opening days. This person is called the hut warden or tenant. His or her main tasks are to cater for the guests and to manage the hut. This includes cooking and providing hot and cold food and drinks. A very important part is the organization of the overnight accommodation. In advance, reservations must be accepted and handled at most of the huts.
In addition, the hut warden is responsible for the service and of the hut equipment during operation.
A special form of the managed hut is the guarded hut. In this form of hut, one person is present at the hut during the period of management and organizes the operation of the hut without providing food. The guest brings their own food and the host or hostess prepares the food. However, this form of management is rather rare.

5.2.3.2 Non-serviced huts

The non-serviced huts are also called self-catering huts. The characteristic feature is that the guests bring all their own food and cook in the hut themselves. They organise their stay in the hut completely independently. It is important to note that in most cases the huts in the Eastern aAps are only accessible with a key, which must be collected from the owner's section.
However, there is also a special form. These are the winter rooms. They are available to mountaineers as accommodation outside the operating time in winter. They are either open or accessible with a key that is standardized throughout the Eastern Alps. In other countries (France), it is forbidden to lock the winter room.

5.3 Special types of huts

5.3.1 Winter room/ winter house

A winter room is a very different variant of a Bivouac box. It is a usually a separate place in or attached to a guarded hut with a separate entrance. It offers shelter and accommodation outside the operating hours and thus enables mountain trips outside the hut season. Usually, one has to pay for using the facility. If the place is separated from the main hut and a bigger alone standing building it is often referred as winter house. The comfort varies and can be similar to a rudimentary bivouac box up to a fully equipped hut with many amenities. In principle, there are beds, mattresses, blankets, cushions, an oven, cooking equipment, firewood, a table and seating. The more luxury ones have even electricity, running water, a tiled stove. Apart from the increased amenities the same rules as for good bivouac box manner should apply.

Source: OeAV, DAV, CAI

5.3.2 Bivouac Hut

The typical bivouac hut or box is made from metal, wood, plastic or high-tech composite material. It contains many sleeping places in one small room and the building is mostly visible from distance. It has a small entrance turned away from the windward side. It usually has a basic insulation and few windows. Equipment and comfort can vary extremely. In most cases it is equipped with mattresses, blankets, candles, snow shovel, some emergency supplies and a hut book, more rarely with an emergency telephone, a cooker, cooking fuel cushion and almost never with an oven. The shelter has neither running water nor a toilet. A bivouac box is an emergency accommodation at exposed places in high alpine regions at typical spots where mountaineers get stranded or serves as a high starting point for complex and time-consuming mountain routes. Bivouac boxes are in most cases far away from any serviced hut and in most countries in the alps they are only used in case of an emergency and shall not serve as a cheap alternative to guarded huts.

Main characteristics of a Bivouac box:

- reduced
- spartan
- remote

Bivouac boxes are often located at starting points for high alpine summit tours or on long-distance hiking trails where there are no managed huts over long distances. These bivouac huts are not meant for a comfortable night; they are primarily intended for those mountaineers who are on correspondingly demanding tours. The bivouac culture in Italy and England differs a little bit. In these countries, the bivouacs are used as a self-catered alternative to guarded huts and usually are part of the trip planning.
In the high mountains, the bivouac boxes are usually set up in wind sheltered depressions, close to saddles, prominent passages or close to avalanche proof rock-wall. Only a few are located on mountain peaks. More frequently they are found on highly frequented routes either in the middle or towards the end. In the Western Alps, bivouac boxes are often located at the beginning of ridge ascents. The entrance door, which is usually unlocked, is so high that it can be opened even when there is snow.

Source: OeAV, DAV

History

In the early phases of the conquest of the Alpine regions, there was no particular distinction between different types of buildings. All kind of accommodations in the high mountains were spartan emergency shelters that offered only makeshift protection from wind and weather. Bivouac-like shelters were built for the conquest of Mont Blanc as early as in 1785. Bishop Salm did the same for the ascent of the Grossglockner in 1800 and Friedrich Simony built an emergency shelter on the Dachstein in 1843.

Gradually, due to the increased number of mountaineers, the first huts with catering and basic facilities were developed. These were founded in favourable locations. The shelters located in less spectacular locations or in difficult terrain remained correspondingly rudimentary which are the forerunners of today's bivouac boxes.

The following is an example of user recommendations from the Austrian Alpine Club for bivouac boxes:

- Use bivouac boxes only in emergency cases.
- They are not a destination for romantic nights in the mountains!
- They serve as emergency shelters or for resting on a long mountain tour and meant for alpinists who really need them.
- Observe the principle: "Leave the bivouac box exactly as you found it".
- Take your rubbish back to the valley, there is no one who disposes the rubbish, it just piles up.
- Close doors and windows properly! If they are left open, they can get damaged, and the interior will get ruined by wind, rain, and snow.
- Use common sense when going to the toilet. Don't do it in the proximity of the shelter, bury it and take the toilet paper down to the valley.
- Inform yourself about the standard at the bivouac box and bring all the necessary equipment.
- Take care when cooking and avoid any contamination with hazardous substances.
- Don't post your perfect night in the bivouac box on social media. It could find imitators and soon the place suffers from over crowdedness by people who are using it as touristic destination.

5.3.3 Bivouac

A bivouac box should not be confused with a bivouac although most of the time they are called the same name, that's why it's confusing. Basically, a bivouac is an emergency overnight sleep in the open wild with no shelter-like installation. It only serves the purpose to overcome (survive) the night without any additional equipment. A bivouac sack or even a sleeping bag increases the comfort and decreases the probability of serious health damage.

5.3.4 Emergency shelter

An emergency shelter usually is a small primitive building or covered place with limited comfort and little space. It can be manmade or natural e.g., a rock, cave, or doline. In the most cases, it allows no bearable overnight stay in the long run due to its limited space, missing beds, or the lack of a sealed floor. An emergency shelter serves as protection from adverse weather conditions or in case of imminent danger. It purely preserves a person from any serious casualties. Historically, these places were typically used by herders and shepherds to get protection from the cold, wind, rain, snow or even thunderstorms.

Small hut

Source: OeAV

Open shelter

Source: alpintouren.com

Natural shelter

Source: outdooractive.com

5.4 Main infrastructure elements of a hut:

Huts or shelters are an infrastructure facility built in the mountain environment. They have the basic purpose of providing basic supplies and accommodation when visiting the mountains.

The huts were originally built from materials that were available in the immediate surroundings (rock, wood) and could be transported by simple means. Their furnishings were very simple - a seating area with a wood stove, a few tables and wooden benches, and a smaller bedroom with wooden bunk beds and dormitories mostly in the attic. The huts were uncomfortable, so it was quite unpleasant to stay longer, but our predecessors had no choice.

Over the decades, both, the means of transport and the choice of materials used in the reconstruction and construction of mountain huts have changed considerably, so that modern mountain huts are built from materials that are energy-efficient and durable. However, there have been even greater changes in interiors and their furnishings. Of course, it is necessary to distinguish between huts located in high mountains, which can only be reached after a climb of several hours, and those located in lower areas. The latter huts are accessible to a wider range of visitors, the higher ones are the starting point for high altitude tours.

As a rule, the huts in the high mountains are smaller, more modest in equipment and simpler in sanitary standards (depending on the amount of water and energy available for sewage treatment). The typical range of available space includes:

- storage space for shoes and equipment
- living room
- kitchen
- bedroom/storage for guests
- bedroom for staff
- toilets for guests
- toilets for staff
- storage rooms for food, beverages, wood, cleaning materials and waste
- space for technical equipment for the hut operation
- winter room either integrated into the building or located outside the building

Depending on the type of supply using a ropeway for material transport huts have a material store in the valley so that supplies can be temporarily stored for transport. In addition, depending on the type and size of the wastewater treatment facilities, technical rooms are available either in the building or mostly outside.

6 Functions of a hut

6.1 Infrastructure for mountaineering activities

The huts in the mountain regions have a history of over 150 years. They were built in the first place to shorten the long climbs or to make the summit ascents possible. There is a great deal of literature on the history of mountain huts. The decisive factor for the construction of huts was the endeavour of the alpine associations to create bases in the Alps or mountain regions in order to climb the peaks. This has changed somewhat in the meantime because the starting points of the huts can be reached much more quickly than in the past. Nevertheless, the huts still exert a fascination. Magnificent views of the mountain world and life in a certain simplicity far away from urban bustle continue to exert a great fascination on hut visitors.

Thus, the huts continue to have a very important function as a starting point for all activities related to mountain sports. Whether climbing and alpine tours in summer or ski tours in winter, whether as a starting point for hikes, the huts represent the most extensive infrastructure in the mountains.

6.2 Point of information and visitor guidance

The mountain world is fundamentally subject to rapid weather changes, which are increasingly accelerated by climate change, so that despite careful planning of mountain tours and increasingly reliable weather forecasts, weather events cannot always be predicted. In this case, the mountain refuge is a very safe place. Because of their very good knowledge of the local microclimate, hut keepers can often give more reliable forecasts for short-term weather conditions. This is a very valuable service for guests.

Climate change also has a profound impact on mountain conditions. Permafrost is melting, heavy rainfall and storms are influencing the increasing extent of avalanches and landslides. These influences mean that paths or even entire valleys must be closed. Much of this information, which changes daily, is provided to guests by the hut keepers. They also advise on alternatives.

Despite extensive information about the special features of the mountain environment and its vulnerability provided by the alpine associations, in schools and other institutions in the valley, visitors to mountain huts should be reminded to treat the mountain environment with sensitivity. In mountain huts, visitors can obtain information in the field of nature conservation, especially with regard to individual locally protected plants, animals, water resources, etc.

6.3 Offer of food and drinks

Food and drinks are generally offered at the managed huts. This starts with breakfast, which can be quite substantial. The offer ranges from butter, bread and jam to muesli, cheese, sausage, and fresh fruit. Of course, coffee and tea and served, too. At most huts, you can also get tea for the tour. A special feature is that members of the alpine associations in the Eastern Alps are entitled to tea water. This is a right, which is pronounced in the rules of huts. Non-members do not enjoy this offer.

The lunch and dinner offer can be very varied. There are meat, fish, and egg dishes as well as vegetarian dishes. Here too, a member of alpine associations has the privilege of ordering a mountaineer's meal at the maximum price of nine euros in the Eastern Alps. Half-board is often offered for dinner as well because it simplifies the hut logistics. At the huts of the DAV, OeAV and AVS there is an initiative called "*So schmecken die Berge*" (This is how the mountains taste). The aim of this initiative is to use local and regional products for the huts and thus to strengthen agriculture, bakeries, butchers and breweries in the valley. Only huts that meet the relevant criteria are accepted and allowed to carry the corresponding quality label.

The range of drinks is usually very large and regional. The offer ranges from beer, wine, lemonades, mixed drinks to local specialties.

Overall, the offer is characterized by specialties from the regions.

6.4 Environmental protection

This aspect has two sides, which are described below.

On the one hand, huts strongly contribute to the protection of nature from the influences of human presence. The huts have a control function in that they provide guests with a protected space. This prevents wild overnight stays in nature and limits the impact on nature to a few square meters.

On the other hand, the hut sites ensure that the impact on nature is minimised by their management. This is done, for example, through wastewater purification systems, regenerative energy generation systems, economical use of resources, etc.

6.5 Protection from weather conditions

The huts in the mountain regions also have a protective function regarding the weather conditions. They protect against heat, rain, snow, wind, storms, and lightning. The huts are built and equipped accordingly.

6.6 Emergency alarm point

Despite the exceptionally rapid development of communication technology, especially in the field of mobile phones, there are still areas in the mountains where there is no mobile phone network. Especially in climbing areas, the hut keepers can recognize accidents very quickly. In case of an accident or emergency, the refuges are the first point of contact to report the accident to the mountain rescue service and start a rescue operation. In this case, the hut keeper can usually take immediate action, for example, in the case of avalanche accidents. Some huts have a radio set so they can call the rescue service even if there is no mobile network.

Emergency equipment is available in many huts. However, it is rather rarely used because accident victims are often rescued by helicopter, which carries the necessary rescue equipment.

7 Environmental minimum standards of huts

7.1 Wastewater treatment and sanitary infrastructure

Wastewater treatment at mountains and mountain refuges serves to protect the groundwater in the refuge area and underlying deposits. The required degree of purification is determined by the respective legal regulations. Due to the usually difficult transport conditions and unfavorable weather conditions at mountain huts, the construction and operation of wastewater treatment plants at mountain huts is very expensive. Generally, a biological waste treatment plant is installed.

The local framework conditions are a very important factor for the planning and construction of wastewater treatment plants at mountain refuges.

Main factors which influence the system are:

- transport effort (type of supply)
- altitude above sea level
- geology
- summer and winter operation
- cost-intensive energy supply
- drinking/utility water supply scarce
- terrain topography (steep/rocky subsoil)
- legal requirements
- design size of the system
- dry toilets
- yield of the water supply
- maintenance effort
- third-party maintenance

The composition of the wastewater from mountain huts and shelters can be very different. In particular, the availability of water, the consumption of hot water and the type of management have a very strong influence on the dirt load. In addition, strong fluctuations in the amount of wastewater and its composition occur in the course of a year or a season due to varying occupancy.

Huts with many single-day visitors and only a few or no overnight stays usually have a significantly lower concentration of organic substances, but above-average ammonium loads (mainly from grey and yellow waters), than huts with mainly overnight visitors.

In general, the concentration of pollutants in the wastewater of mountain huts and refuges is significantly higher than in comparable objects in the valley. This must be taken into account when dimensioning the wastewater treatment plant.

Wastewater from mountain huts generally has a much lower temperature than that in the valley.

As a rule, objects in isolated locations are characterized by the fact that their supply and disposal systems must function self-sufficiently. This is referred to as an island location. It is therefore important that the individual systems are coordinated with each other; an integral approach reveals the mutual interrelationships.

Process steps of wastewater treatment
Pre-treatment: Pre-treatment serves to eliminate the solids. Mechanical processes (e.g., settling or screening) are used for this purpose. It is used before the main treatment and relieves the latter.

Main treatment: The main treatment serves to eliminate the dissolved substances. Biological and physical processes are used for this purpose.

Advanced purification: Advanced purification is used to eliminate constituents that could not be removed in the main purification.

Sludge treatment: The term sludge treatment refers to the treatment of the separated wastewater ingredients (the solid, pasty, or sludge-like substances removed from the wastewater = sewage sludge) using mechanical and biological processes.

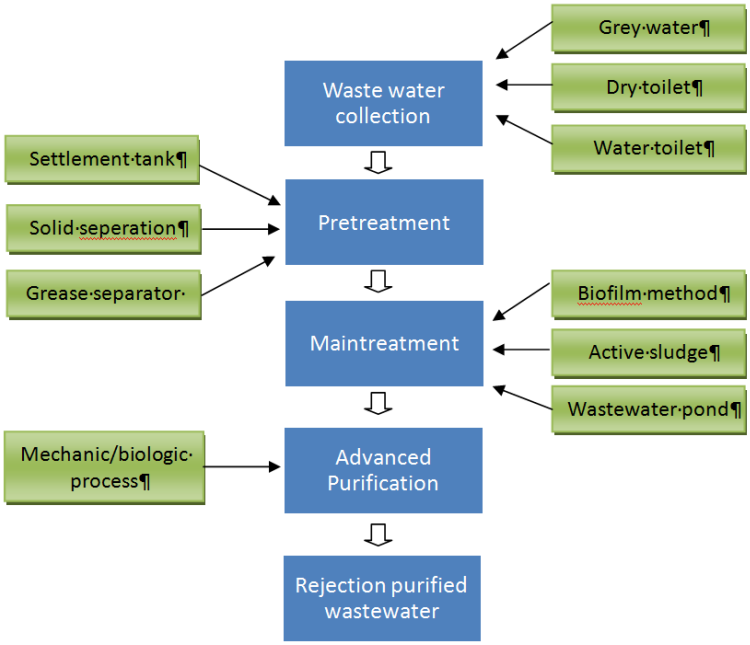

Filter bag plant Ostpreußen Hut


Filter bed, Göppinger Hut


Trickling filter, Watzmannhaus


Wastewater treatment plant, Württemberger Haus

Schematic representation of a wastewater treatment plant



7.2 Waste management at mountain huts

The following reflects the basic assumptions on waste management which apply in Europe.

Waste can be solid, liquid, or gaseous and is managed and disposed differently according to its unique properties.

For the EU members, the directive of the European Parliament of 19 November 2008 on waste and repealing certain directives are the basis for any assumptions concerning waste.

According to the directive 2008/98/EC the main aim is to protect the environment and human health by preventing or reducing the adverse impacts of the generation and management of waste and by reducing overall impacts of resource use and improving the efficiency of such use.

Definition of waste
The concept of waste has two dimensions, one is a self-perspective and the other one concerns a broader perspective from a public interest approach.

Personal dimension: Waste in the subjective sense is any substance or movable object which the holder discards or intends or is required to discard.

Societal dimension: Waste in the objective sense is a movable object whose collection, storage, transport and treatment as waste is necessary in order not to impair public interests which generally addresses the protection of the environment and health, safety and public order.

In particular, the public interest is impaired if:

- The health of people may be endangered, or unacceptable nuisances may be caused,
- dangers to water, air, soil, animals or plants and their natural living conditions may be caused,
- the sustainable use of water or soil may be impaired,
- the environment may be polluted beyond the unavoidable extent,
- fire or explosion hazards may be caused,
- noise or sound may be caused to an excessive extent,

- the occurrence or proliferation of pathogens can be promoted,
- public order and safety may be disturbed, or
- the townscape, landscape or cultural assets may be significantly impaired.

Situation at the huts:
In the cities and villages, there are a variety of waste types for which there are also corresponding disposal paths. These are e.g., residual waste, bulky waste, municipal waste, biological waste, recyclable waste.

All these types of waste are also generated at the shelters or huts. The only difference is that there is no waste collection service that picks up the waste at regular intervals. The tenant of the hut must separate the waste, store it separately and bring it to the valley. This can be done by ropeway for material transport, helicopter, or vehicle. This special situation requires that storage space for waste must be available at the huts. This is associated with additional costs for the hut-owning club.

Fundamental approach
The waste directive takes the waste hierarchy 2008/98/EC as its basic measure in order to entail waste prevention as its prior principle. Its main aim is to reduce waste and make waste streams transparent under the general "polluter pays principle" and the "extended producer responsibility".

Source: EU Commission

The hut keepers are, of course, also confronted with the fact that visitors bring material that they want to dispose of at the hut. For this reason, there are no waste containers at most huts. In addition, biodegradable waste bags are provided at many huts so that guests can take their waste back to the valley.

Above all, it is important that the waste generated at the hut is neither burned on site nor dumped in the landscape.

7.3 Energy supply systems

There is a wide range of energy supply systems at the huts. The main goal for the supply is the use of renewable energy sources. Many huts have photovoltaic systems for power supply with storage systems from batteries and for heat generation. In addition, there is the energy source of hydropower. Sometimes there are already many combined heat and power plants with rapeseed oil as the energy source on the huts, which serve to supply both, electricity and heat. In addition to these technical plants, wood heating systems are still used both, for cooking and as a space heating system. Bottled gas is also often used for cooking, sometimes from steel tanks.

Unfortunately, many huts still have diesel generators. These are to be replaced in the medium term.

7.4 Drinking water supply

Drinking water is essential for the supply and operation of the huts. Without drinking water, regular operation of the huts is not possible.

The drinking water supply of mountain huts is a great challenge for the operators. Guests have high expectations. From his point of view, the demand for clean air, clean water and a clean environment in the region concerned is particularly high. Against the background of climate change, the supply of drinking water will become one of the greatest challenges for the management of mountain huts.

For drinking water to be free of pathogenic germs with a high degree of certainty, the dwell time of the water underground should be at least 60 days. In the mountains, there is at best meltwater that flows through a moraine gravel, for example, or precipitation water that seeps into a crevice and emerges after a few hours. There are also shelters that collect part of the drinking/ service water on the roof and store it in a cistern.

However, the legal framework applies to all who use drinking water, external circumstances are not considered.

In most cases, water disinfection systems in the form of UV systems are installed on the huts. In addition, the drinking water must be regularly sampled and tested by a certified body.

If safe drinking water is not available, measures must be taken. This can occur if the suitability as drinking water is not confirmed in the expert opinion or, for example, if surface water enters, if the water is turbid, but also if the UV system fails.

- The competent authority must be informed.
- The guests must be informed.
- Attach the notice "No drinking water" to the outlets.
- Water must be boiled.
- Drinking water must be available in the kitchen area.
- The operator must solve the problem within 30 days at most.
- It is not a permanent solution.

If people suffer damage to their health due to contaminated drinking water, this can lead to legal consequences for the operator. Therefore, utmost importance must be attached to clean drinking water.

8 Working conditions minimum standards

8.1 General

8.1.1 Introduction

If workers are employed in refuges, the relevant occupational health and safety regulations must be applied. These regulations primarily include requirements for the refuge as a place of work. Places of work must meet certain requirements in order for the employment of workers to be permissible.

For huts, for obvious reasons, these requirements cannot always be met in their entirety, because for instance according to Swiss law, employees must have a rest outside the working place which is, of course, impossible in a hut. It is therefore necessary to develop guidelines with the alpine associations and the authorities in order to preserve the typical character of mountain refuges, but on the other hand also to ensure adequate protection of workers through appropriate measures.

8.1.2 Terms and definitions

Workplaces in buildings are structural installations and parts of structural installations to which workers have access in the course of their work: e.g. workrooms, corridors, stairwells, storerooms, machine rooms, sanitary rooms and rooms for resting during work breaks. Work rooms are all those rooms in which workers have access according to the purpose of the room, during the regular working hours.

8.1.3 Terms and definitions for shelters

In relation to refuges, the terms and definitions are greatly simplified by the size of the refuges. Almost all traffic routes will also be considered escape routes. The entrance or exit to the refuge usually serves as the emergency exit.

8.2 Workrooms

For work rooms, basic regulations apply to room height, ventilation, and natural lighting (windows). Work rooms are the kitchen and the guest room.

8.2.1 Room heights and ventilation

Room heights of less than 2.5 m are accepted for existing huts, smoking is strictly prohibited in the guest room in the huts of the Eastern Alps.

8.2.2 Lighting

In principle, natural lighting of work rooms must be provided by light-intake areas (windows or skylights) to the extent of 10% of the floor area. However, due to the location and the associated wind and weather conditions of shelters in extreme locations and due to the time-related working circumstances, an exception may be made for natural lighting. For the exception, however, the exposure area must not be smaller than 5 % of the floor area.

8.3 Living spaces for employees

There must be a space of at least 10 m^3 per worker. Each room must be ventilated and have at least one window leading into the open air. A lockable box and a bed with bedding shall be provided. Bunk beds are not permitted. A room height of at least 2.5 m must be maintained in new buildings. A room height of 2.3 m is permissible if there is a space of at least 12 m^3 per worker.

In huts that are also operated between 1 October and 31 May, the living rooms must be heatable. Facilities for drying wet clothes must be available. Unless smokers and non-smokers are accommodated in separate rooms, smoking must be prohibited.

8.4 Sanitary and social facilities

Showers with hot water and toilets (flush or non-flush) shall be available to workers in sufficient numbers. Separate lounges are not required if a suitable area is provided for workers to take meals and stay during breaks.

9 Others

9.1 Fire protection standards

9.1.1 Organizational fire protection on shelters

The basic protection target specifications from the building laws of the federal states or states are almost identical and they require that all structural installations are planned, executed, and maintained in such a way that life and health are not endangered. They also stipulate that the spread of fire must be restricted, and safe escape ensured.

Only the measures otherwise required with regard to extinguishing work and rescue measures by fire brigade emergency services must be omitted in the case of shelters due to their location. The general requirement to take

measures that enable building occupants to fight an incipient fire, provided they do not endanger themselves, remains in place.

Thus, if in "normal" buildings in the valley, in addition to preventive fire protection, defensive fire protection is also available as a reliable "pillar", the fire protection safety in a refuge in an extreme location is limited to the measures of preventive fire protection - structural, technical, and organizational measures. Nevertheless, the basic requirements must be ensured.

9.1.2 Structural measures

The possibilities to realize structural measures according to the standards of today's building regulations are limited. Most of the huts were built many decades ago, and what they all have in common is that several conversions and additions have taken place over the years, which were often not documented.

The required fire protection measures were usually not carried out in such cases.

Even if a high value is always placed on fire protection and expert implementation in accordance with regulations in all current building measures, the residual risk of the old building fabric cannot be completely eliminated, as is ultimately also known from experience with historical buildings in the valley.

The special location, use and the fact that rescue and fire-fighting measures by the fire brigade are not possible are partly considered in the current regulations - however, even if these requirements are less stringent than those for buildings in the valley, their implementation in the shelters is not easy. A balanced fire protection concept tailored to the refuge is necessary and its preparation is also recommended for measures that do not require approval, as this planning instrument can record and evaluate the special structural features so that the possible measures can be taken in a targeted, justified, and comprehensible manner.

For example, the opening of escape doors to the outside can rarely be realized due to the exposed location, as this would make it impossible to open the door in snowy conditions, the door could be torn off its hinges in an uncontrolled manner during extremely strong gusts of wind in the mountains, or an entrance door opening to the outside would result in an increased risk of injury in daily use.

However, this requires both knowledge of the building regulations and an understanding of the actual value of the proposed measures.

Escape route lengths and escape route widths are based on the respective legal provisions.

9.1.3 Technical measures

In case of fire, it is imperative that the overnight guests are warned in good time and can leave the common rooms, especially the sleeping quarters, and find shelter outside the hut.

Depending on the detailed regulations, smoke alarms, a hazard alarm system (networked smoke alarms with an alarm control centre) and/or a fire alarm system must not be missing in a shelter, as such technical equipment represents an essential personal protection measure.

Both, fire detectors (smoke detectors) and smoke warning detectors can detect smoke particles in the air and sound an alarm at a certain concentration and density.

It is possible to add push-button detectors to the system to manually trigger an alarm in case of danger.

Since non-converted attics are used as storage rooms, these areas must also be equipped with automatic detectors.
Safety lighting

Backlit escape signs are required in the shelters to mark escape routes. In special cases, safety lighting may also be required in the escape routes.

Smoke extraction

In multi-storey shelters with interior stairwells, openings for smoke ventilation must be provided in the stairwells. It must be ensured that the openable windows can be opened without the use of aids. In special cases, in multi-storey shelters with interior stairwells and a very large number of guests, it may also be required that the smoke outlet can be opened from each storey.

Operational safety and effectiveness of the systems

Since refuges in extreme locations are not operated all year round, the commissioning of the technical installations and the inspection of their effectiveness and operational safety are particularly important. Even if the acceptance tests and regular inspections are carried out by independent bodies, it is important that the tenants or the refuge staff have the necessary expertise and are trained to operate the facilities.

9.1.4 Organizational measures

Since in extreme situations refuges are not accessible for the rescue forces, or only with a considerable delay, organizational measures are of particular importance. In this context, the tenants and the refuge staff are particularly challenged, as they not only have to take care of the refuge operation, but also have to take the first measures in an emergency and guide the evacuation of the refuge.

While trained and instructed personnel can assume that the fire brigade will quickly take over the management of the refuge in the valley, the refuge personnel and the refuge guests have to rely on self-help.

Since, as a rule, neither the hut staff nor the guests have fire-fighting training and appropriate equipment and, ultimately, no extinguishing water is available, if an attempt to extinguish the fire is unsuccessful, the only possibility of self-rescue is to safely leave the building.

This means that suitable fire extinguishers must be available in the refuge in sufficient numbers and size according to the respective country-specific standard.

In the guest area of the shelter, solid, ember-forming substances of fire class A are assumed to be present for which foam or water extinguishers can be used. In the area of the sleeping and guest rooms, the use of ABC powder extinguishers is not considered suitable due to the obstruction of vision by extinguishing powder.

Due to the high risk of fire and smoke, fire extinguishers can only be used to fight a fire in its initial phase.

The locations of fire extinguishers on each floor should be clearly visible and located at central points on the escape routes (e.g., at the exit to the outside, at the entrance to the stairwell, at intersections of corridors, etc.).

A grease fire extinguisher and a fire blanket shall be kept available in the kitchen.

In technical and storage rooms, powder, CO_2 or foam extinguishers can be used depending on the equipment.

In any case, the hut staff should be trained in the use of fire extinguishers. A fire extinguishing exercise is a compulsory part of the training for fire protection wardens that the Alpine clubs offer for hut wardens and tenants as part of the hut technology seminar.

An important instrument of organizational fire protection are the fire protection regulations.

In the fire protection regulations, the relevant rules for fire prevention and for behavior in case of fire are compiled and adapted to the building.

In addition to the measures against the development and spread of fire, the fire protection regulations should also describe information on how to behave in the event of a fire – in particular on alerting and evacuating the refuge as well as alerting the rescue services in the valley, etc.

Brief information on fire protection measures in the refuge and on how to behave (e.g., prohibition of putting smoke alarms out of operation, information on the correct behavior in the event of an alarm - check the situation, attempt to extinguish the fire, help comrades, get to safety, etc.) should also be included in the refuge rules and posted in a clearly visible place.

The installation of escape route plans in the rooms, the area-wide marking of escape routes with backlit or self-illuminating or fluorescent escape signs, depending on the structural situation, is mandatory. It must be ensured that exits to the outside can be opened from the inside at any time and without tools (a key box to secure emergency exits is not suitable!). It is forbidden to store objects in corridors and staircases. Regular inspection of the technical systems is one of the minimum measures.

Especially in larger huts, it is recommended to carry out evacuation drills and to document the process. However, the aim of this exercise should not be to get the climbers or the school class out of bed during the night, but to give the hut staff the opportunity to practice what to do in an emergency.

9.2 Lightning protection standards

9.2.1 General

Persons who are outdoors are in any case exposed to the risk of a close or direct lightning strike. All commonly given advice, such as leaving exposed areas or crouching with closed legs, serves to reduce the risk, but does not provide protection against a lightning strike in the open. Therefore, especially in the high mountains, shelters equipped with a lightning protection system are often the only really safe places within a larger radius during thunderstorms.

The general thunderstorm occurrence is determined by the occurrence of negative (~90 %) and positive downward lightning (~10 %), whereby in the alpine region average lightning density values of 2 to 5 lightning bolts per km^2 and year can be expected, and the impact points are largely determined by chance. A multiple of these lightning flashes occurs within the thundercloud (without ground contact) and usually poses no immediate danger to persons and objects.

In the case of structures in exposed locations, the lightning strike frequency in these objects can be significantly higher than in the local surroundings due to the occurrence of so-called upward lightning flashes. These upward flashes are triggered at the top or by superstructures on high structures and would not occur without the presence of the structure. In flat terrain, upward flashes are observed at structures higher than 100 metres. At exposed locations in the mountains, upward flashes may also be triggered by objects with a significantly lower height (antenna mast on the roof, etc.).

Since 2008, there has been a uniform series of regulations for lightning protection throughout Europe, EN 62305 Parts 1 to 4, which meet the current requirements of modern lightning protection.

Lightning protection system: For modern lightning protection, both, "external lightning protection", consisting of interception system, arrestor system and earthing system, and "internal lightning protection" (equipotential bonding and surge protection) must be implemented. The external lightning protection, formerly often referred to as lightning protection system, serves to reduce physical damage (fire, explosion, etc.) and the risk to life in the building structure, whereas the internal lightning protection serves to protect the electrical equipment and to avoid dangerous step and touch voltages.

9.2.2 Legal basis

The necessity for the installation of a lightning protection system on shelters arises from their exposed location.

9.2.3 Special features of lightning protection systems in extreme locations

In general, lightning protection systems for shelters are constructed in the same way as those for ordinary buildings. Due to the exposed location, some special features may have to be considered when installing the lightning protection system. For example, large amounts of snow on the roof can lead to increased mechanical stresses on the fastenings of the interception and down conductors of the lightning protection system. The exposed location can result in poor earthing conditions (due to the usually very high specific ground resistance, earth electrodes cannot be buried or can only be buried partially) and thus complete equipotential bonding (internal lightning protection system) is of particular importance.

In terms of lightning protection for shelters, the entire system must be considered, including all associated or nearby objects or technical equipment (possibly existing photovoltaic systems, remote diesel generators, cable car systems, antenna systems, weather stations, etc.). It is not only important to prevent a fire in the event of a lightning strike, but also to protect the people in the shelter from dangerous step and touch voltages and to keep the technical infrastructure functional.

Regular inspection of the lightning protection system should not only ensure that the parts of the lightning protection system are in good condition and can fulfil their intended functions (no corrosion, good electrical connections, etc.), but also ensure that any newly added utilities or structural changes have been correctly incorporated into the lightning protection system.

10 Data collection and evaluation

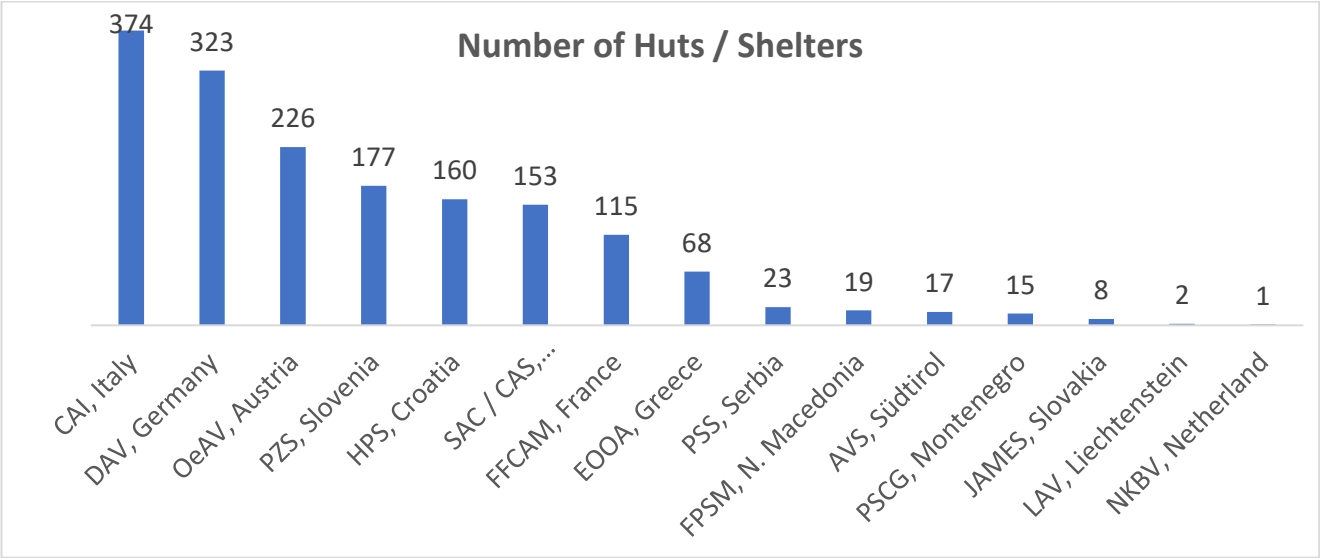
10.1 Data collection – general information

Associations which submitted data:

- Mountaineering Association of Italy (CAI)
- Mountaineering Association of Germany (DAV)
- Mountaineering Association of Austria (OeAV)
- Mountaineering Association of Slovenia (PZS)
- Mountaineering Association of Croatia (HPS)
- Mountaineering Association of Switzerland (SAC/CAS)
- Mountaineering Association of France (FFCAM)
- Mountaineering Association of Greece (EOOA)
- Mountaineering Association of Serbia (PSS)
- Mountaineering Association of North Macedonia (FPSM)
- Mountaineering Association of South Tyrol (AVS)
- Mountaineering Association of Montenegro (PSCG)
- Mountaineering Association of Slovakia (JAMES)
- Mountaineering Association of Liechtenstein (LAV)
- Mountaineering Association of Netherland (NKBV)

Number of huts / shelters: 1681

Association	Number of huts and shelters
CAI, Italy*	374
DAV, Germany	323
OeAV, Austria	226
PZS, Slovenia	177
HPS, Croatia	160
SAC/CAS Switzerland	153
FFCAM, France	115
EOOA, Greece	68
PSS, Serbia	23
FPSM, North Macedonia	19
AVS, South Tyrol	17
PSCG, Montenegro	15
JAMES, Slovakia	8
LAV, Liechtenstein	2
NKBV, Netherland	1
Total	**1681**



Data collected:

1. Hut/Shelter
2. Name of the Mountain Hut or Shelter
3. Country
4. District/ State
5. Mountain/ Location
6. GPS coordinates in decimal, WGS 80
7. Elevation
8. https link to hut
9. Picture URL (generic URL)
10. Managed/non-managed
11. Operating Organization
12. Owner of the hut
13. Wastewater treatment
14. Waste management systems
15. Water supply

16. Source of energy, electricity, and heating
17. Kind of area (National Park, or protected area)
18. Sanitary facilities
19. Kitchen facilities.

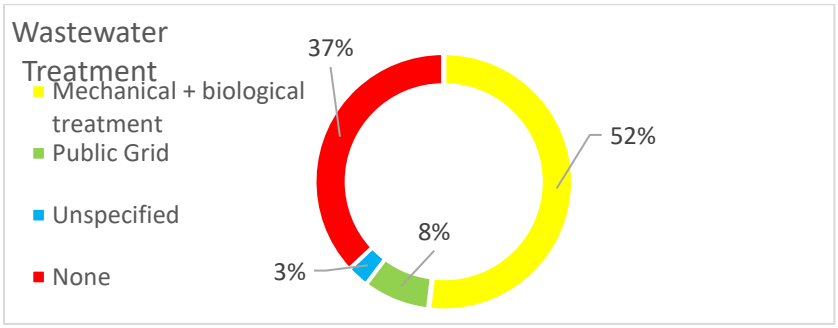
Note: CAI (Italy) and SAC/CAS (Switzerland) have not submitted technical data for the chapters 13 – 19. It is sometimes very difficult to obtain the data of the huts. For this purpose, the support of the individual sections on site is needed. The recording is all voluntary work. At the DAV, there are 70 self-catering huts in the low mountain ranges, data of which is only available from a certain part.

10.2 Result of the data collection

10.2.1 Wastewater treatment

Analyzed data for 956 huts/shelters:

Type	%
mech. + bio treatment	52
none	37
public grid connection	8
Other	3



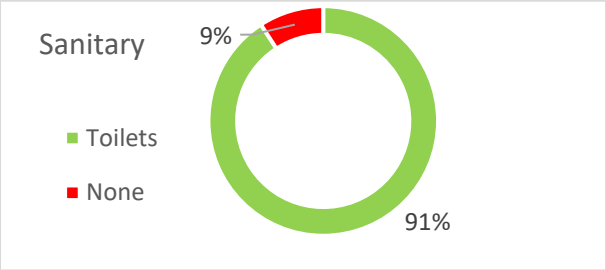
Analysis per Association

	Mechanical + biological treatment	Public Grid	Unspecified	None
HPS, Croatia	0 %	0 %	2 %	98 %
DAV, Germany	65 %	26 %	0 %	10 %
EOOA, Greece	0 %	0 %	0 %	100 %
FPSM, N. Macedonia	0 %	0 %	0 %	100 %
NKBV, Netherlands	100 %	0 %	0 %	0 %
PSS, Serbia	0 %	0 %	0 %	100 %
JAMES, Slovakia	100 %	0 %	0 %	0 %
FFCAM, France	74 %	0 %	0 %	26 %
OeAV, Austria	71 %	12 %	16 %	1 %
CAI, Italy	no information	no information	no information	no information
PZS, Slovenia	88 %	0 %	0 %	12 %
SAC, Switzerland	no information	no information	no information	no information
AVS, South Tyrol	65 %	0 %	0 %	35 %
LAV, Liechtenstein	100 %	0 %	0 %	0 %
PSCG, Montenegro	0 %	0 %	0 %	100 %

10.2.2 Sanitary Infrastructure

Analyzed data for 996 huts / shelters:

Type	%
toilets	91
none	9

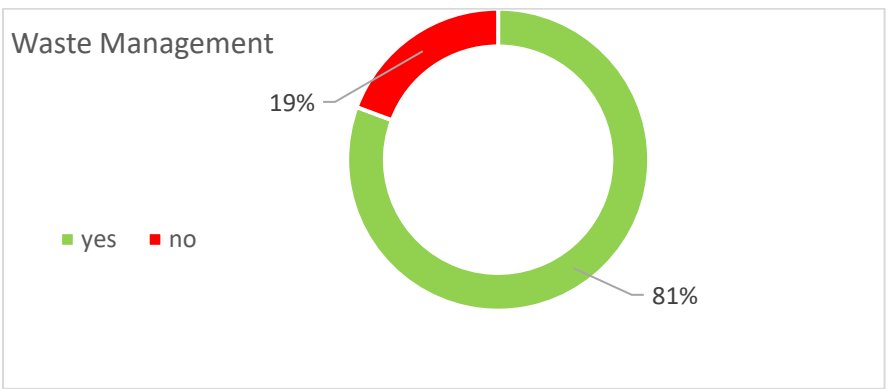


Analysis per Association

	Toilets	None
HPS, Croatia	84 %	16 %
DAV, Germany	93 %	7 %
EOOA, Greece	100 %	0 %
FPSM, N. Macedonia	63 %	37 %
NKBV, Netherlands	100 %	0 %
PSS, Serbia	96 %	4 %
JAMES, Slovakia	100 %	0 %
FFCAM, France	91 %	9 %
OeAV, Austria	99 %	1 %
CAI, Italy	no information	no information
PZS, Slovenia	90 %	10 %
SAC, Switzerland	no information	no information
AVS, South Tyrol	71 %	29 %
LAV, Liechtenstein	50 %	50 %
PSCG, Montenegro	57 %	43 %

10.2.3 Waste management

Analyzed data for 912 huts/shelters. 81% of all huts / shelters have a waste management system.



Analysis per Association

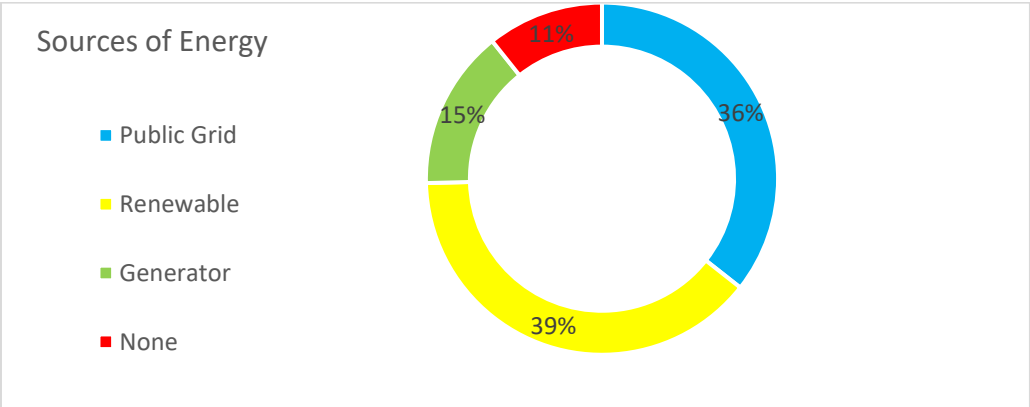
	yes	none
HPS, Croatia	100 %	0 %
DAV, Germany	90 %	10 %
EOOA, Greece	0 %	100 %
FPSM, N. Macedonia	no information	no information
NKBV, Netherlands	100 %	0 %
PSS, Serbia	0 %	100 %
JAMES, Slovakia	100 %	0 %
FFCAM, France	63 %	38 %
OeAV, Austria	97 %	3 %
CAI, Italy	no information	no information
PZS, Slovenia	90 %	10 %
SAC, Switzerland	no information	no information
AVS, South Tyrol	65 %	35 %
LAV, Liechtenstein	50 %	50 %
PSCG, Montenegro	79 %	21 %

10.2.4 Energy supply systems

Analyzed data for 1008 huts / shelters:

Type	**%**
public grid connection	36
renewable energy	39
generator	15
none	11

The four categories represent a summary and there are many combinations of energy production plants. The following are examples: accumulator, electric energy+generator, electric energy+photovoltaics+generator, gas lamps, hydropower+generator, photovoltaics+generator, photovoltaics+generator+renewable energy, photovoltaics+off grid system, renewable and fossil energy, photovoltaics, hydropower and fossil energy, fossil fuels, hydropower and photovoltaics.
In total, associations have submitted 18 categories of sources of energy. EOOA (Greece) has the most diverse sources of energy in the huts / shelters - 12 categories.



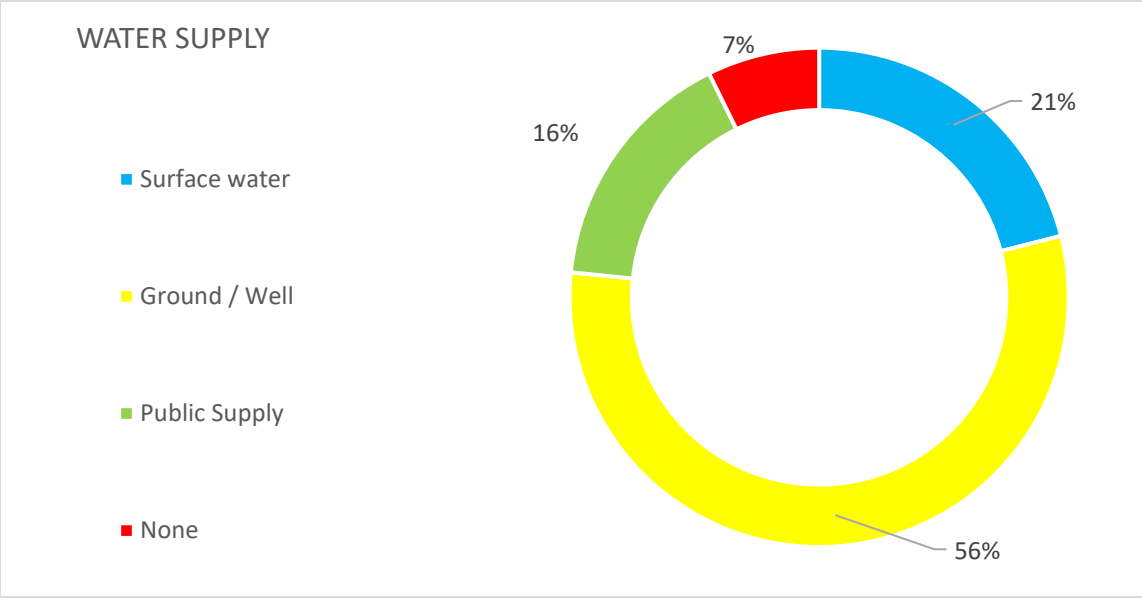
Analysis per Association

	Generator	Renewable	Public Grid	None
HPS, Croatia	11 %	22 %	41 %	26%
DAV, Germany	0 %	52 %	40 %	7 %
EOOA, Greece	50 %	18 %	31 %	1 %
FPSM, N. Macedonia	21 %	74 %	0 %	5 %
NKBV, Netherlands	0 %	100 %	0 %	0 %
PSS, Serbia	0 %	100 %	0 %	0 %
JAMES, Slovakia	38 %	63 %	0 %	0 %
FFCAM, France	7 %	77 %	0 %	16 %
OeAV, Austria	31 %	35 %	32 %	2 %
CAI, Italy	no information	no information	no information	no information
PZS, Slovenia	12 %	15 %	63 %	10 %
SAC, Switzerland	no information	no information	no information	no information
AVS, South Tyrol	18 %	47 %	6 %	29 %
LAV, Liechtenstein	33 %	67 %	0 %	0 %
PSCG, Montenegro	21 %	14 %	29 %	36 %

10.2.5 Drinking water supply

Analyzed data for 1017 huts / shelters:

Type	**%**
Surface water	21
Ground / well	56
Public supply	16
None	7



Analysis per Association

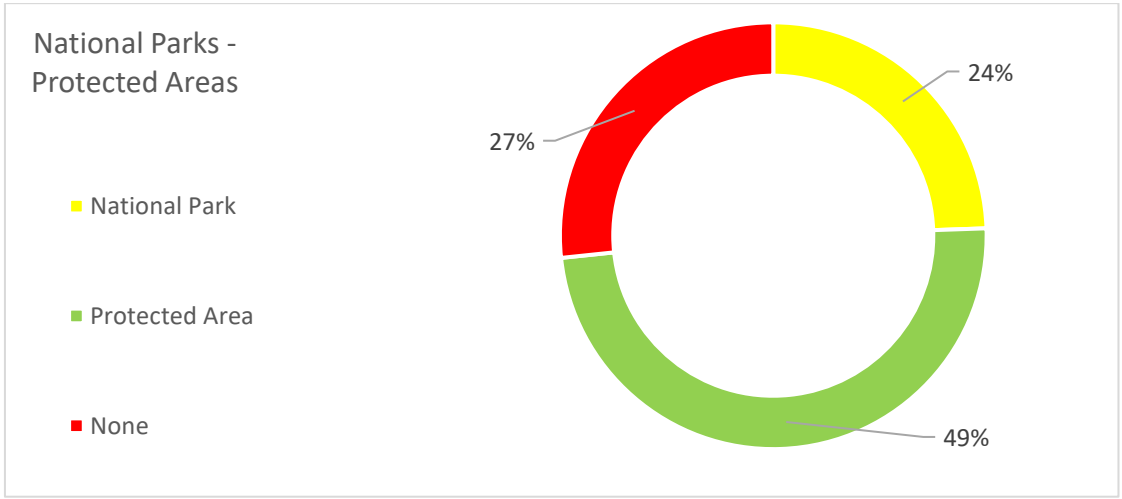
	Surface water	Ground / Well	Public Supply	None
HPS, Croatia	49 %	18 %	24 %	8 %
DAV, Germany	7 %	74 %	10 %	9 %
EOOA, Greece	35 %	43 %	19 %	3 %
FPSM, N. Macedonia	0 %	63 %	26 %	11 %
NKBV, Netherlands	0 %	0 %	100 %	0 %
PSS, Serbia	0 %	4 %	91 %	4 %
JAMES, Slovakia	13 %	88 %	0 %	0 %
FFCAM, France	3 %	76 %	12 %	8 %
OeAV, Austria	16 %	74 %	8 %	2 %
CAI, Italy	no information	no information	no information	no information
PZS, Slovenia	31 %	40 %	19 %	10 %
SAC, Switzerland	no information	no information	no information	no information
AVS, South Tyrol	0 %	71 %	0 %	29 %
LAV, Liechtenstein	0 %	100 %	0 %	0 %
PSCG, Montenegro	36 %	57 %	0 %	7 %

10.2.6 Kind of area - National Park or other protected area

Analyzed data for 778 huts / shelters.:

Type	**%**
National Park	24
None	27
protected area	49

*Other: Landscape conservation area, National Park Peripheral Zone, Natura 2000, Natura network, Parnassos National Forest, unspecified, Protected Area Sopotnica Waterfalls, protected landscape, SR Bijele i Samarske stijene, strict reservat, significant landscape, SR Rožanski i Hajdučki kukovi, NP Sjeverni Velebit, strict reservat, Parc Naturel Régional du Queyras, PNRPA, PNP, Parc National de la Vanoise, Massif du Mont Blanc, Game reserve, Spring reserve, Special protected area



Analysis per Association

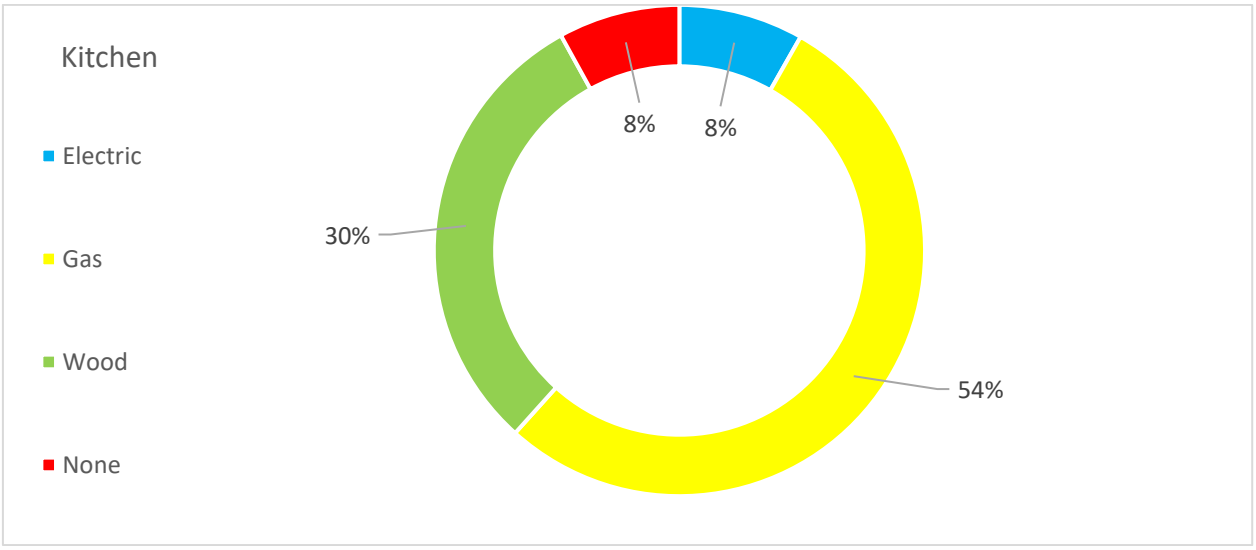
	National Park	Protected Area	None
HPS, Croatia	5 %	38 %	57 %
DAV, Germany	23 %	77 %	0 %
EOOA, Greece	10 %	10 %	79 %
FPSM, N. Macedonia	37 %	11 %	53 %
NKBV, Netherlands	0 %	0 %	100 %
PSS, Serbia	22 %	4 %	74 %
JAMES, Slovakia	100 %	0 %	0 %
FFCAM, France	71 %	29 %	0 %
OeAV, Austria	24 %	76 %	0 %
CAI, Italy	no information	no information	no information
PZS, Slovenia	25 %	40 %	34 %
SAC, Switzerland	no information	no information	no information
AVS, South Tyrol	6 %	71 %	24 %
LAV, Liechtenstein	0 %	0 %	100 %
PSCG, Montenegro	43 %	21 %	36 %

10.2.7 Kitchen Facilities

Analysed data for 986 huts / shelters:

Type	**%**
Electric	8
Gas	54
wood	30
none	8

*Other: electric, electric stove+ wood stove



Analysis per Association

	Electric	Gas	Wood	None
HPS, Croatia	0 %	0 %	99 %	1 %
DAV, Germany	5 %	81 %	9 %	5 %
EOOA, Greece	28 %	59 %	12 %	1 %
FPSM, N. Macedonia	26 %	21 %	37 %	16 %
NKBV, Netherlands	0 %	100 %	0 %	0 %
PSS, Serbia	100 %	0 %	0 %	0 %
JAMES, Slovakia	0 %	100 %	0 %	0 %
FFCAM, France	0 %	74 %	0 %	26 %
OeAV, Austria	11 %	26 %	56 %	7 %
CAI, Italy	no information	no information	no information	no information
PZS, Slovenia	0 %	85 %	5 %	10 %
SAC, Switzerland	no information	no information	no information	no information
AVS, South Tyrol	29 %	29 %	12 %	29 %
LAV, Liechtenstein	33 %	33 %	33 %	0 %
PSCG, Montenegro	0 %	8 %	77 %	15 %

10.3 Evaluation of the data

10.3.1 General data

During the analysis phase, it was possible for 15 associations to provide general hut data. The associations were contacted and asked to provide data. They were provided with an Excel table. This is an excellent basis for further developments and for demonstrating the importance of mountain huts for tourism and their steering function.
The hut data are presented in the web-based map mapunto https://mapunto.org. This allows users to select their destinations throughout Europe.

Our aim is to obtain hut data from other associations so that the gaps that still exist in Northern Europe in particular can be filled, for example Norway.

10.3.2 Technical equipment data

The collection of data for the technical equipment of huts is very time-consuming. This is mainly due to the fact that the data must be collected by the volunteer hut wardens.

It is therefore really astonishing and cannot be valued highly enough that so much data has been made available.

The data collection showed that there are very different systems and therefore the results were summarised in the evaluation for reasons of clarity. The evaluations according to the individual associations give an overview of the technical status and where there is a need to catch up.

10.3.3 Summary of data evaluation

The background for collecting the data was to first gain knowledge about the current state. This will allow us to determine what further requirements exist for the technical equipment and what measures need to be taken. We want to achieve the goal of establishing a Europe-wide minimum environmental standard for our huts, for example, regarding drinking water supply, waste disposal and wastewater treatment

11 Assessments of the associations on the huts' situation in the respective country

In a further step, the participating associations will use the collected data to document the future challenges to their authorities and call for support.

11.1 Country specific situation

The partner associations were asked to describe their country-specific situation. The following example from the Republic of North Macedonia illustrates the problems that mountaineering associations have to deal with. These descriptions will be supplemented during the project.

11.1.1 FPSM, North Macedonia

11.1.1.1 Number and situation with the huts and shelters

There are up to 30 mountain huts and shelters in North Macedonia, but in the Erasmus+ matrix only those owned by FPSM or mountaineering clubs and associations are registered. Most of them are in a bad condition or not functional because they are old or repurposed buildings (military, police, schools etc.) from the period between the 1950s-1960s. Since the independence of the country (1990s) the huts and shelters were abandoned and without regulated ownership. At end of the 1990s when many new mountain clubs were established, part of the huts and shelters were restored with minimal investment, but since then, almost nothing was done for their renovation. Hence, their present condition is still very bad, because they are old buildings, with outdated equipment that does not meet even the basic criteria for these types of constructions. Without consultation, the previous Government has taken the huts and shelters into governments' protection, which added to their further decline.

The total number of huts and shelters in the Erasmus + matrix for North Macedonia is 19. The first 11 huts are functional huts offering some services to mountaineers (accommodation and food) and two are shelters. The rest of the six huts are not functional or do not fulfil minimal standards for accommodation.

11.1.1.2 Ownership status and management of huts

Out of the total number, 6 buildings are owned or given (by the state) to the Mountaineering Federation (FPSM), 5 are owned by mountaineering clubs, 3 are owned by municipalities, 2 are owned by private companies and 2 have unresolved ownership status.

Owned by:	Name of the Hut/Mountain:	Managed by:	Note:
FPSM	Dare Dzambaz (Vodno)	MC „H2O“, Skopje	
FPSM	Tower-Shelter (Toto Vrv)	MC „Argentus“, Tetovo	
FPSM [99]	Karadzica (Jakupica)	MC „Drachevo“, Skopje	
FPSM [100]	Cheples (Dautica)	MC „ Cheples“, Veles	The hut was illegally confiscated from FPSM. A

[99] Formally, the facility was assigned for the permanent use to FPSM, by a government's decision from 2018.
[100] The hut was built with funds from FPSM and formally belongs to FPSM, but in an illegal procedure it was "taken over" and then privatized by the mayor of the municipality of Chashka. A lawsuit is currently being filed against the mayor, after which a procedure for restitution of the ownership of FPSM should be initiated.
[3]The hut was built with funds from MC "Pelister" from Bitola, which conducted a legalization procedure. However, the mayor of Bitola disputed the legalization procedure and passed an act by which the ownership of the hut was taken over by the municipality. The ownership status of the hut is currently unresolved.

			lawsuit is currently pending.
FPSM	Shest Chesmi (Vodno)	Private entity	Doesn't offer full services as mountaineering facility
FPSM	Josif Stancik (Vodno)	Doesn't offer full services as mountaineering facility	Doesn't offer full services as mountaineering facility
FPSM / MC „Ljuboten"	Ljuboten (Shara Mountain, Staro selo)	MC "Ljuboten", Tetovo	Shared ownership with MC "Ljuboten" (50 %)

Owned by:	**Name of the Hut/Mountain:**	**Managed by:**	**Note:**
MC „Pelister"[3]	Dimitar Ilievski Murato (Pelister)	MC „Pelister" Bitola	
MC „Ljuboten"	Ljuboten (Popova Shapka)	MC „Ljuboten" Tetovo	
MC „Ljuboten" and FPSM	Ljuboten (Shara Mountain, Staro selo)	MC „Ljuboten" Tetovo	Shared ownership with FPSM (50 %)
MC „Entuzijast"	Sharena Chesma (Belasica)	MC „Entuzijast" Strumica	
MC „Bel Kamen"	Dzumaja (Plachkovica)	MC „Bel Kamen" Radovish	
MC „Skopska Crna Gora"	Shelter Spirova Koliba (Skopska Crna Gora)	MC „Skopska Crna Gora" Skopje	

Owned by:	**Name of the Hut/Mountain:**	**Managed by:**	**Note:**
Municipality of Chashka	Papradishte (Dautica)	Ecology group Green Power	Former primary school
Municipality of Karbinci	Vrteshka (Plachkovica)	MC „Lisec" Shtip	
Municipality of Gevgelija	Tome Shutov Krotki (Kozuf)	MC „Kozuf" Gevgelija	
Owned by:	**Name of the Hut/Mountain:**	**Managed by:**	**Note:**
Private company	Smreka (Popova Shapka)	MC „Transverzalec" Skopje	
Private company	Crn Kamen (Jablanica)	MC „Zakamen" Struga	

Owned by:	**Name of the Hut/Mountain:**	**Managed by:**	**Note:**
Unresolved	Neolica (Baba)	MC „Gjorgi Naumov" Bitola	
Unresolved [101]	Kopanki (Pelister)	The hut is burnt	

Out of a total of 19 buildings listed in the database, 17 are managed by mountaineering clubs, while two are managed by private entities (they offer only catering facilities).

11.1.1.3 Internal equipment and environment protection

As stated in the introduction, the general condition of the mountain huts in North Macedonia is very bad because they do not meet even the basic standards for this type of constructions applied in the countries with developed mountaineering culture.

Buildings and accommodation: Almost all huts are old buildings on which only minor repairs have been made to make them functional. There have been some exemptions in the recent years - several investments in reconstruction were done (The Tower-Shelter on Titov Vrv, Vrteshka Hut, Sharena Cheshma Hut, Dare Dzambaz) Sleeping rooms are with old furniture and mattresses, kitchens are equipped with accessories brought from the mountaineers, toilets are old, and in several huts, there is no heating, water, or electricity.

Sources of energy: Most of the huts have electricity supply (hydropower), except for a few that have their own generators. None of the huts has the equipment for using renewable energy sources, except for one or two that have built-in solar panels that are used only as an additional energy source. Electricity is mainly used for lighting, and for heating, stoves on wood or gas are used.
In the kitchens, wood stoves are used in almost all huts, some of the huts also use gas stoves and in extraordinary situations, electricity is used for cooking. In general, due to costs, cheaper sources of energy are used.

Water Supply: Being located outside populated areas, most huts are supplied with water from ground/well systems built either for their needs or for buildings located on the same site. Some of those well systems, as well as the huts themselves, are very old and need to be renovated. Only a few huts have access to a local public water supply.

Wastewater treatment: None of the huts has any wastewater treatment system, either mechanical or biological. In most cases, the wastewater is discharged into a septic tank built near the hut, or pipes are discharged into the land at a certain distance from the hut.

Waste management system: in general, mountain huts gather the waste collected in the hut or outside the hut and dispose it in the nearby garbage dump. However, none of the huts is connected to a waste management system, either from the municipality or from the wider region, in terms of a regulated and organized collection, transportation, selection, treatment and disposal of the solid waste.

11.1.1.4 Main problems: lack of financial resources, management problems, poor infrastructure

Almost all mountain huts, apart from a few that are in more attractive locations, face a lack of funding, primarily because the overall costs of maintaining the huts (electricity, heating, hygiene, communications, consumables, hut keeper salary etc.) are high while the income from overnight stays and other guest services is insufficient to cover all those costs. In addition, many mountaineers are rarely willing to spend the night in a mountain hut due to their low standard of living and/or due to the actual poor conditions of the huts. As a result, most mountain huts are unable to hire a hut keeper or tenant to take care of the hut and are only open on weekends.

Another problem that contributes to the weak financial situation of the mountain huts is the poor infrastructure of roads leading to most of the huts. This contributes to the huts having fewer visitors at different times of the year, as only a certain number of mountaineers are able to reach the hut by their own means of transport or by foot. If the infrastructure were better, the huts could probably accommodate visitors who are not mountaineers but who want to visit the site.

The management of a large number of huts is left to several volunteers from the mountaineering associations or clubs. In this regard, another problem is the lack of culture or incentives for volunteer work among mountaineers, but also the lack of specific knowledge of how huts can be successfully managed.

11.1.1.5 Absence of a national strategy and support from central and local government institutions

The state, i.e., the competent institutions do not have a comprehensive strategy for the development of mountain huts and/or, in general, for the development of mountaineering tourism, so this issue is completely left on the sidelines. The support of state institutions, especially the Government, the Ministry of Economy, the Agency for Promotion and Support of Tourism and the Agency for Youth and Sports is crucial for improving the general situation in mountaineering in the country, and especially for the reconstruction and revitalization of mountain huts.

In addition to the Government's support for the final settlement of ownership status of the mountain huts which belong the Mountaineering Federation, it is important to adopt an appropriate strategy for the development of mountain huts and mountain tourism in general, and to provide funding for investment in mountaineering infrastructure, including the reconstruction of the existing and building of new mountain huts. Currently, there is a lack of vision, coordination, and cooperation between state-level institutions regarding the promotion of mountaineering, the maintenance of mountaineering facilities and infrastructure, and the construction of new facilities in locations where they are lacking.

Furthermore, for the successful functioning of the mountaineering associations and the mountaineering huts at the local level, the support and cooperation with the units of the local self-government are of great importance. At present, there is a lack of such cooperation, and there are even a few municipalities that work against the interests of the mountaineering clubs, so they have either appropriated the mountaineering huts or completely hinder their work.

12 Summary, outlook and next steps for the further project phases

With this analysis report, a very good overview of the mountain huts in Europe is now available. The report is a good starting point for the development of the future strategy of the huts. It is now necessary to obtain further data from the other EUMA members in order to complete the overall picture.

Finally, we would like to thank all the participating associations for the sometimes very laborious data collection. Special thanks go to the working group on huts, without which such a survey would not have been possible, and above all to Goran Nikoloski, who summarized and analysed the data collection.

EUMA, November 2022, Hanspeter Mair, Chairman of Working group Huts

ERASMUS+ project

"EUMA - improvement of good governance of climbing and mountaineering in Europe"

No. 612970-EPP-1-2019-1-CZ-SPO-SCP

✓ **Training programme for national associations - huts on the European level**

Co-funded by the Erasmus+ Programme of the European Union

euma
european-moutaineers.eu

Training programme for national associations - huts on the European level

Objective what do we want to achieve during this session	Achieve a sustainable huts management Train future hut tenant and his/her personnel to run a mountain hut in a proper way Parts are: Maintenance of technical equipment on huts Fire protection Water purification Waste water treatment Hut tenant training Hut Symposium VBG Workshop for occupational safety Working conditions Legal aspects for huts and employees Sustainability label
What is the rational explaining why	• Climate changes cause troubles for the huts due to water supply, degradation of permafrost, change of seasonality in combination with visitor streams. • This imposes an extra threat to the fragile business model of a mountain hut. • Additional damage will happen due to increased avalanche danger and increasing number of bed bugs • The channel of supplies like routes and ropeways for material transport are extraordinarily damaged • Difficulty to acquire employees which are prepared to stay for a longer time • Inflation of norms which impose more and more pressure on huts. The norms and the regulations are usually not suitable for the mountain huts regime. • The pressure of authorities on mountain huts to reduce the comfort. • Increasing prices for material and in general higher costs for constructions in the mountains as compared to the valley • The issue is to make a change from conventional energies to affordable renewable energies for decentralized solutions on mountain huts. • The huts are a place to get information about the mountain environment and how to protect it. • The lack of money for cost intensive installations. • To create incentives to improve the environmental standard on huts, a quality label for sustainability could be introduced.
Requirements for participants is any expertise / experience required? Do they have to read/prepare in advance?	• The participants should be persons responsible for huts in the association, hut tenants or hut employees. • They should read the compendium for huts management in advance • They should prepare a short presentation on their current situation and problems they are facing on their mountain huts.

Methods applied What methods will be used?	• Secondary literature research • Individual presentations • Group work • Best practice sharing • Focus groups • Group presentations and counter presentations • Brainstorming • Problem based approach • Local inspection cases • Hut information tour
Materials and technical devices needed handouts, forms, specialized presentation device ….	• Compendium for huts management • Fact sheets • Handouts • Evaluation form • Feedback questionnaire • Methodology catalogue • Equipment for practical demonstrations and/or trainings
Outcome Summary, recommendation etc.	• Guidelines for running and maintaining a mountain hut • Summary is given by participants
Recommended Agenda For next meetings on huts management	**1.** Welcome note **2.** Presentation of current situation with rotating focus points, e.g., legal rights, methodology, assisting tools, new inventions **3.** Best practice example **4.** Working groups **5.** Results presentation **6.** Synthesis of results **7.** Deduction of recommendations and best practice of measures **8.** Huts information tour **9.** Presentation of personal perception and identification of theoretical approaches on the practical example **10.** All over summary and outlook for the next topics to be discussed

ERASMUS+ project

"EUMA - improvement of good governance of climbing and mountaineering in Europe"

No. 612970-EPP-1-2019-1-CZ-SPO-SCP

✓ **Chapter IV - Mountain Trails Analysis**

Co-funded by the Erasmus+ Programme of the European Union

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Chapter IV - Mountain Trails Analysis

1 Object of the project

Hiking is the oldest and most popular activity in nature and landscape. Hiking trails are the longest sports facilities in the world.
In this project, we want to focus on these trails and work out how they should be designed, how they should be marked, how they can be maintained and what infrastructure is necessary.
In the end, a guideline for action is to be created that can be applied to the whole of Europe.

2 Definition of European trails

Within this project, a trail is defined as a footpath:

- located in Europe
- in all landscapes (mountains, low mountain range, lowland)
- part of network of trails
- visible and clearly recognisable in the terrain
- part of working area of NGO
- that is physically marked with signs and signposts
- users have free access to the trails
- must be aligned with the local, regional, and national legislation

Including a list of exclusions:

- educational path
- trails run by national parks, local communities and state organisations
- approach trails which are not part of the NGO network

Final definition of trail
Walking, hiking and mountain trails are footpaths of public interest for the purpose of walking, running or climbing, are located in any kind of landscapes, are visible and clearly recognisable in the terrain, and are physically marked and signposted.

In Europe, walking, hiking and mountain trails are part of the network of trails under the umbrella of one of the two European NGOs: the European Union of Mountaineering Associations (EUMA) and the European Ramblers' Association (ERA).

Approved by Erasmus+ WG for trails on 25th of April 2022 and revised on 18th of May 2022.
Modified on 23rd of June 2022 by Erasmus+ WG for trails according to agreed comments from "1st Analysis Report of Erasmus+ project (WG trails)".
EUMA Presidium and ERA Board approved this document with comments on 31st of August 2022.
Final version approved by Erasmus+ WG for trails on 20th of September 2022.

3 Project phases

The project is divided into three phases:

3.1 Initial phase

The purpose of this phase is to describe (analyse) the actual situation for trails. That means identifying the EU scale of the issues, experience, good and bad practice, identifying possible ways of solution.

3.2 Strategy phase

The aim of this phase is to define a policy and strategy plan for improvement of governance of trails as well as communication and decision-making structures.

3.3 Implementation phase

Make the strategy and policy plan widely known among EUMA and ERA members as well as among other important stakeholders and make it also functional. That is why it is important to establish a basic structure for committees /working groups which will continue to be active in the concrete issues.
Links will be established between

- EUMA / ERA – national associations,
- EUMA / ERA – other stakeholders,
- EUMA / ERA – national federations,
- EUMA / ERA – EU
- National association – national network, consisting of clubs and regional bodies, as well as other stakeholder structures as sport, regional, environmental bodies.

4 Working group trails

EUMA members are working on the topic of trails under the leadership of ERA.
They are supported by a representative of Charles University in EU policy analysis.
In detail, these are (in alphabetical order):

Leader		
Schuster, Helmut	ERA	European Ramblers´ Association
Members		
Aschaber, Andreas	OeAV	Austrian Alpine Club
Gareis, Nicolas	DAV	German Alpine Club
Harnochova, Jana	ERA	European Ramblers´ Association
Jiroudkova, Petra	CHS	Czech Climbing Association
Kotnik, Katarina	PZS	Alpine Association of Slovenia
Latorre, Angelo	ERA	European Ramblers´ Association
Mair, Hanspeter	DAV	German Alpine Club
Rotovnik, Bojan	EUMA	European Union of Mountaineering Associations
Seliger, Bogdan	PZS	Alpine Association of Slovenia
Simonovski, Simon	FPSM	Mountaineering Federation of North Macedonia
Stefanovski, Boban	FPSM	Mountaineering Federation of North Macedonia
Tomalova, Eliska	CUNI	Charles University Prague

5 Vision of European trails

At the very beginning of this project phase, we defined our visions of European trails.
Trails:

- are exclusively used by users on foot except where use by others is explicitly allowed.
  In this case, hikers have priority over other users
- are allowed to run on any area (access right), e. g. state territory, communal territory, private territory, seaside, lakefront, riverside, with simultaneous consideration of environment and nature protection
- EU recognise trails as important infrastructure component for tourism and sport for all, provide sustainable livelihood for the local community
- signs and signposts are maintained at least once a year
- costs of maintenance and creation of new trails are covered by public funding

- trail keepers must be clearly specified, wherein voluntary engagement is preferred
- should not run on sealed roads with traffic
- a creation or interference with trails must get approval from national or regional hiking NGO
- exemption of liability for the landowners and trail keepers when hikers hurt themselves by using trails
- increase the self-responsibility of trail users
- creation of an official on-line European network of trails (collection of basic data), accessible for the large public
- sustainable development of mountain areas and trails in particular in accordance with the European Green Deal and the SDG

6 Status of the trails in Europe

6.1 Survey and their participants

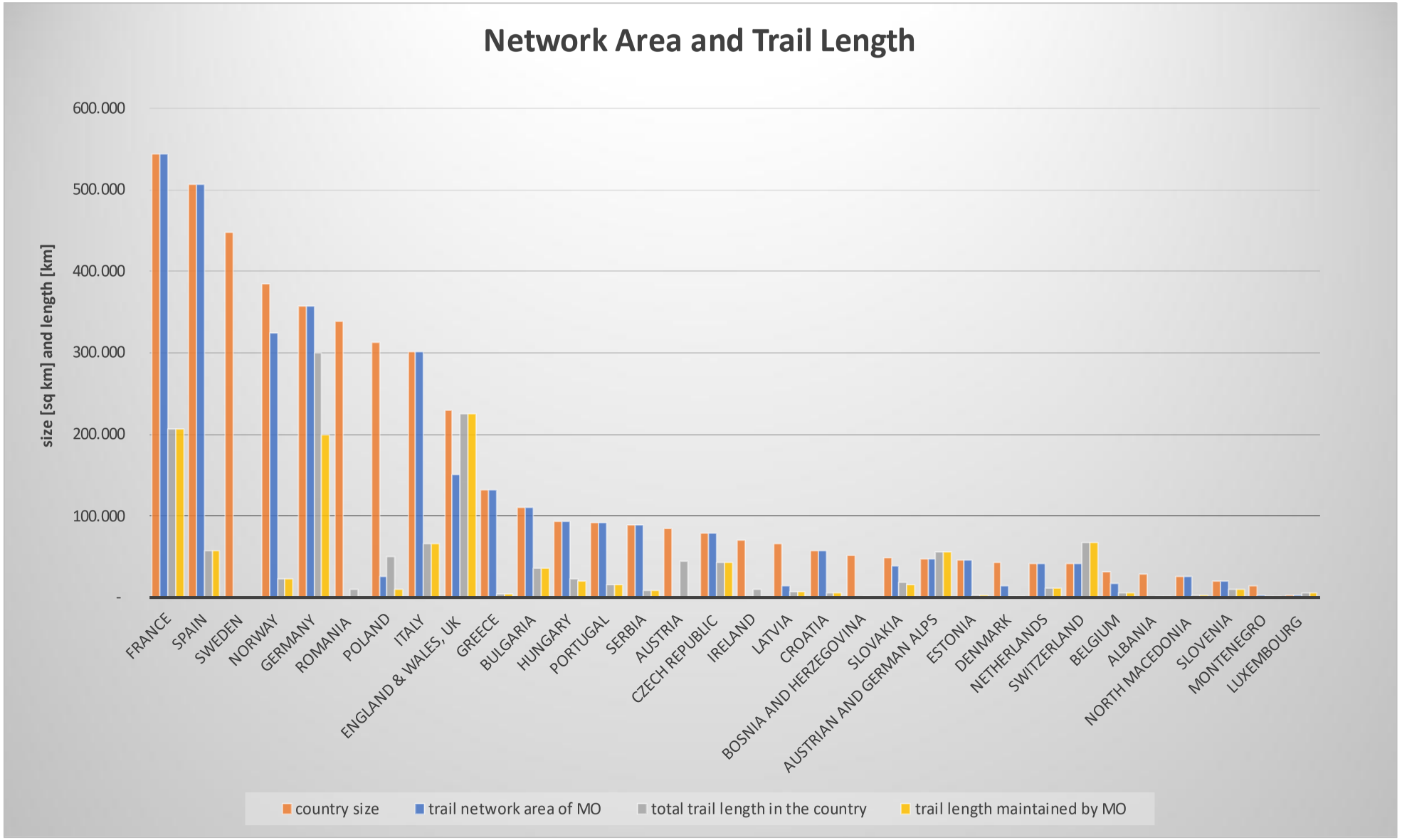
To get an overview of the status of the trail network in Europe, its infrastructure, the way trails are managed and their place in politics and population, we launched a survey among the member organisations of EUMA and ERA. The evaluation was carried out on the basis on 37 questionnaires coming from 30 different countries. This is because for Germany, Italy, the Netherlands, Romania, Slovakia, Spain, and Switzerland two different associations handed in the questionnaire. In case of different numbers, the mean value was used.

6.2 Results in detail.

6.2.1 Trails data

All data mentioned in the report refer to the responses to our survey.
The total length of hiking trails in Europe is about 1,500,000 km.
The total length of hiking trails maintained by our MOs is 1,145,976 km in an area of 3,239,490 km^2.
On average, 350 m of trails run per square kilometre.

Country	country size [km2]	trail network area of MO [km2]	total trail length in the country [km]	trail length maintained by MO [km]
Albania	28.750	-	1.200	1.200
Austria	83.882	83.882	44.000	44.000
Austrian and German Alps	46.400	46.400	56.000	56.000
Belgium	30.688	17.000	5.200	5.200
Bosnia and Herzegovina	51.197		1.000	
Bulgaria	111.000	111.000	35.000	35.000
Croatia	56.594	56.594	5.819	5.819
Czech Republic	78.866	78.866	43.500	43.500
Denmark	42.900	-	14.000	260
England & Wales, UK	230.000	151.130	225.308	225.308
Estonia	45.000	45.000	3.000	3.000
France	543.939	543.939	206.000	206.000
Germany	357.582	357.582	300.000	200.000
Greece	132.000	132.000	4.200	4.200
Hungary	93.000	93.000	22.000	20.000
Ireland	70.273		9.546	
Italy	301.000	301.000	65.500	65.500
Latvia	65.300	13.600	6.770	6.770
Luxembourg	2.685	2.685	5.000	5.000
Montenegro	13.812	2.760	1.400	1.200
Netherlands	41.543	41.543	11.000	11.000
North Macedonia	25.713	25.713	2.800	2.800
Norway	385.207	323.808	22.000	22.000
Poland	312.696	25.000	49.756	10.000
Portugal	92.256	92.256	15.374	15.374
Romania	338.391		10.000	
Serbia	88.361	88.361	9.000	7.600
Slovakia	49.034	38.000	19.000	15.500
Slovenia	20.271	20.271	10.045	10.045
Spain	506.900	506.900	57.000	57.000
Sweden	447.435			
Switzerland	41.200	41.200	66.700	66.700
total	**4.708.162**	**3.239.490**	**1.327.118**	**1.145.976**


Network Area and Trail Length
size [sq km] and length [km]
600.000
500.000
400.000
300.000
200.000
100.000
-
FRANCE
SPAIN
SWEDEN
NORWAY
GERMANY
ROMANIA
POLAND
ITALY
ENGLAND & WALES, UK
GREECE
BULGARIA
HUNGARY
PORTUGAL
SERBIA
AUSTRIA
CZECH REPUBLIC
IRELAND
LATVIA
CROATIA
BOSNIA AND HERZEGOVINA
SLOVAKIA
AUSTRIAN AND GERMAN ALPS
ESTONIA
DENMARK
NETHERLANDS
SWITZERLAND
BELGIUM
ALBANIA
NORTH MACEDONIA
SLOVENIA
MONTENEGRO
LUXEMBOURG
country size
trail network area of MO
total trail length in the country
trail length maintained by MO

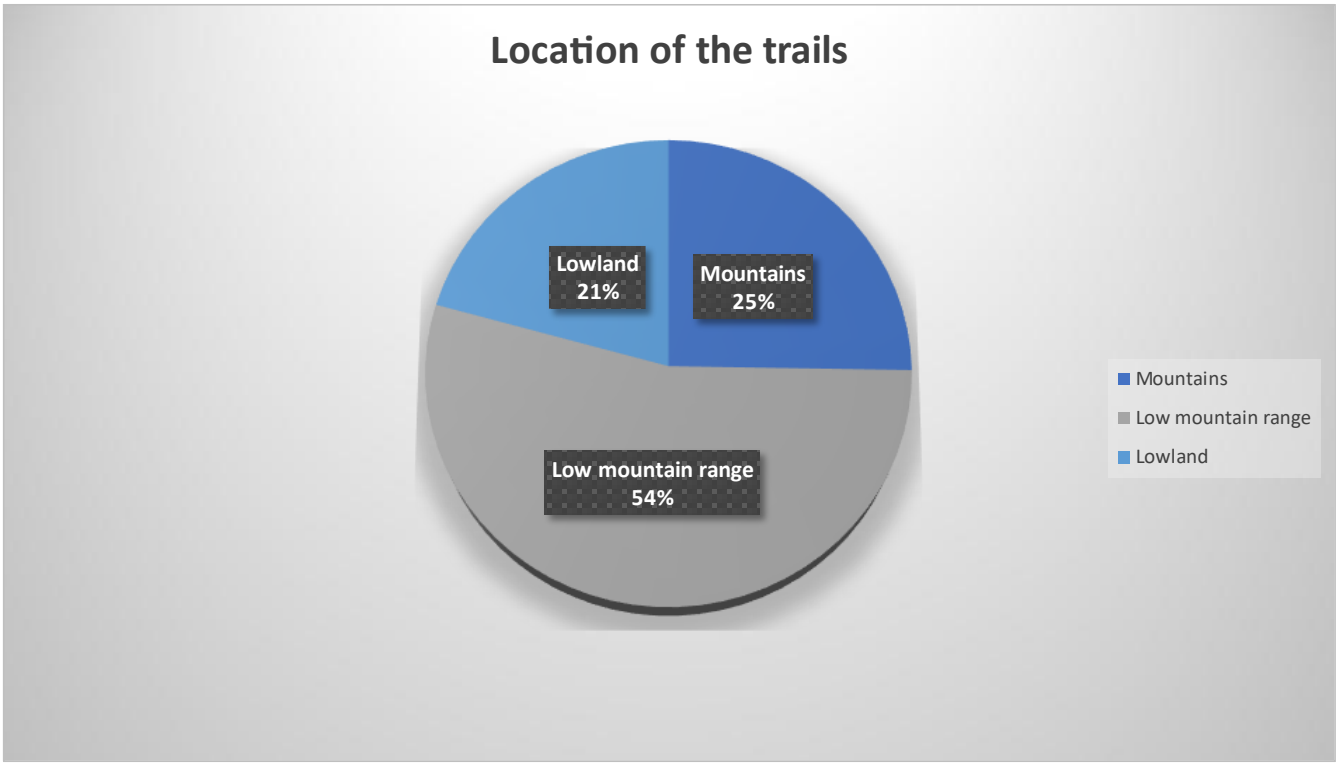
6.2.2 Location of the trails

We expected that the effort required for creation, maintenance and management would vary depending on the level of the trails.
Therefore, participants of the survey were asked to divide their trails into three categories:

- low land
- low mountain range
- mountains

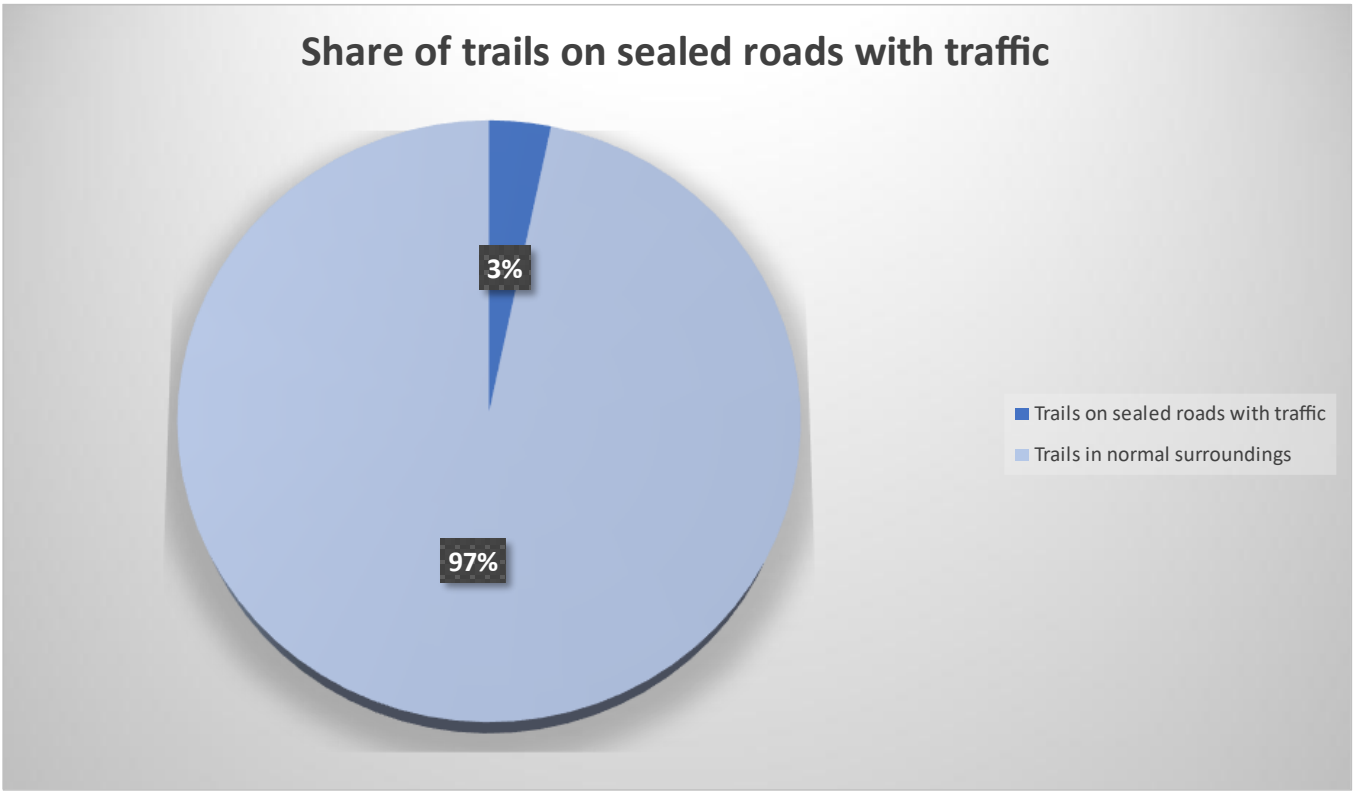
As there are no specifications for those categories, most of the participants roughly followed the categorisation:

lowland =	< 200 m a.s.l.
low mountain range =	200 – 1.000 m a.s.l.
mountains =	> 1.000 m a.s.l.



6.2.3 Trails on sealed roads with traffic

For hiking, one of the worst scenarios is using trails on sealed roads with traffic. A walker is the slowest and weakest road user, is therefore a permanent traffic block for other road users and is constantly in danger of being injured. In addition, he/she puts his/her health at risk through the noise and exhaust fumes of passing motor vehicles as well as through the stress, resulting from dangerous situations.In approx. 75% of the countries that participated in our survey, there are trail routes on sealed roads with traffic.



6.2.4 Via ferratas

Background

Historically, via ferratas developed from secured alpine trails stemming predominantly from the first world war. They served the simple goal to secure the path which led to strategic positions (summits, barracks, dugouts, shooting positions etc.) during war times. They remained until today and were constantly maintained while the idea expanded to different forms of via ferratas.

Definitions and types of via ferratas

Iron wire secured trails: A so-called railing rope is installed in order to overcome exposed trail sections with a high risk of falling. Iron brackets, steel pins and stairs are supportive. In this case, a trail is considered as mountain or alpine trail and no equipment is needed.

Via ferrata general definition

A via ferrata is an iron wire secured trail which follows a certain route for a longer period of time. Handles and steps assistances are statically installed to facilitate advancement
in otherwise very difficult climbing terrain. Typically, a Y-shaped via ferrata kit with an energy absorber and two independent special carabiners are used.

Types of via ferratas

Classic alpine via ferrata

The route leads through alpine environment, rock faces, over ridges with generally a longer approach and usually ends on a summit. It forgoes for artistic elements like rope bridges, difficult passages, or overhanging sections. Iron brackets, steel pins and stairs and similar aids are used to overcome tricky passages.

Sports via ferrata

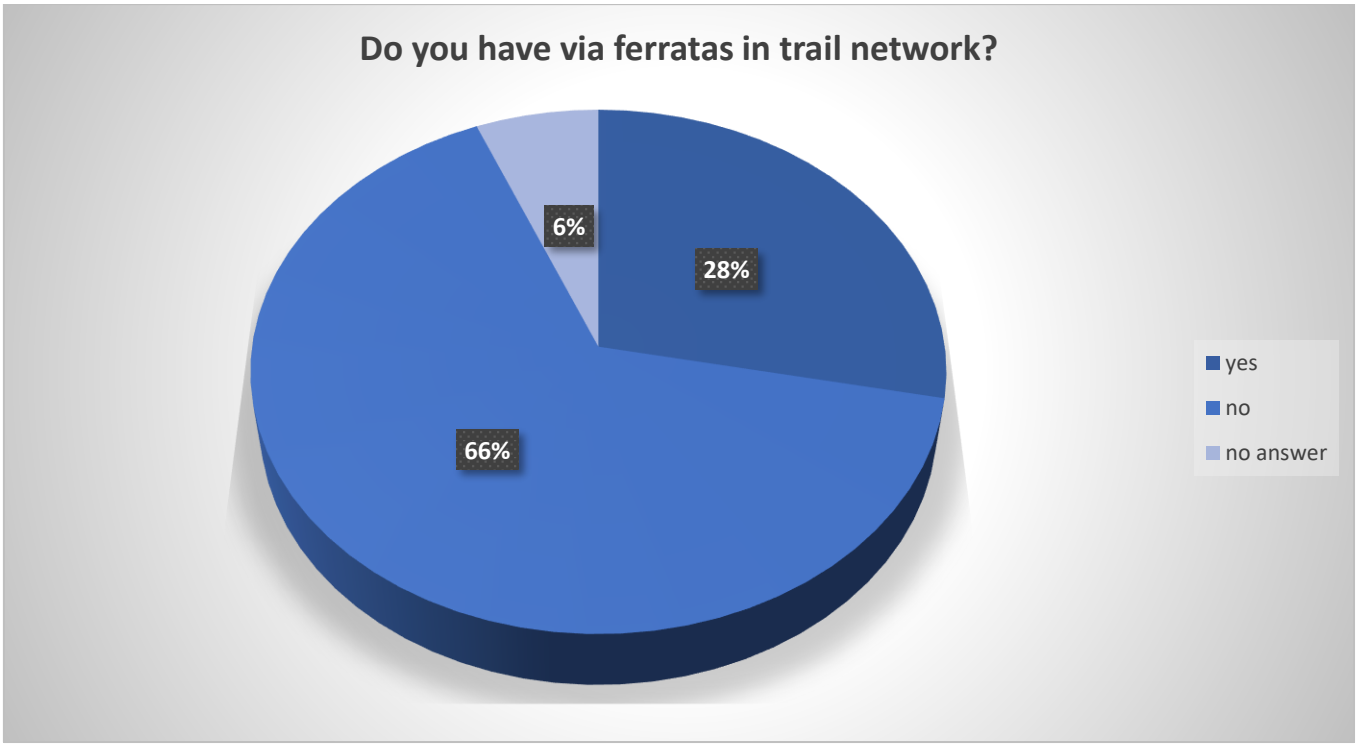
These types of via ferratas are close to the valley and have a comparably short approach; they do not have too many artificial aids like steel pins, iron brackets or stairs. Mainly friction needs to be used for the feet. Usually, no summit is reached, the way is the goal.

Fun via ferrata

These types of ferratas developed in the French alps in the 1990s. They are close to the valley or a ropeway. They mostly use spectacular routes through a wall or gorge using a lot of iron with an extreme exposure feeling. They use a maximum of artistic elements like rope bridges, flying foxes, nets, swinging elements or artificial handles.

Number of via ferratas

The majority of the 37 associations do not have via ferratas in their trail network. Nevertheless, about one third has via ferratas in their trail network.



From the nine associations who are having via ferratas in their trail network, CAI reports the highest number, namely more than 400, followed by the OeAV network in Austria with about 100, and 20 in the Czech Republic while the associations in Bosnia and Herzegovina, Bulgaria, Germany, Montenegro, Portugal, Romania, Serbia, and Slovenia, have between 20 and 2 via ferratas in their working area. As a fact of history, the via ferratas have been developed in the Alps and the idea found its way to other European countries.

Management of via ferratas

From the 37 returned questionnaires, 15 associations could give information about the organisation or institution managing the via ferratas.

In **Slovenia,** classic via ferratas (difficult, very difficult marked trails) are managed by the Alpine clubs and coordinated by the Commission for Mountain Trails of the Alpine Association of Slovenia. Sports and fun via ferratas are mainly managed by local communities.

In **Bulgaria,** the via ferratas are maintained by the Bulgarian Tourist Union, and other tourist clubs while in **Spain** this is done by public institutions or climbing centres. In **Italy,** the via ferratas are mostly maintained by alpine guides once a year. The few via ferratas in **Croatia** are installed by enthusiasts or other individuals who find support in local mountaineering societies, but not all the ferratas are managed by the HPS. The same can be said for **Bosnia and Herzegovina** where the association has no responsibility. In **Romania,** via ferratas are managed by individuals, local organizations, and the mountain rescue service or forestry agencies. In **Switzerland,** the via ferratas are managed by different organisations, private organisations, tourism organisations, and the Swiss Alpine Club.

In the **Czech Republic**, via ferratas are not under a common system and they are built and managed by cities, communities, associations or other bodies and the responsibility lies on the one who builds it. The same counts for **Portugal**. Within the **DAV** and **OeAV** the ferratas are managed and maintained by professionals, mostly mountain guides who are either paid by the local alpine club or by the headquarters.

In **Hungary,** there are two organizations who manage the via ferratas, Vasaltutak and MHSSZ. In **Serbia,** there is an NGO and a local mountaineering club who manage the via ferratas. In **North Macedonia,** it is very unclear who is managing the via ferratas since they are part of different projects. In **Montenegro,** via ferratas are arranged, maintained and commercially used on the principle of public private business partnership between the local tourism

organisation or National Park and private tourism agencies. In **Slovakia,** the via ferratas are not part of the trail network. They are managed mainly by the mountain rescue service, or by other local organisations.

Conclusion of Via Ferratas
In most European countries where this kind of trail is present and where we got the information from the questionnaire different stakeholders take care about the via ferratas. Nevertheless, in Austria, Germany, Italy, Slovenia and Switzerland, the leading mountaineering association centrally influences the process of building and maintaining via ferratas with recommendations and establishes connections with suitable persons. In the other countries there are mostly the local mountaineering clubs who are involved in any management process. The via ferratas are also managed by the government e.g., in Spain, touristic institutions, NGOs, local communities, or the mountain rescue service.

Suggestions
Uniform recommendations on constructing and maintaining via ferratas are missing and should be facilitated. This is especially needed in typical holiday destinations where tourists from countries with a reliable and more or less institutionalized process rely on the safety of the via ferratas without any thought for self-responsibility.

Courses for doing via ferratas and for guiding on them could be implemented.
A systematic central institution should have the overview of the different via ferratas.

6.2.5 Free access to trails

Except for one, all countries provide free access to their hiking trails. In some countries, the rules for national parks are limited. There are bans on access in some periods. Or a ticket is required.
Most common problems are due to the lack of legal regulations, private owners can fence their own territory and so problems arise regarding passage.
Romania is the only country where in some regions you must pay for access to the trails.

In Slovenia, the law defines free access for users and trail keepers.

Yes:	No:	no answer:
32 (89 %)	0 (0 %)	SE, 2xNL, IT

Country / region	Exceptions
AL	Lack of information of trail network
Cat, PT	Trail shall be homologated for free access
Ch1, SI	Free access based on the foot and hiking trail law
CZ	Trails are the most challenging at the beginning, later hikers are sorted out by themselves
ES	Trails on public/private roads/land with written owner's permission
HR, RS, ME, MK	Access fees in protected areas (parks…)
HU	No legal regulations so private owners can fence their land
IT1	In some periods of the year prohibited access for environmental protection
RO	in some regions you have to pay for access
Tra	There is usually a fee
Cat: Federació d'Entitats Excursionistes de Catalunya (FEEC) IT1: CAI Tra: Erdélyi Kárpát-Egyesület / Siaciateatea Carpatină Ardeleană / Transylvanian Carpathian Society Ch1: Berner Wanderwege	

6.2.6 Alignment with local, regional, and state legislation

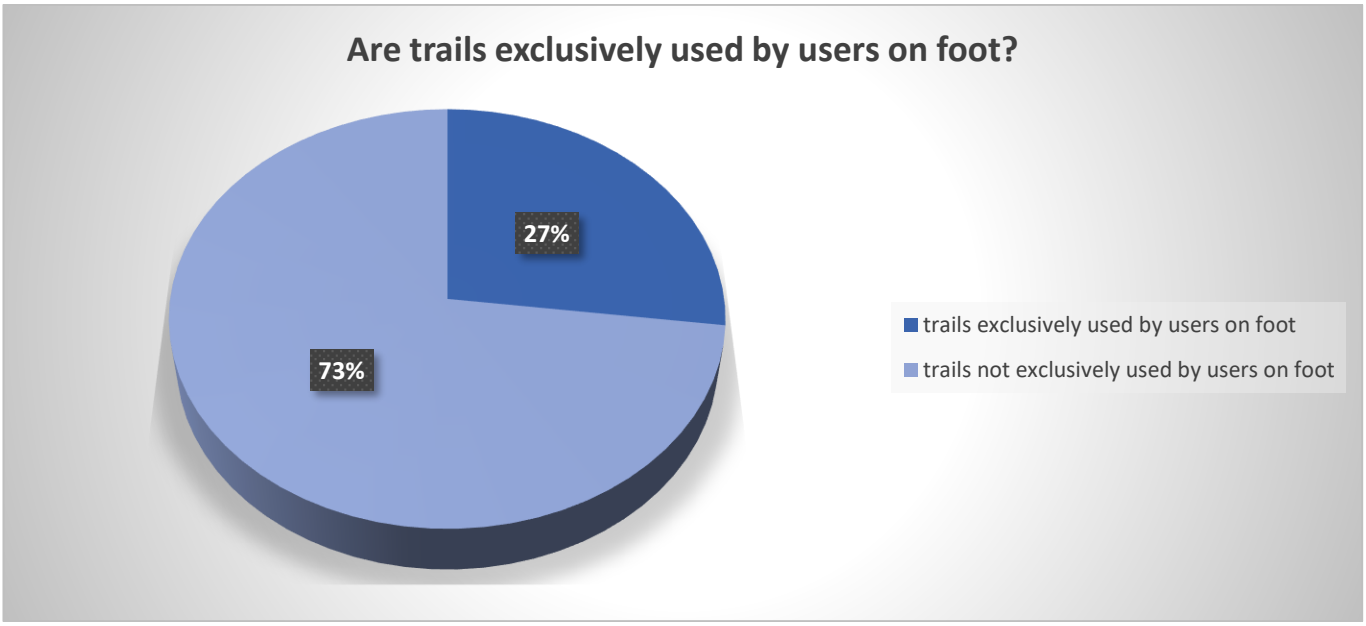
Three quarters of the countries surveyed have some kind of legal regulation of hiking trails, whether on local, regional or state level. However, many of them do not have a law that constitutes the status of marked trails. The existence of a hiking trail is just based on tradition, depends on landowners and there is no special legal protection of the hiking trails which is a problem not only for the existence of a trail (historic or long), but also special conditions for the health and safety of the hikers are not ensured (no overlap with cycle routes, surface topic).

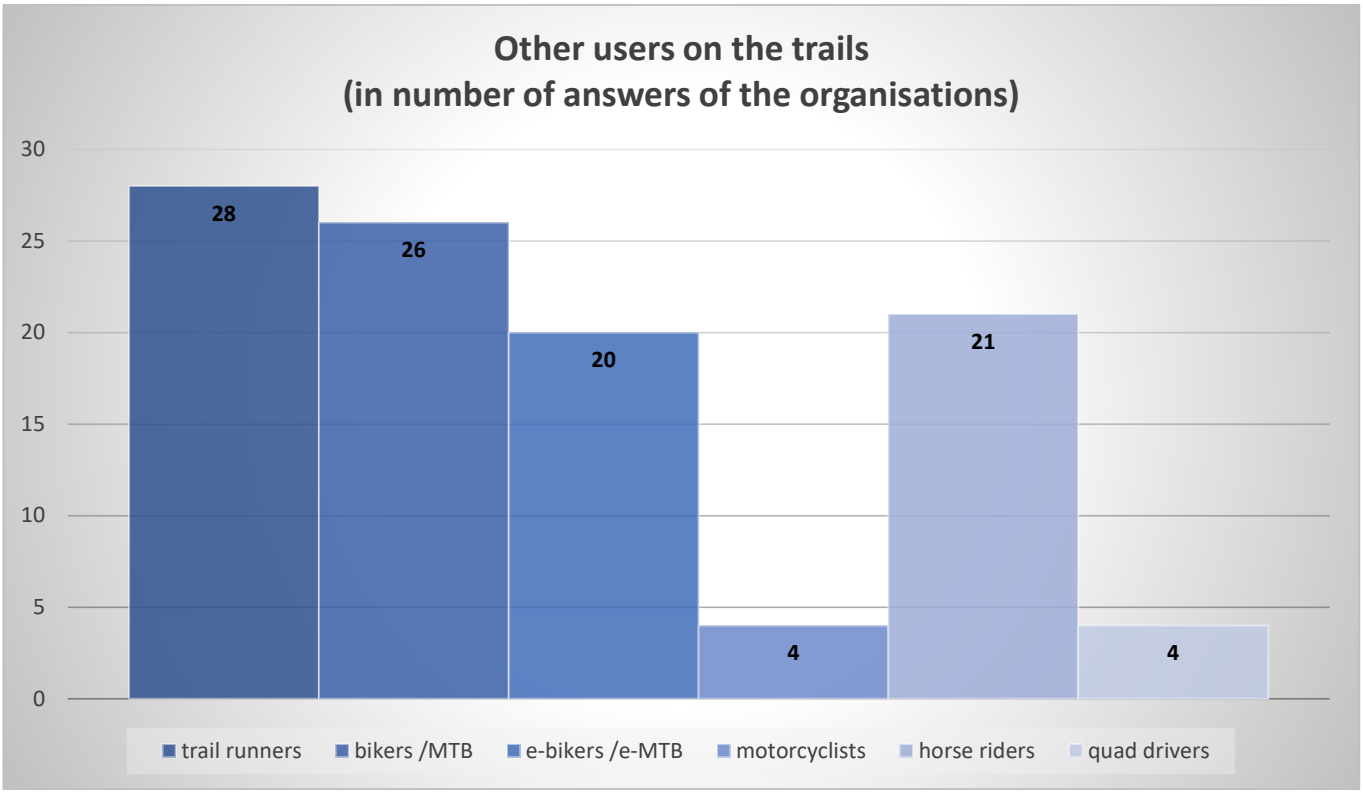
One quarter of the surveyed countries either have no regulations or regulations apply just partly (depending on special conditions).

6.2.7 Are your trails exclusively used by users on foot, except where use by others is explicitly allowed? Do hikers have priority over other users in that case?

Nine organisations say that their trails are exclusively used by users on foot whereas the trails of 28 organisations are also used by other users.
These other users are:
trail runners (on trails of 28 organisations),
bikers/MTB (26),
e-bikers/E-MTB (20),
motorcyclists (4),
horse riders (21),
quad drivers (4).
Other users not mentioned above are skiers (Estonia and Slovakia), who also use the trail.

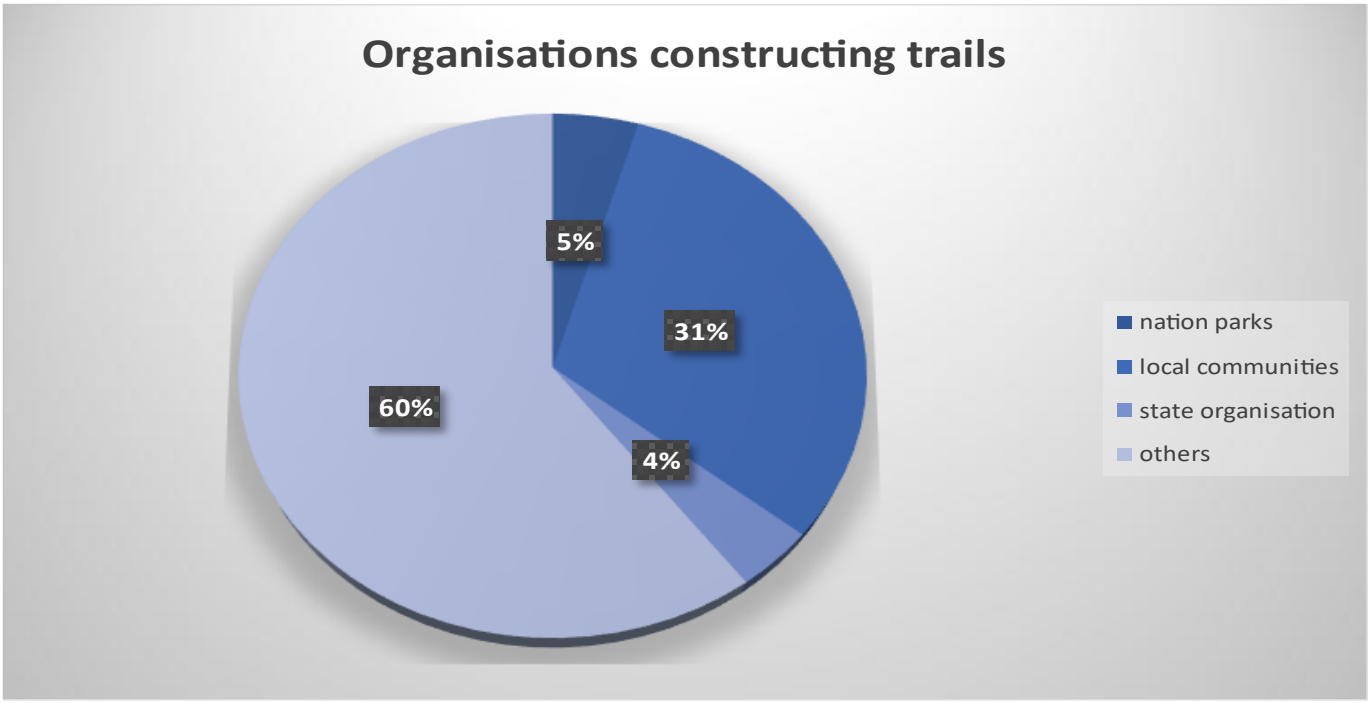
Some organisations mention that the use of the trail by other users than hikers is allowed if indicated on signs or on separate trails.
Some organisations observe that the trails intended for hiking are also used by other users and prevent this by employing rangers in protected areas.
Mutual respect and consideration are essential for the sharing of trails. Nevertheless, some conflicts might appear (e.g., horse riders vs. bikers) when using the same trail.
Beside the general rules about who can use the trails, there are some exceptions for accessing the trails (sport events in Romania e.g.).
The lack of binding laws for the trail use is mentioned by one organisation from Bosnia and Herzegovina.

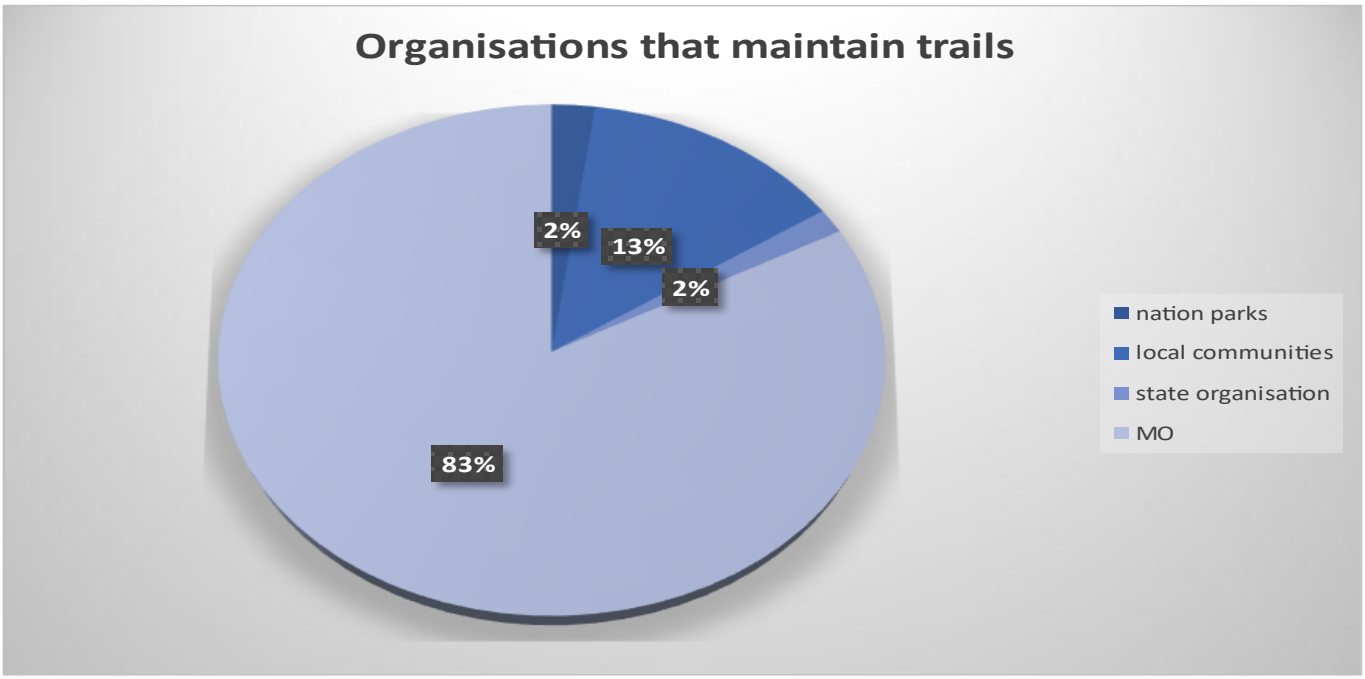




6.2.8 Are there trails constructed and maintained by national parks, local communities or state organisations in your working area?

In the European countries, national parks, local communities, and state organisations are responsible for the creation of hiking trails in addition to NGOs.
At least, most of the trails are maintained by our MOs.
In Croatia, for example, park rangers also attend their seminars for trail keepers so they can maintain trail in parks areas alone. In Slovenia, in some cases, national parks create and maintain some trails. Local communities sometimes also create touristic trails.





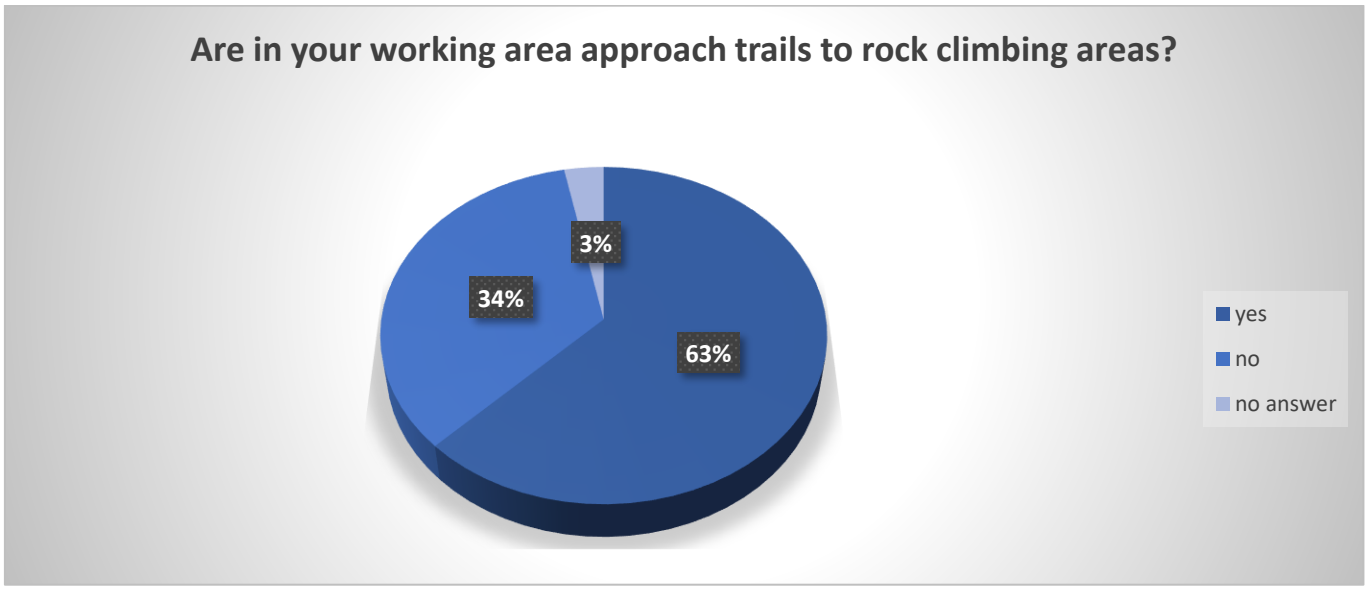
6.2.9 Are there approach trails to rock-climbing areas in your working area?

Definition

An approach trail usually is an unsealed single-track trail which leads to a rock-climbing area where different approach trails link climbing spots. It usually connects the last accessible point of the public traffic network (accessible by two track vehicles), mostly a parking space with the rock-climbing area. These trails are used to get access to the rock-climbing area and can run on official and marked trails or on wild trails formed by regular usage. The ratio between official trails and wild trails differs but mostly the last few steps are made on a wild trail. Some rock-climbing areas do not need an approach trail since they are located next to the parking space or on the side of a street or forest street where two track vehicles can drive.

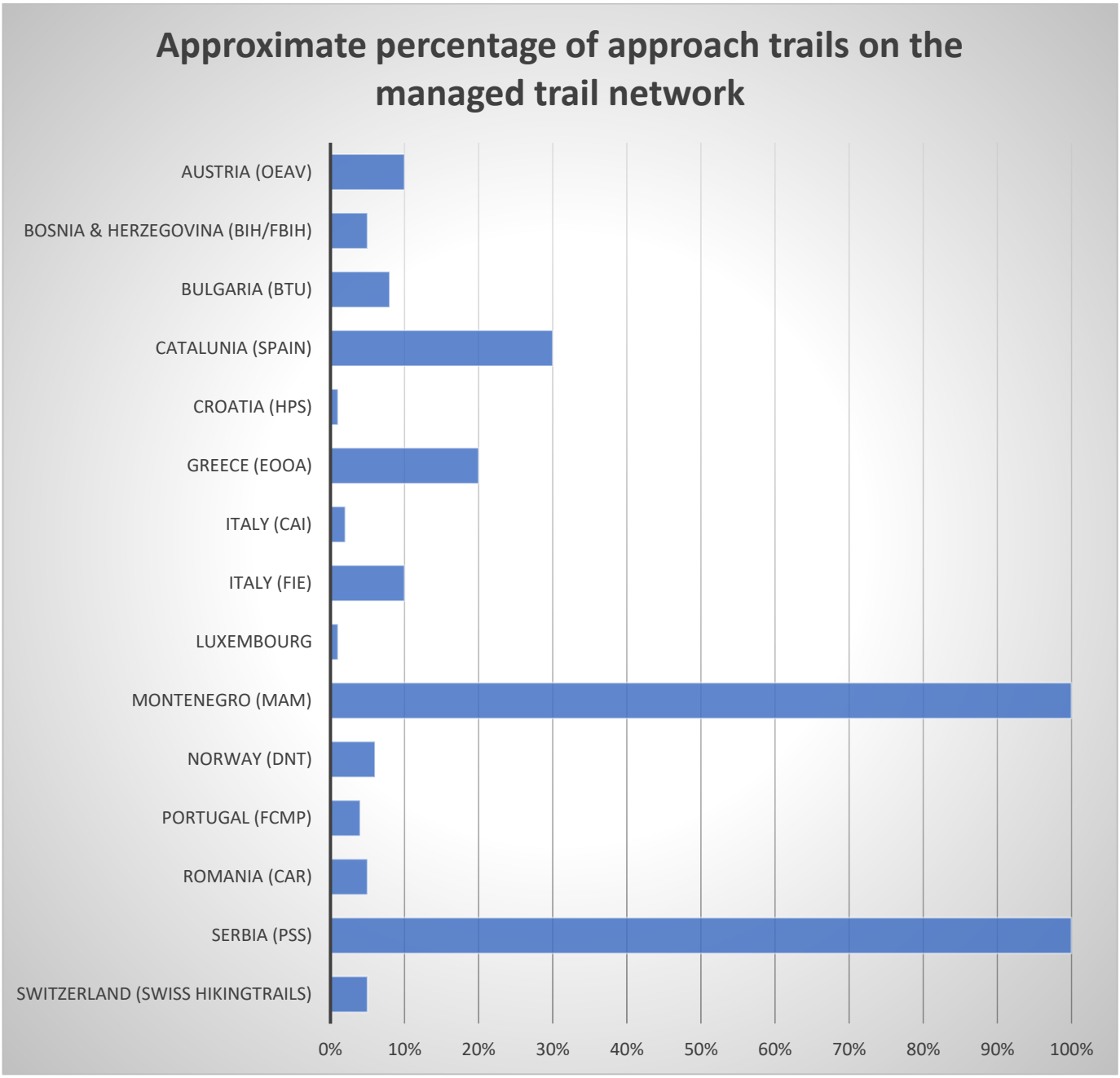
Approach trails presence

About two thirds of 37 associations have approach trails to rock-climbing areas in their trails network. This shows a significant presence of this type of trails in the investigated countries. For one country this information was not available. This result shows that climbing is very present in many European countries even in regions where due to the absence of mountains or big mountain ranges one would not suspect it.



Percentage of approach trails on the trail network

Serbia's and Montenegro's associations have the greatest share on approach trails to rock-climbing areas, followed by Spain and Greece. The associations who returned the questionnaire for Italy, Austria and Bulgaria have a considerable share of approach trails in their network. For the Albanian, British, and French associations, this information was not available. This table supports the fact that climbing is a famous sport in several European countries and climbers partly use y the infrastructure of the European trail network managed by different associations.



Suggestions

A cooperation between hiking trail associations and climbing associations could help to streamline the visitor guidance system for rock-climbing areas. The rock-climbing areas could profit by the experience of the trail experts and make the approach trails better. Due to the fact that there is no main path several wild approach trails form having an impact on nature. This could be influenced through a proper approach trail which is well marked. An example is given by the OeAV where some approach trails leaving the regular trail system are marked.

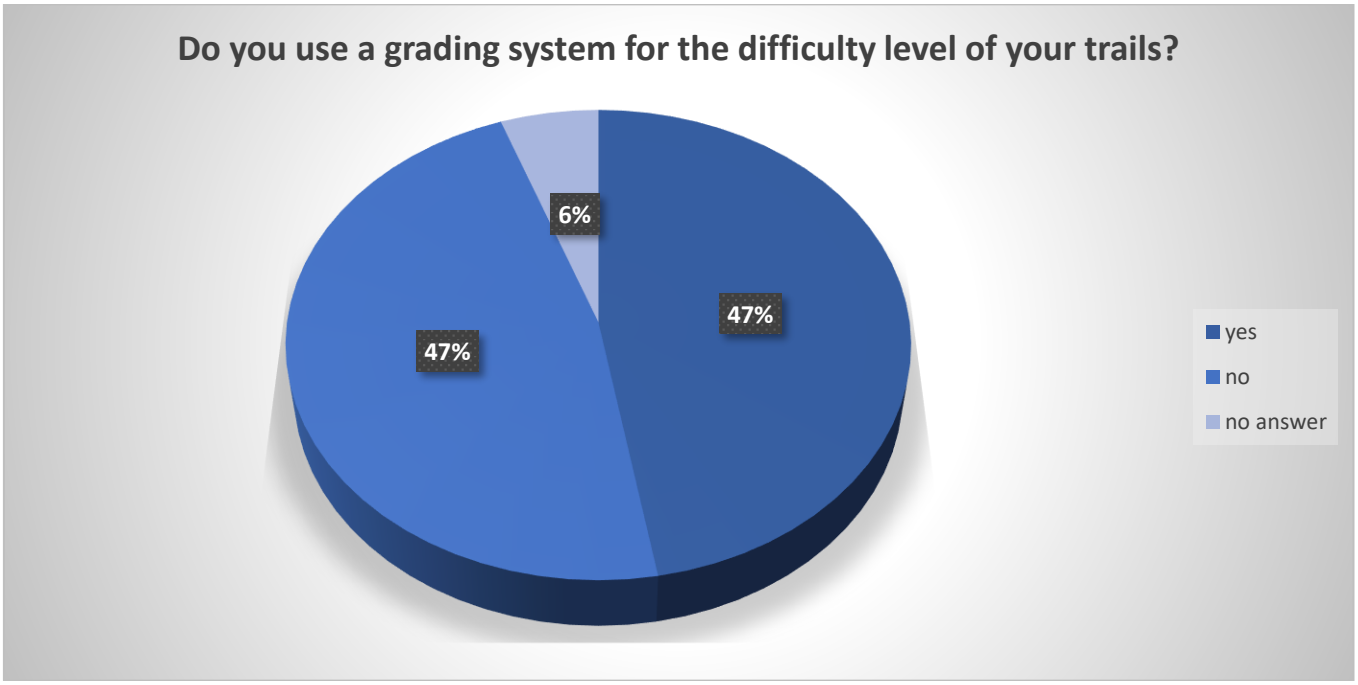
Sign towards three climbing sports within the rock-climbing area "Artzbergklamm" Tyrol

Sing towards the rock-climbing area "Seeblick" Styria

Approach trail map AV rock-climbing area Innsbruck

6.2.10 Grading system and marking

Some countries and associations use a system to show different difficulties of their trails. About half of the 37 associations differentiate their trails regarding different aspects like, difficulty, length, terrain, steepness, danger, themes and quality as well as visibility of markings. Most associations using a grading system report that this is used nationwide. Two associations could not give information about this aspect.



Marking

The marking of the trails could differs depending on the difficulty or the type of the trail. The following part presents the delivered data from the associations.

Slovenia
In Slovenia, the law states that marked trails are used on hikers' own risk. There are 3 (technical) categories of marked trails:
Easy trails – walking without the use of hands. Trekking poles can be used.
Difficult trails – Occasional use of hands. Steel rope and other equipment to increase safety. A helmet is recommended. (A triangle marks difficult trails on the signposts. On maps these trails are represented by a dashed line.)
Very difficult trails – use of hands is necessary. Steel rope and other equipment to facilitate upward movement. A helmet, climbing harness, and via ferrata kit are recommended. (A triangle with exclamation mark inside appears on the signposts. On maps these trails are represented by a dotted line.)

Italy (CAI)
T = Tourist - Itineraries on small paths, mule tracks or easy paths, with clearly evident routes that do not pose uncertainties or problems of orientation. They generally run below 2000 m and usually constitute access to mountain pastures or refuges. They require some knowledge of the mountain environment and physical preparation for walking.
E = Hiking - Itineraries that almost always run on paths, or on traces of passage in various terrain (pastures, debris, stony ground), usually with signs; there may be short flat or slightly inclined sections of residual snow, when, in the event of a fall, the slide stops in a short space and without danger. Sometimes they develop on open terrain, without paths but not problematic, always with adequate signs. They can run on steep slopes; the exposed sections are generally protected (barriers) or secured (cables). They can have single passages on rock, not exposed, or short and

not tiring or demanding sections thanks to equipment (ladders, rungs, cables) which, however, do not require the use of specific equipment (harness, carabiners, etc.). They require a certain sense of orientation, as well as some experience and knowledge of the mountainous territory, walking training, as well as appropriate footwear and equipment.
EE = trails for expert hikers - Itineraries generally marked but which imply an ability to move on particular terrain. Paths or tracks on rough and treacherous terrain (steep and / or slippery slopes of grass, or mixed rocks and grass, or rock and debris). Varied terrain, at relatively high altitudes (stony ground, short non-steep snowfields, open slopes without reference points, etc.). Rocky sections, with slight technical difficulties (aided routes, via ferratas). On the other hand, paths on glaciers are excluded, even if flat and / or apparently without crevasses (because crossing them would require the use of a rope and ice axe and knowledge of the related belay/safety manoeuvres). They require:
mountain experience in general and good knowledge of the alpine environment;
sure-footedness and absence of dizziness;
adequate equipment, and physical preparation.
EEA = trails for expert hikers with equipment - Aided routes or via ferratas for which the use of self-belaying devices (harness, heat sink, carabiners, lanyards) and personal protective equipment (helmet, gloves) is required

Italy (FIE)
T: Tourist path: easy, short, no significant differences in height –less than 500 m total up/down; it may follow cultural/religious itineraries (thematic), particular equipment is not required;
E: Excursion path: mostly on well-marked tracks, between 500 and 1,000 m of total ascent, less than 20 km long, few passages might be tracks of path, a certain expertise, training and equipment is required;
EE: Path for expert ramblers: the trail is long (more than 20 km, with more than 1000 m ascent, some parts may be difficult/exposed/steep/short parts even with the help of iron cables (NOT ferrata); a good training, expertise and equipment (shoes, clothing) is mandatory;
EEA: the same as above with significant parts of the path requiring ferrata expertise, training and full equipment (helmet, mountaineering harness, via ferrata kit) are mandatory;
Long-distance paths: European long-distance paths (E-paths)

Croatia
In Croatia, the system of marking the difficulty of a mountaineering trail originated in the Alpine countries at a time when no other information was available. In the opinion of CMA, the difficulty of a mountaineering trail depends more on the capabilities of the individual user than on the trail itself. Thus, for example, the same mountaineering trail can be difficult when a person is a child, become easy when he/she grows up, and become difficult again when a person enters old age. It is known that today modern technologies have made it easy to access a wealth of information about each mountaineering trail, so it is assumed that users will assess how demanding the trail is for them.

Germany and Austria
Trails in the sense of this concept are mountain trails in alpine and high alpine areas. They can thus present the typical alpine hazards. The use of adequate equipment for walking on these trails is presupposed. The working areas include trails of different categories:

Valley trails
Valley trails are predominantly wide, they generally have only a slight incline and no passages with a risk of falling. Due to their proximity to the valley and their easy character, valley trails are usually not maintained by alpine clubs. In Tyrol, the blue marking is not used.

Mountain trails
Mountain trails are predominantly narrow, they are often steep and can have passages that pose a danger of falling. With increasing difficulty, and thus higher classification, the frequency of passages with a risk of falling increases, as does the frequency of secured walking passages and/or easy climbing passages that require the use of hands.

Alpine routes

These routes lead into open alpine and high alpine terrain and are no mountain paths in the previous sense. They can be visible in the terrain through footprints, which are the result of frequent use, but they can also be pathless. Alpine routes include exposed areas that are prone to slipping and falling, as well as unsecured walking and climbing passages. Their technical difficulty can be significantly higher than that of difficult mountain trails. (But they can also be less difficult, as in the case of an unmarked glacier crossing, for example). Alpine routes are usually neither created nor maintained, so they may not be marked or signposted as an aid to orientation. Alpine routes require absolute sure-footedness and freedom from vertigo, good physical condition, excellent orientation skills, secure terrain assessment, alpine or even high alpine climbing and mountaineering experience, and familiarity with the use of the necessary mountain and emergency equipment.

For mountain trails, Germany and Austria use blue (easy) red (middle) black (difficult) for hiking trails.

●	Bergwege mit blauem Punkt sind: • einfachere Wege, die schmal und steil sein können
●	Bergwege mit rotem Punkt sind: • überwiegend schmal, oft steil angelegt und können absturzgefährliche Passagen aufweisen • kurze versicherte Gehpassagen können vorkommen
●	Bergwege mit schwarzem Punkt sind: • schmal, oft steil angelegt und absturzgefährlich • Es kommen zudem gehäuft versicherte Gehpassagen und/oder einfache Kletterstellen vor, die den Gebrauch der Hände erfordern • Trittsicherheit und Schwindelfreiheit sind unbedingt erforderlich
Alpine ROUTE	• Alpine Routen führen in das freie alpine bzw. hochalpine Gelände und sind keine Bergwege im vorangegangenen Sinne • Sie können exponierte, ausrutsch- und absturzgefährdete sowie ungesicherte Geh- und Kletterpassagen enthalten

This table shows a comparison between the neighbouring regions:

Wegekategorien

Achtung: *In unseren Nachbarländern gelten andere Wegekategorien. Hier zum Vergleich die entsprechenden Einteilungen und die Zeichen.*

Bayerische Alpen ohne Allgäu	Land Tirol	Salzburger Land	Vorarlberg + Allgäu	Schweiz
Schwere Bergwege ●	●	●	◥	◥
Mittelschwere Bergwege ●	●	●	◥	◥
Einfache Bergwege ●		●	◥	◥
Talwege			◥	◥

Switzerland (Berner Wanderwege)

In Switzerland, there are three official categories of hiking trails: 1) Hiking trails 2) Mountain hiking trails 3) Alpine hiking trails.

The hiking scale of the Swiss Alpine Club was introduced in 2002 and is divided into six different grades:

T1 (Easy valley trail, yellow):

Trail well marked. If present, exposed areas are very well secured. Danger of falling can be largely excluded with normal behaviour. Also suitable with sneakers. Orientation without problems, usually possible without a map.

T2 (Easy mountain trail, DAV: blue, SAC: white-red-white):

Trail with continuous route. Terrain partly steep, danger of falling not completely excluded. Some surefootedness necessary, trekking shoes recommended. Elementary orientation skills.

T3 (moderately difficult mountain trail, DAV: red, SAC: white-red-white/white-blue-white): Trail on the ground not necessarily visible throughout. Exposed areas may be secured with ropes or chains. You may need your hands for balance. Partly exposed places with danger of falling, scree areas, pathless scree. Good surefootedness, good trekking shoes necessary. Average orientation skills. Elementary alpine experience.

T4 (Difficult mountain trail, DAV: black, SAC: white-blue-white):

Trail not necessarily available. In certain places you need your hands to move forward. Terrain already quite exposed, tricky grassy slopes, crags. In the high mountains possibly easy firn fields and glacier passages. Familiarity with exposed terrain required. Sturdy trekking shoes. Some terrain awareness and good orientation skills. Alpine experience. Retreat may be difficult in the event of a sudden deterioration in weather.

T5 (Difficult mountain trail, DAV: black, SAC: white-blue-white):

Often pathless. Some easy climbing sections. Exposed, demanding terrain, steep scree. In the high mountains, there may be loose glaciers and firn fields with danger of slipping. Mountain boots. Secure terrain assessment and very good orientation skills. Good alpine experience in high alpine terrain. Elementary knowledge in the use of ice axe and rope.

T6 (difficult mountain trail, DAV: black, SAC: white-blue-white):

Mostly pathless. Climbing passages up to grade II. Often very exposed. Tricky scree terrain. Glacier with increased danger of slipping. Mostly not marked. Excellent orientation skills. Mature alpine experience and familiarity with the use of alpine technical aids.

Mountain trails of grades T5 and T6 are in part already "alpine routes" and can correspond to easier alpine tours (L, WS) in terms of overall demand - however, due to the terrain, mostly without securing possibilities.

Switzerland (Schweizer Wanderwege)

The “Schweizer Wanderwege” define three difficulty levels.

1. Wanderweg - hiking trail: https://www.wandern.ch/de/signalisation/wanderweg;
2. Bergwanderweg - mountain trail: https://www.wandern.ch/de/signalisation/bergwanderweg;
3. Alpinwanderweg - alpine trail: https://www.wandern.ch/de/signalisation/alpinwanderweg All further information about system and waymarking are described in our Manual; Waymarking that can be downloaded here: https://www.wandern.ch/download.php?id=3332_cf5929c8;

Design elements of all categories of signposts are specified by the SN 640 829a standard. Many trail users are already used to the difficulty levels of Swiss hiking trails. The levels come along with hiking suggestions (print/digital), campaigns are launched to inform people about requirements on mountain hiking trails, definitions of difficulty levels can be read on websites such as https://www.wandern.ch/de/signalisation etc.

The Swiss mobile foundation introduced separately:

- National routes
- Regional routes
- Local routes
- Barrier-free routes

North Macedonia

In North Macedonia, they use Class 1 - recreational walking trails, Class 2 – mountaineering-easy trails (a path available for a certain group of people with good health and basic mountaineering knowledge), Class 3 – Mountaineering-moderate trails /medium heavy trails (trail that requires good health, good physical condition, and

good knowledge of mountaineering techniques) and Class 4 – Mountaineering-hard trails / difficult trails (path for mountaineering "professionals")

France
Differentiation between GR which applies to long distance hiking trails, GR® which applies to hiking trails within a geographic entity and PR® which is usually a loop trail doable within one day.

Luxembourg
Grading from 1 to 4 according to the European standards, 4 not being applicable due to the topography of the landscape.

Montenegro
The law of mountain trails and the standard for the construction and installation of tourist signs prescribe, among other things, criteria for assessing the difficulty and complexity of mountain trails for the following purposes:
a) difficult mountain trail - black, b) medium difficult - red and c) light - blue.
Assessments of difficulty are mandatory in the publication describing the itinerary, maps and waymarking of mountain trails. The trails are marked with a full circle in the colour of the difficulty:

- light blue circle-easy trail
- red circle-medium difficult track
- black circle-difficult path

Slovakia
The hiking trails are marked according to the Slovak technical norm STN 01 8025 (touristic cycling roads are maintained by the Slovak Cycling Club, according STN 01 8028). Touristic maps contain the network of marked trails. The trails are specified by their number and by one of four colours - red, blue, green, yellow. The colour does not express difficulty, nor quality, but hierarchy: main trails forming the national network are red; main connections, attached to, or crossing the red trails are blue or green, shorter connections are yellow. Marked touristic trails are in terrain marked by stripe-shaped markings - white, colour, white horizontal stripe. On the trail, there are poles with signboards, too.

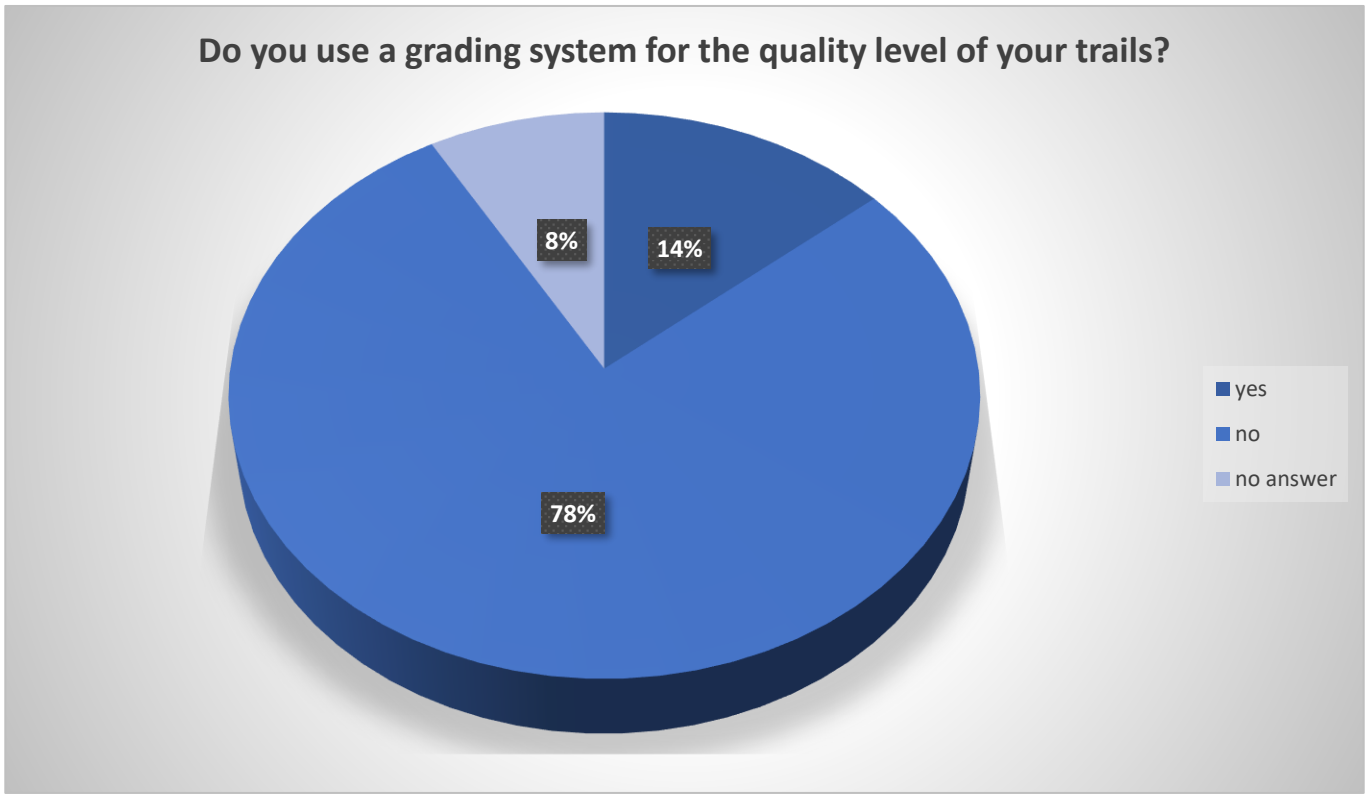
Norway
The grading has four levels:
Green = simple. These are mostly short and easy trails that are suitable for everyone, with no requirements for special skills or equipment. In cases where it is adapted for wheelchair users or prams, this is especially indicated.
Blue = medium. These are trails that are suitable for persons who have basic hiking skills and are in normal physical condition.
Red = demanding. Trails marked in red are suitable for experienced hikers, with good endurance. The trails often require good hiking shoes and other hiking equipment, as well as knowledge of maps and compasses.
Black = extra demanding. These are hikes suitable for experienced mountaineers, with good physique, strength and endurance. Good hiking equipment and good knowledge of maps and compasses are necessary on such trails. How demanding a trail is is determined, among other things, by the number of altitude meters (ascent) and length of the trail. Even if the trail is in flat terrain, it can be marked in red if it is very long. And conversely, even if the trail is short, it can be marked in black if it runs in steep and demanding terrain.

Summary

The trails in the European countries are following different ideas and rationales. It could be said that trails in the Balkan countries have great similarities, also trails in the Slavic countries are showing similarities. Spain and Portugal are showing similarities so do Germany and Austria in the Alpine area.

6.2.11 Grading system for the quality level of trails?

Some ideas are existing in the European countries regarding a special award for the quality of trails.



Almost every country has criteria which a trail must meet and differentiates between managed and non-managed trails. But most of the countries and their associations have no special system for expressing the quality of a trail. Germany, Austria, and Switzerland apply different quality labels like the quality label awarded by the German hiking club, or the best offers by the Swiss mobile foundation. In Austria there is the seal of approval for high quality trails. The French apply a quality label for hiking trails. Luxembourg and the Czech Republic use the Leading Quality Trails - Best of Europe (LQT-BE) label. This certificate is awarded by ERA and could be applied to any European hiking trail. In addition, the Czech Republic is applying the KCT Methodology where the trails' quality is distinguished by (the routes are led by interesting terrain, place, around places of public transport…). Italy is planning to implement an LQT-BE Certification.

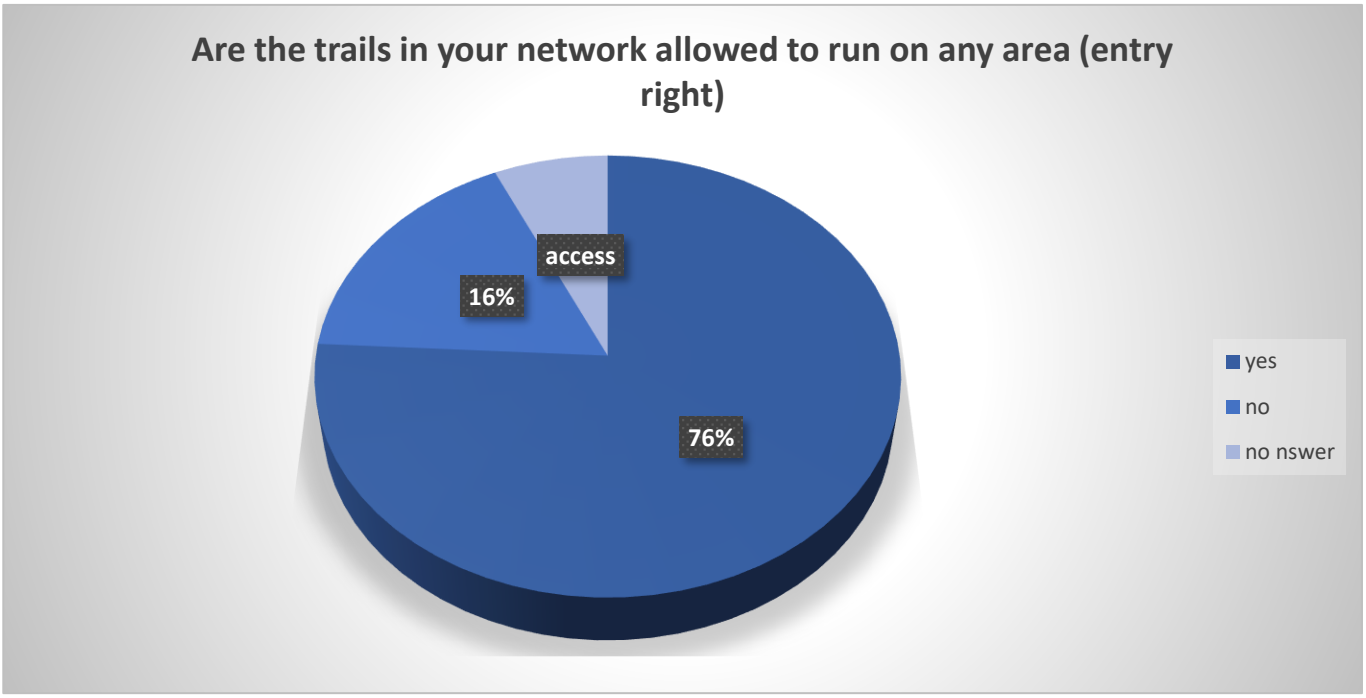
Suggestions

The quality label of ERA "Leading Quality Trails - Best of Europe" is available throughout Europe, the problem is that some countries have not accepted it yet, or their trails do not comply with the criteria needed to apply for the label. In the project, 5 to 10 principles of trails could be developed, for example, howthe path must look like, type of markings etc.

6.2.12 Are your trails visible and clearly recognisable in the terrain?

All of the countries have visible signposts, and the trails are clearly marked.

6.2.13 Are the trails in your network allowed to run on any area (access right), e. g. state territory, communal territory, private territory, seaside, lakefront, riverside, with simultaneous consideration of environment and nature protection?



In most of the countries, the trails may run on any area, which is regulated differently in different countries in accordance with the respective legislative system. From the analysis, it can be determined that the consent of certain parties is required (e.g., private territory, military territory, protected natural areas), while in certain national parks an access fee is charged. Quite a few countries do not have access rights throughout all the areas, even though in the comment section for this question the above-mentioned consent from certain parties is required for the access right to be granted. However, in some countries, the lack of legislation to further regulate the relations between the stakeholders remains an issue.

Comments:

Belgium: Asbl Sentiers de Grande Randonnée
On private territory, a convention with the owner is needed.

Bosnia and Herzegovina: Planinarski Savez Federacije Bosne I Hercegovine
On private territory, a convention with the owner is needed.

Bulgaria (no): Bulgarian Tourist Union
Not allowed to run on private property and Nature reserve parks.

Croatia (no):
The network of existing mountaineering trails historically runs through any area. Within the territory of Croatia, there are restrictions in areas under some form of nature protection. In this case, the consent of the management of these areas is required. Also, the founder of the mountaineering trail is obliged to obtain the consent of the owner of the private property through which the trail passes.

Czech Republic (no): Klub českých turistů (KCT)
In general, a walking route can lead anywhere if we have the consent of the landowner. Historical routes are a chapter in themselves. In case of National parks, there is a contract with the Ministry of the Environment, trail routing is solved individually in the given territory. Military territory is usually inaccessible, but there is a case where the trail is accessible on weekends.

England & Wales, UK: British Mountaineering Council
With some exceptions for safety and privacy.

Estonia: Eesti Matkaliit
On private territory allowed to run only when the owner accepts.

France: Fédération Française de la Randonnée Pédestre
Except for private roads and paths. A passage permit must be signed.

Germany: Spessartbund e. V.
Only if private area is used for economic reasons, it could be closed for trail users.

Hungary: Hungarian Hikers Association
The lack of regulations is still a problem.

Luxembourg: Ministry for the Economy-department for Tourism
Authorization should be requested, but free access is commonly accepted

North Macedonia: Mountaineering Federation of North Macedonia (FPSM)
Allowed in National Parks (entrance ticket to a national park), protected natural area, with special permission.

Poland (no): Centralny Ośrodek Turystyki Górskiej PTTK - Mountain Tourism Center of PTTK
The access right does not exist. Newly built trails need to get permission from landowners.

Portugal: Federação de Campismo e Montanhismo de Portugal (FCMP)
Trails are built throughout the national territory, except for some areas of natural full reserve or for example in private properties whose owners do not authorize way marking and free transit.

Serbia: Planinarski savez Srbije (PSS)
It is allowed with permission of the owner or stakeholder.

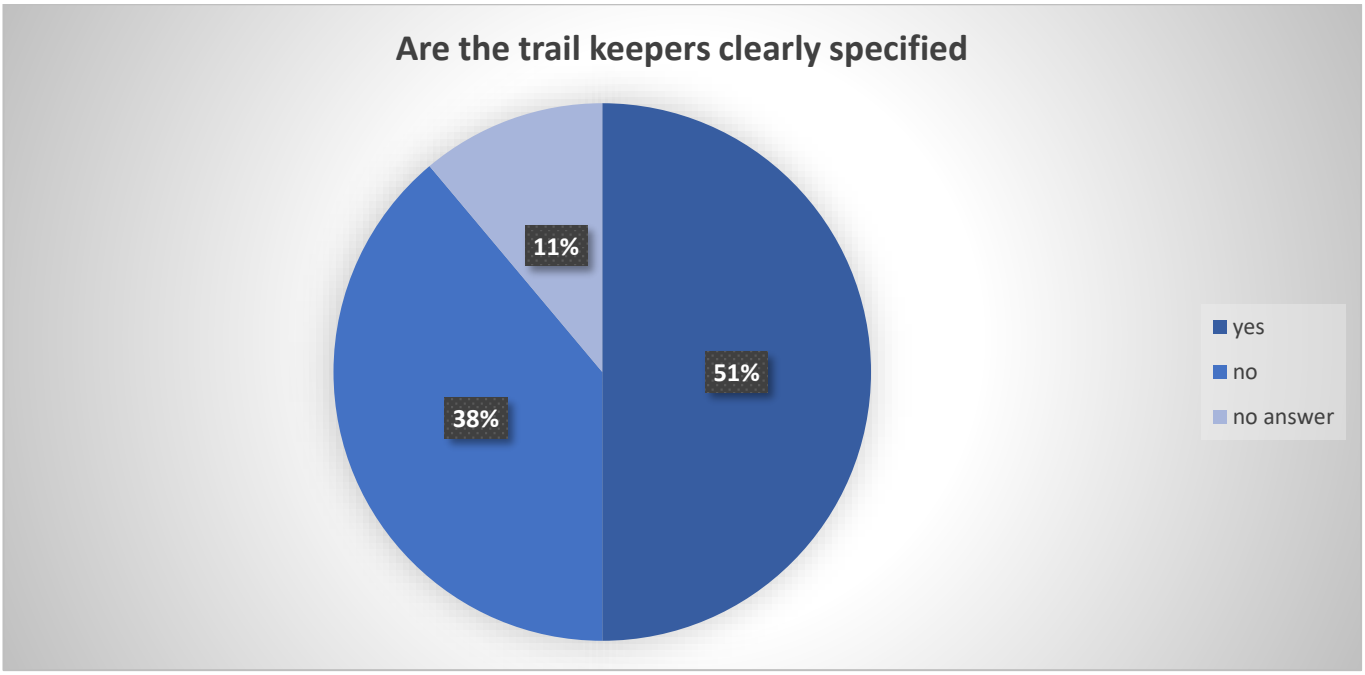
Slovenia: Planinska zveza Slovenije
The environmental consent and consent of owner/operator is obligatory.

Spain: Federación Española de Deportes de Montaña y Escalada
Most of the trails are built on public roads, for public use. There are trails through private land, through Protected Natural Areas, through Public Hydraulic Domain, Coastal Domain, Communal Mountains, etc. They must have permission from the owner / managing body of the same. In the homologation process it is one of the matters that is checked.

Switzerland: Berner Wanderwege
The (written) consent of the landowner must be available and the routes must be recorded in the cantonal sectoral plan (= planning binding on the authorities).

Switzerland: Schweizer Wanderwege
The (written) consent of the landowner must be available and the routes must be recorded in the cantonal sectoral plan (= planning binding on the authorities).

6.2.14 Are the trail keepers clearly specified?



There is no general agreement on this question. In some of the countries, there are state organizations of trail keepers, but that is a rare example. In other countries, different organizations and services perform these activities, in some of the countries trail keeping is taken care of by a project of different third persons that are not a part of the state organizations, responsible to carry out these activities ex officio. In some countries there are state officials such as forest rangers which, among other activities, have the responsibility to take care of the condition of the tracks.

Comments:

Albania (no): Albanian Mountaineering Association
The trails in Albania are mostly marked by different NGO-s and mostly this is not clear.

Bosnia and Herzegovina (-):
Trails are marked either by mountaineering association members or individual persons, but it is not clearly documented who the trail commissioner is

Croatia (no):
Within the HPS, there is no organised trail keepers' service. Participants who complete the trail marking training receive a badge to wear during the trail maintenance action. Protected areas have their own organized surveillance service. The task of the supervisor (ranger) is, among other things, to take care of the proper use of arranged, registered mountaineering trails and compliance with the prescribed rules of environmental protection by visitors.

England & Wales, UK (no): British Mountaineering Council
It is not clearly advertised at the point of access or exit who is managing the trail. In order to find out, it is necessary to research this on the web / contact the local authority.

Estonia (no):
State Forest Management Centre and other organisations are main actors.

France: Fédération Française de la Randonnée Pédestre
There are few trail keepers, except in some territory as parks.

Italy (no):
The trail keeping task is accomplished by several institutions. On the E-Paths, usually FIE is in charge of the keeping.

Greece (no):
There are no guards on the trails of Greece.

Hungary (no):
There is no active ranger system in Hungary, but they are working on it.

North Macedonia (-):
In FPSM, there are trained and qualified trail keepers (markacists), but they are not part of the system in which there are clearly stated duties, obligations, and rights from the state. Markacists are members of mountaineering clubs and they have attended and passed trainings, and they are also taking care of the trails according to their financial and organizational capacities, as well as voluntarily.

Romania (-):
Not all the time the trail keepers are clearly specified.

Serbia:
The Mountaineering Association of Serbia on the state level

- takes care and evidence of the trails
- gives permission for new trails
- gives rules and takes over control

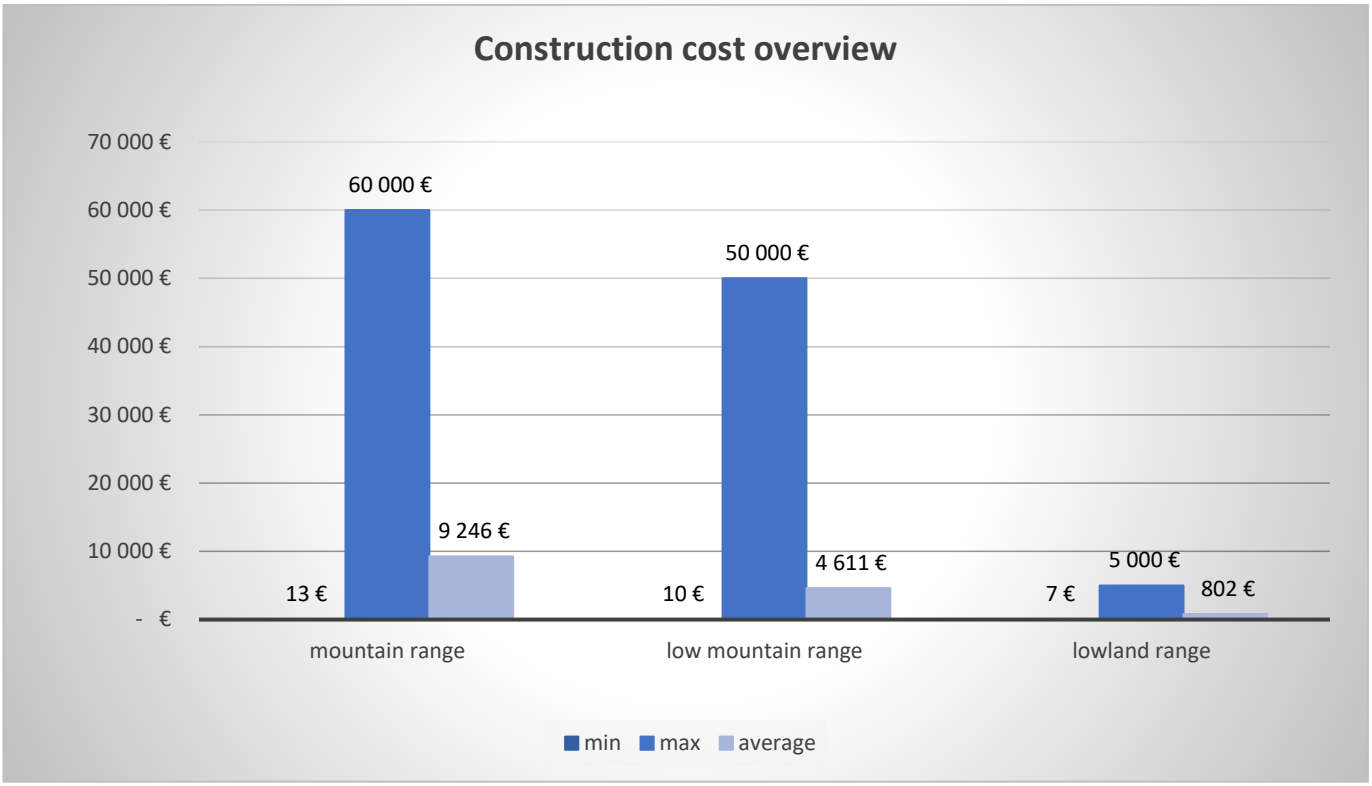
The local MOs keep the trails.

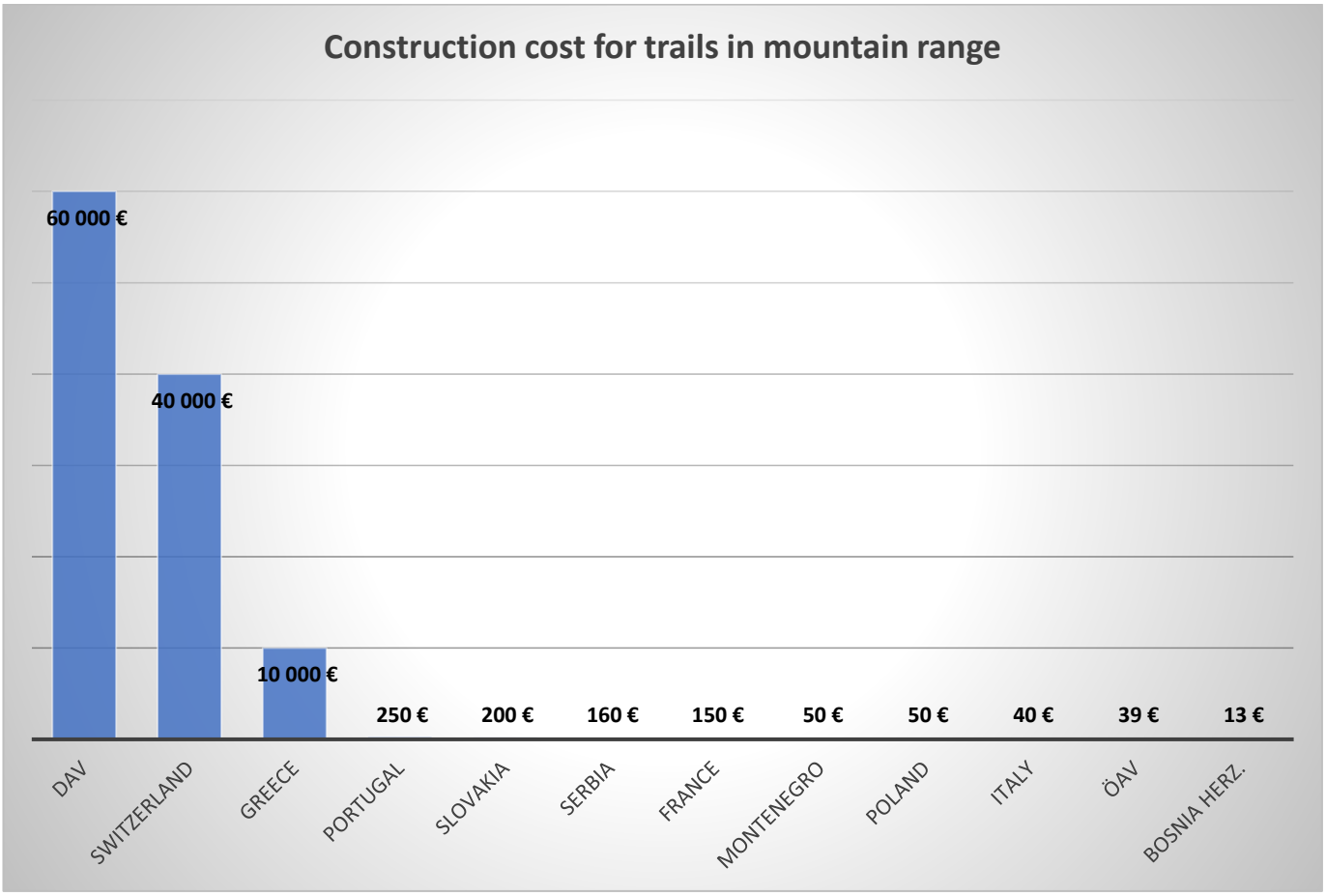
Slovenia: Planinska zveza Slovenije
Only for the trail network in their domain, governed by the law, but there are also others for which we have no information.

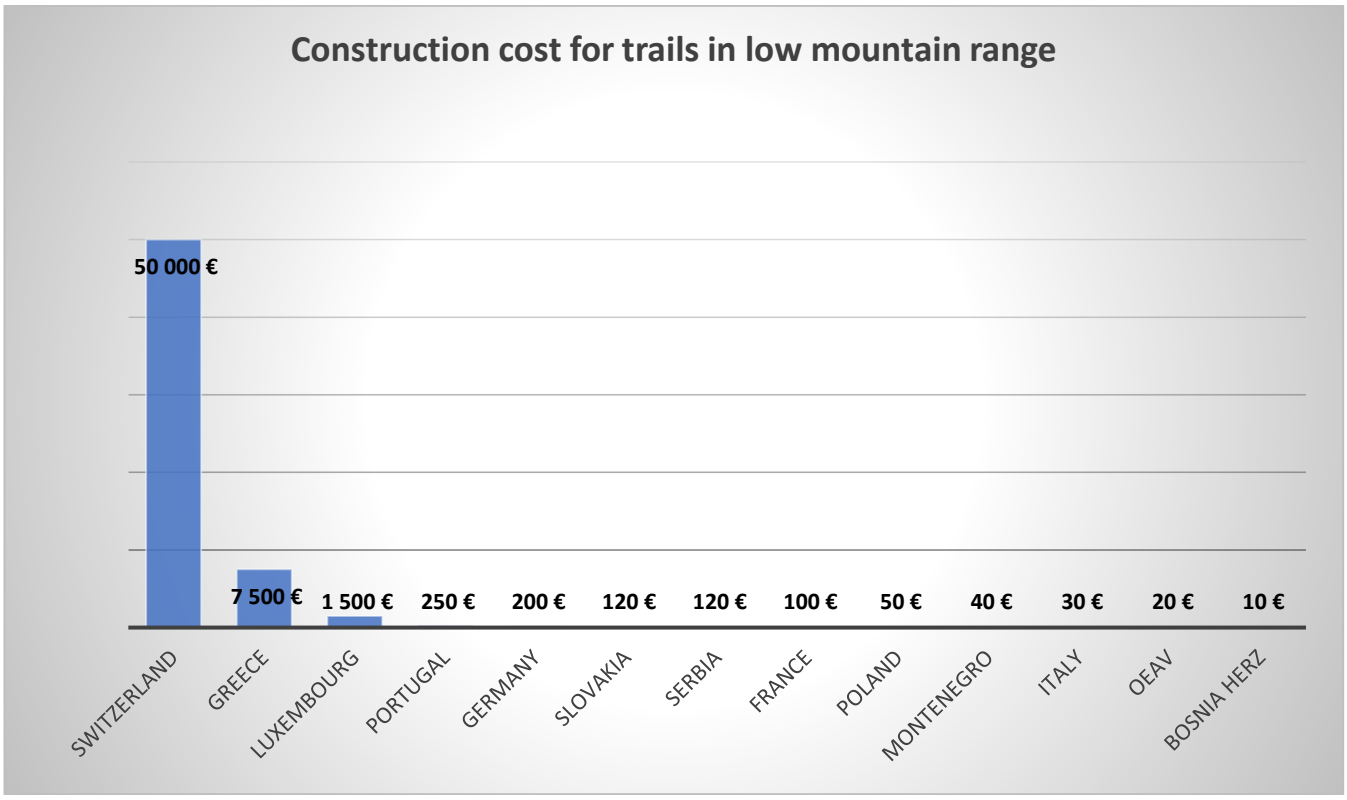
Transylvanian Carpathian Society (-):
The mountain rescue service is.

6.2.15 What are the average costs to construct a new trail?

Costs differ with each country – the difference is big - it is clear from the questionnaire that the costs depend on the route creation approach. In half of the countries the costs of building new and maintaining old trails are significantly reduced by the work of volunteers.
On average, the cost is around € 1,000 – € 2,000 per kilometre of new hiking trail (including project, constructions on the route, signposts, marking, rest areas, information boards, work of 2 paid people in addition to volunteers) depending on the complexity of the terrain and the country in question. Without need of small constructions (like small bridges, handrails…), rest areas, information boards and mainly with the work of volunteers, the cost would be approx. € 400 – € 1,100 per kilometre.
In a specific example of a hiking trail in the Czech Republic, which was 20% new and 80% renovated, 1 km of the new route cost € 550 in light terrain, € 605 in medium-heavy terrain and € 697 in complex terrain. If that was a 100% newly constructed trail, it would cost € 949 in light terrain, € 1,067 in medium-heavy terrain and € 1,262 in heavy terrain (see appendix 1).
Half of the surveyed countries have no information on costs. One country stated the reason is lack of money – they do not construct new trails but try to optimize the existing ones. Another country stated construction of new trails is discouraged by law.


Construction cost overview
70 000 €
60 000 €
50 000 €
40 000 €
30 000 €
20 000 €
10 000 €
- €
60 000 €
9 246 €
13 €
50 000 €
4 611 €
10 €
5 000 €
802 €
7 €
mountain range
low mountain range
lowland range
min
max
average


Construction cost for trails in mountain range
60 000 €
40 000 €
10 000 €
250 €
200 €
160 €
150 €
50 €
50 €
40 €
39 €
13 €
DAV
SWITZERLAND
GREECE
PORTUGAL
SLOVAKIA
SERBIA
FRANCE
MONTENEGRO
POLAND
ITALY
ÖAV
BOSNIA HERZ.


Construction cost for trails in low mountain range
50 000 €
7 500 €
1 500 €
250 €
200 €
120 €
120 €
100 €
50 €
40 €
30 €
20 €
10 €
SWITZERLAND
GREECE
LUXEMBOURG
PORTUGAL
GERMANY
SLOVAKIA
SERBIA
FRANCE
POLAND
MONTENEGRO
ITALY
OEAV
BOSNIA HERZ

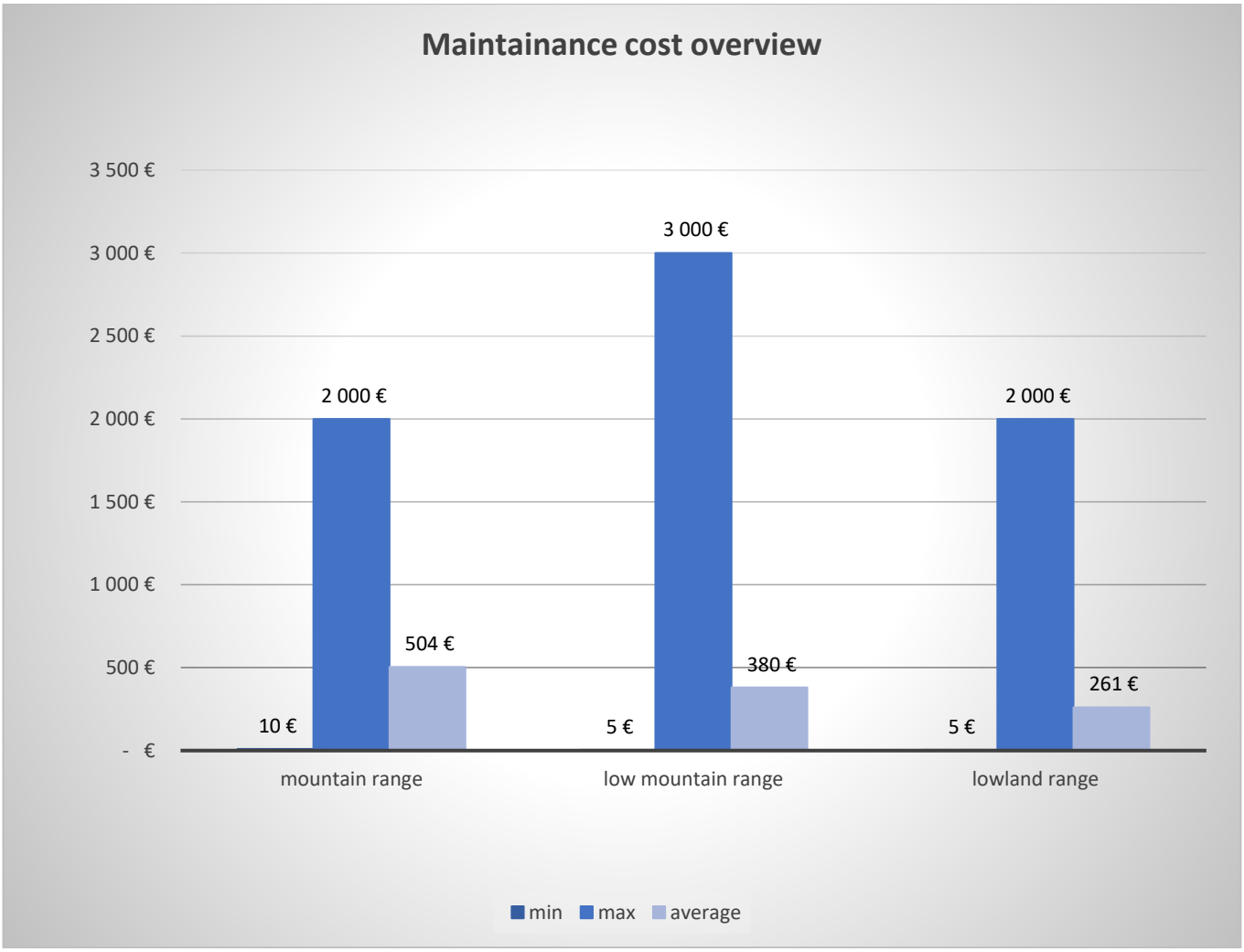

Construction cost for trails in lowland range
5 000 €
3 000 €
250 €
200 €
120 €
100 €
50 €
50 €
30 €
20 €
7 €
NETHERLAND
GREECE
PORTUGAL
GERMANY
SLOVAKIA
SERBIA
POLAND
FRANCE
MONTENEGRO
ITALY
BOSNIA HERZ

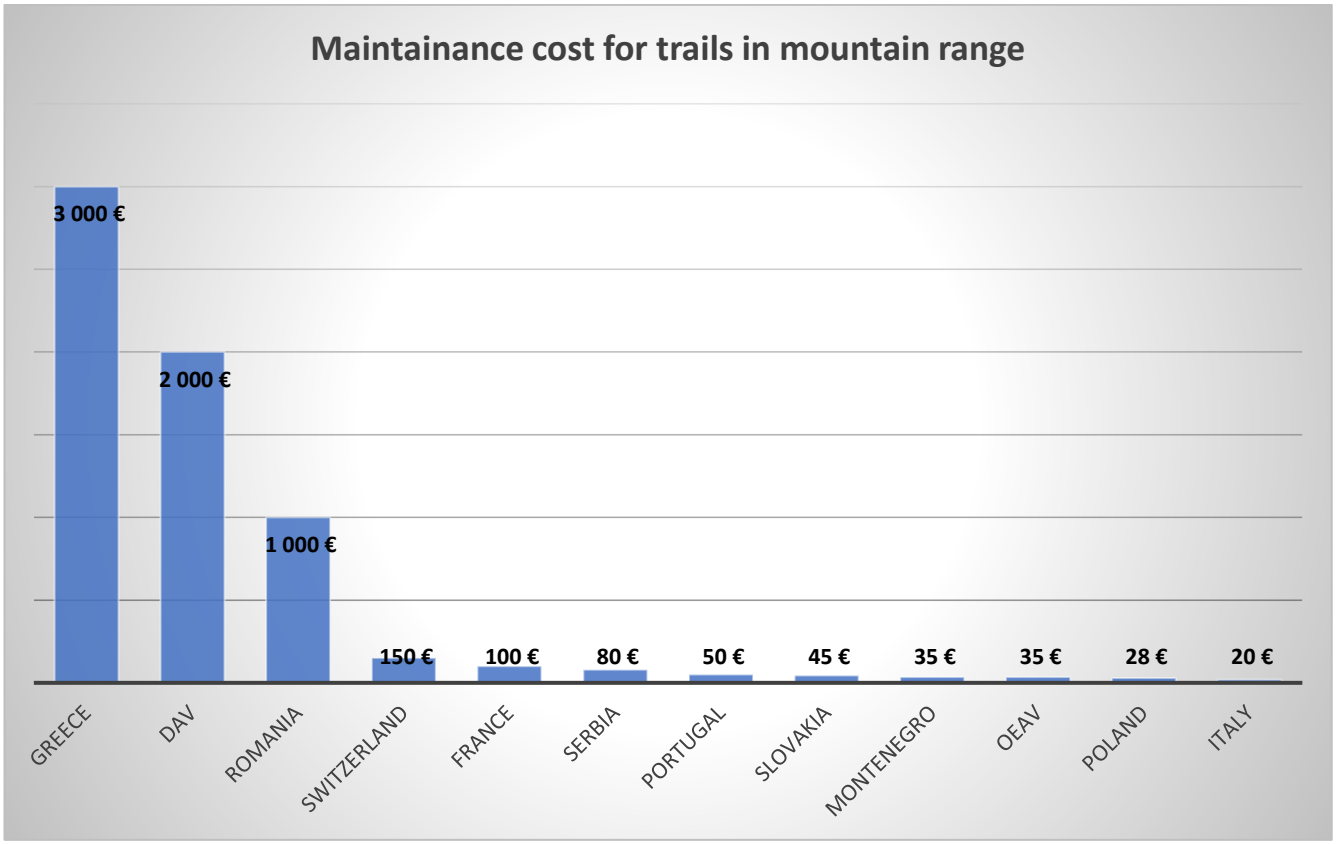
6.2.16 Is the trail construction maintained frequently?

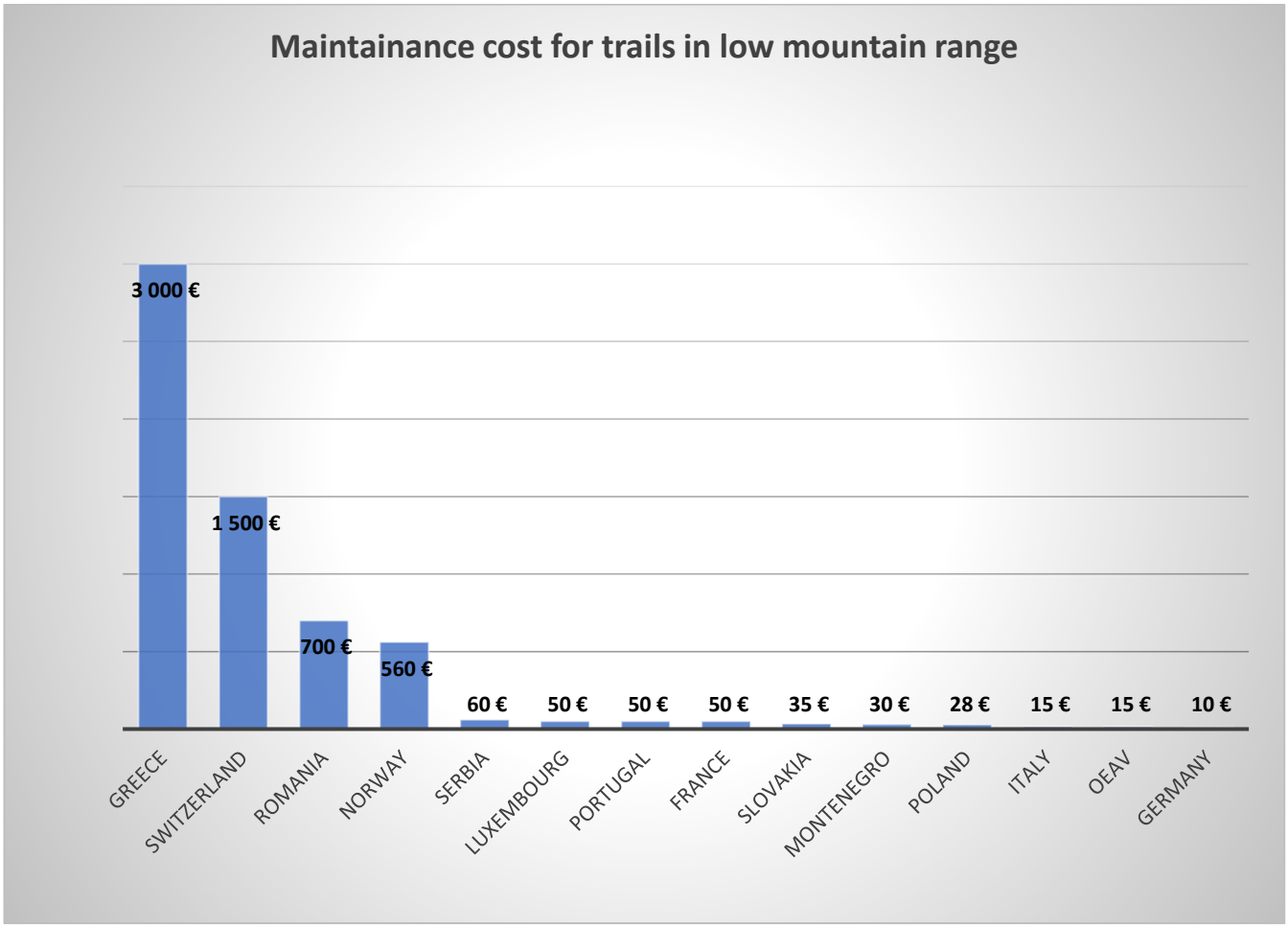
Two thirds of the respondents maintain trails frequently. Usually, the range is 1-5 years. Countries with lush vegetation usually maintain their trails more frequently, i. e. 1-3 years. There is a difference in maintenance: usually there is general maintenance in 2-5 years and trails are usually checked once a year and after natural disasters.
One third of the countries don´t maintain frequently. One of them stated that they do not have enough capacity and power to maintain the whole trail system regularly. Annually they manage necessary alterations of the trail (not constructing new trails) and 9 % of the way marking.

6.2.17 What are the average annual costs to maintain the trail construction?

Costs differ within each country – the difference is big - it is clear from the questionnaire that the costs depend on the route creation approach. In some countries, the costs of maintaining old trails are significantly reduced by the work of volunteers.
On average, the cost is around € 500 – € 1,000 per kilometre of new hiking trail (including project -no need to seek for permissions anymore-, renovation/renewal of constructions, signposts, marking, rest areas, information boards, work of 2 paid people in addition to volunteers) depending on the complexity of the terrain and the country in question. Without need of renovation of small constructions (like small bridges, handrails…), rest areas, information boards and mainly with the work of volunteers, the costs would be approx. € 150 – € 650 per kilometre.
In a specific example of a hiking trail in the Czech Republic, which was 20% new and 80% renovated, 1 km of the new route cost € 550 in light terrain, € 605 in medium-heavy terrain and € 697 in complex terrain. If that was 100% already existing trail, renovation would cost € 491 in light terrain, € 531 in medium-heavy terrain and € 597 in heavy terrain (see appendix 1).




Maintainance cost for trails in mountain range
3 000 €
2 000 €
1 000 €
150 €
100 €
80 €
50 €
45 €
35 €
35 €
28 €
20 €
GREECE
DAV
ROMANIA
SWITZERLAND
FRANCE
SERBIA
PORTUGAL
SLOVAKIA
MONTENEGRO
OEAV
POLAND
ITALY


Maintainance cost for trails in low mountain range
3 000 €
1 500 €
700 €
560 €
60 €
50 €
50 €
50 €
35 €
30 €
28 €
15 €
15 €
10 €
GREECE
SWITZERLAND
ROMANIA
NORWAY
SERBIA
LUXEMBOURG
PORTUGAL
FRANCE
SLOVAKIA
MONTENEGRO
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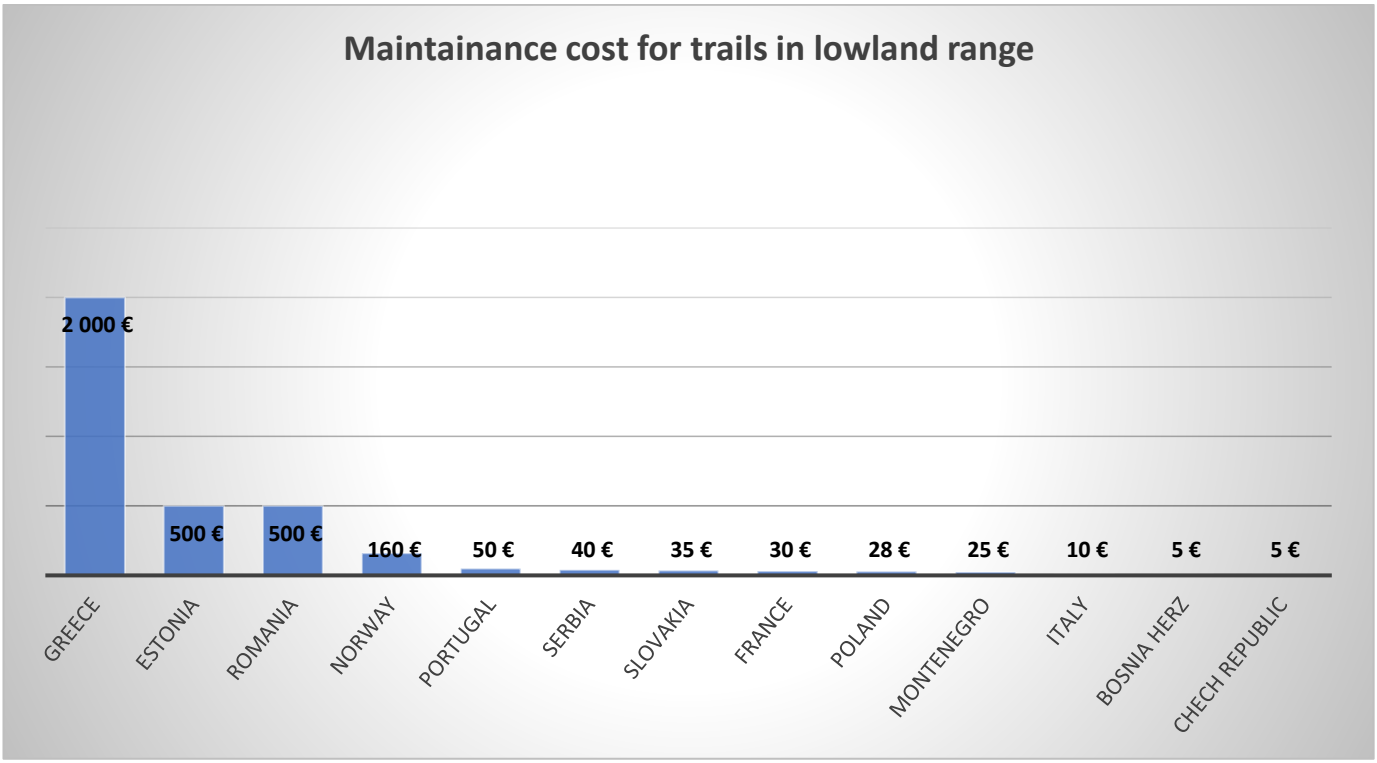
GERMANY



6.2.18 Are your trails physically marked with signs and signposts?

Three organisations say that not all of their trails are physically marked with signs and signposts whereas 30 organisations confirm the question, one organisation says that the physical marking is not accomplished everywhere. The marking systems of the several organisations are quite divers. Every organisation who answered this question has its own method regarding how and where to mark the trail. What is in common for all of them is the use of signal colours and symbols. Some organisations indicate the difficulty, length of the trail or duration of the hike. A trail can be specified by a number, colour, or symbol. The amount of information given by signs and signposts also varies a lot between the organisations. Some organisations even use guidelines which define standards for marking, for example in the Czech Republic. For the Alps, the Alpine Clubs have established an approved signage.

Example of a sign from the CAI

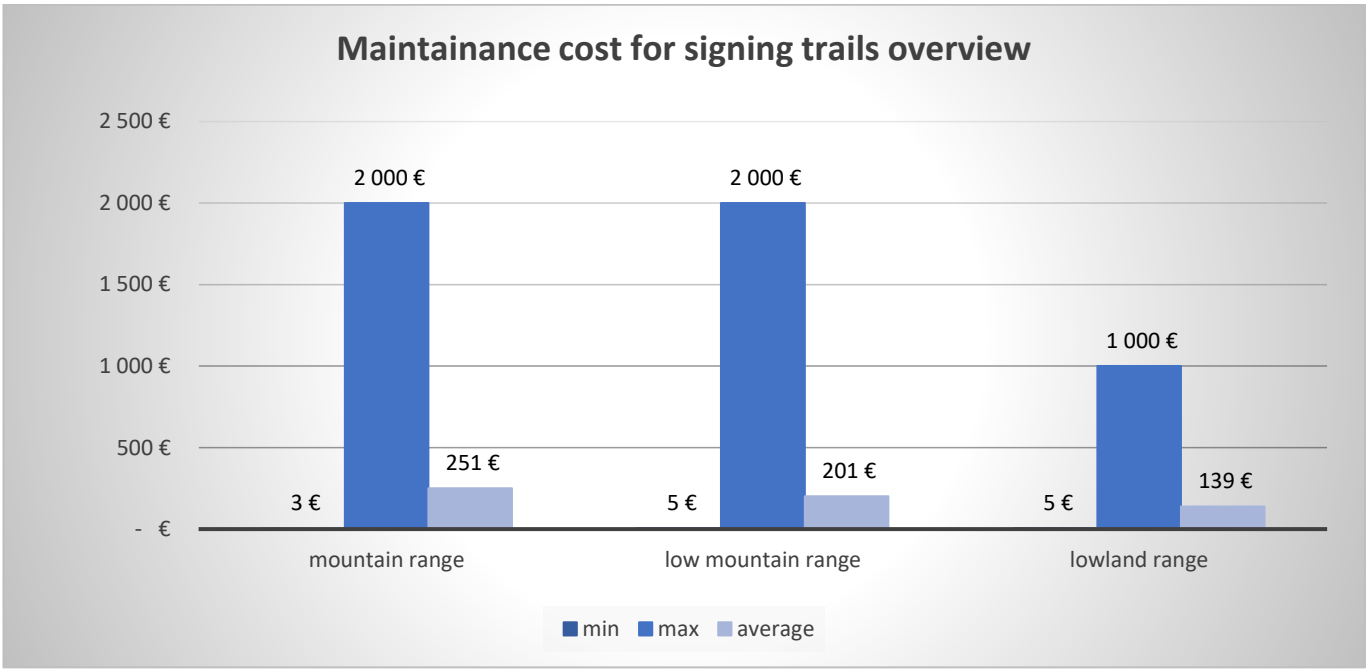
6.2.19 Are signs and signposts of trails maintained frequently?

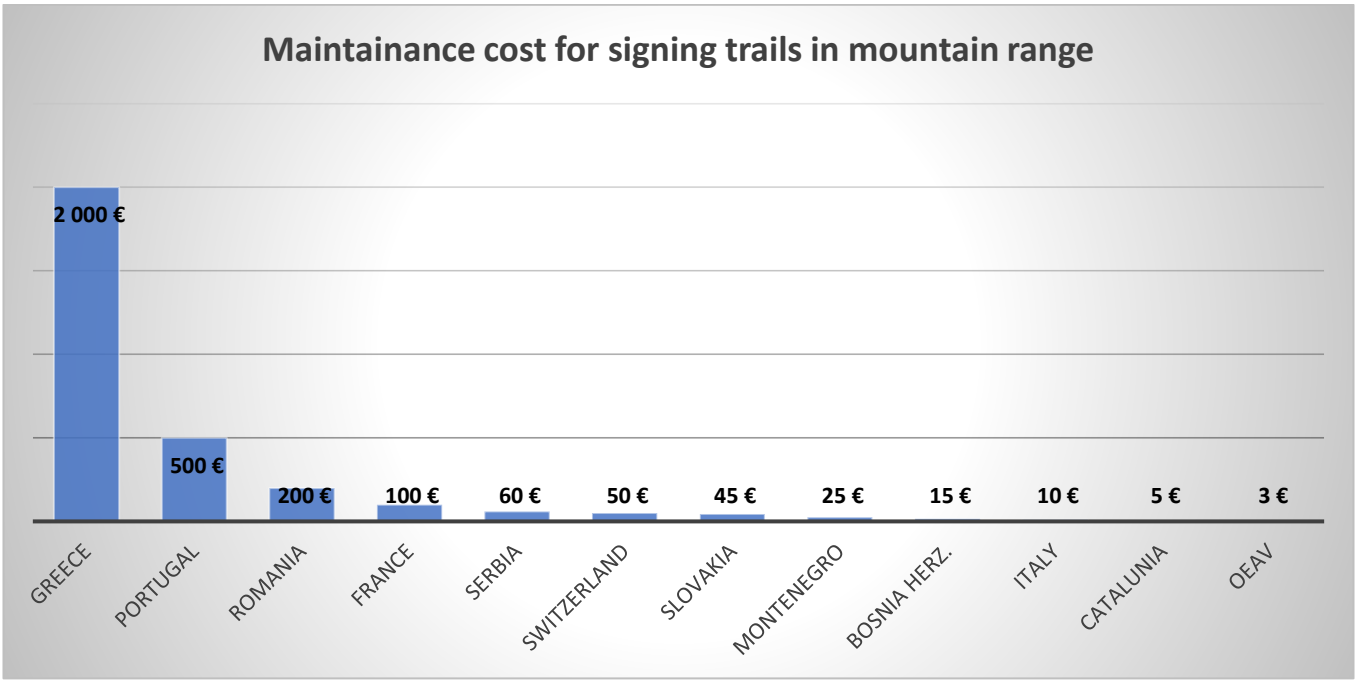
30 organisations state that they maintain their signs of trails frequently. The maintenance is not done frequently by four organisations. However, three out of these four say the average maintenance period is 3-5 years. The average maintenance period of one year is fulfilled by ten organisations. Nine organisations practice maintenance every three years. The organisations were also asked to describe the scope of maintenance work. Many of them check signs and signposts annually during the inspection of the trails (often at the beginning or the end of the hiking

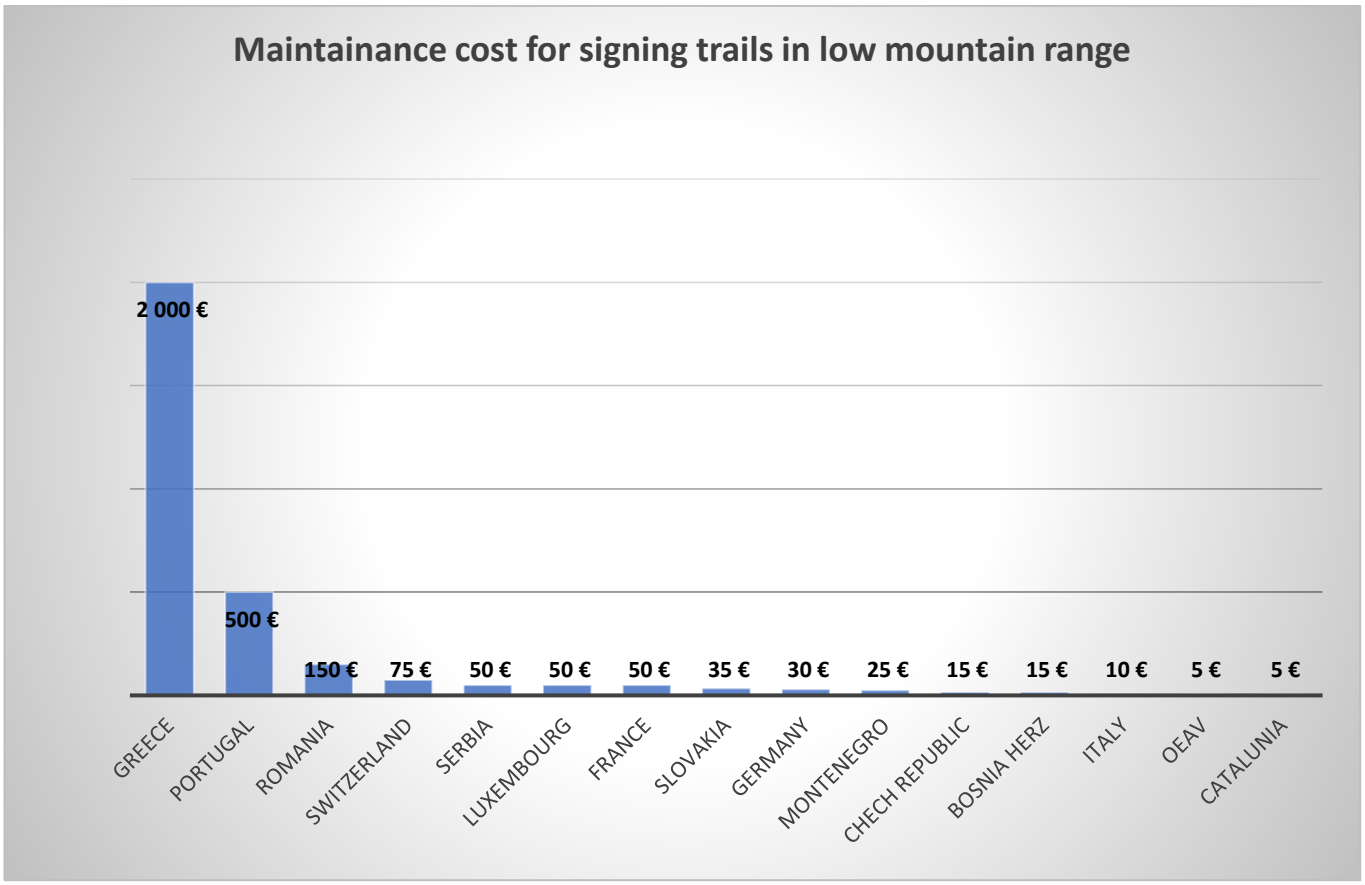
season). When doing this, damages are removed, paths are cleared, vegetation is cut, etc. Though, sometimes not all of the organisation's trails can be checked within a certain period. The Schweizer Wanderwege e. g. also evaluates the information on damages and responses given by hikers to be aware of where repair work is necessary.

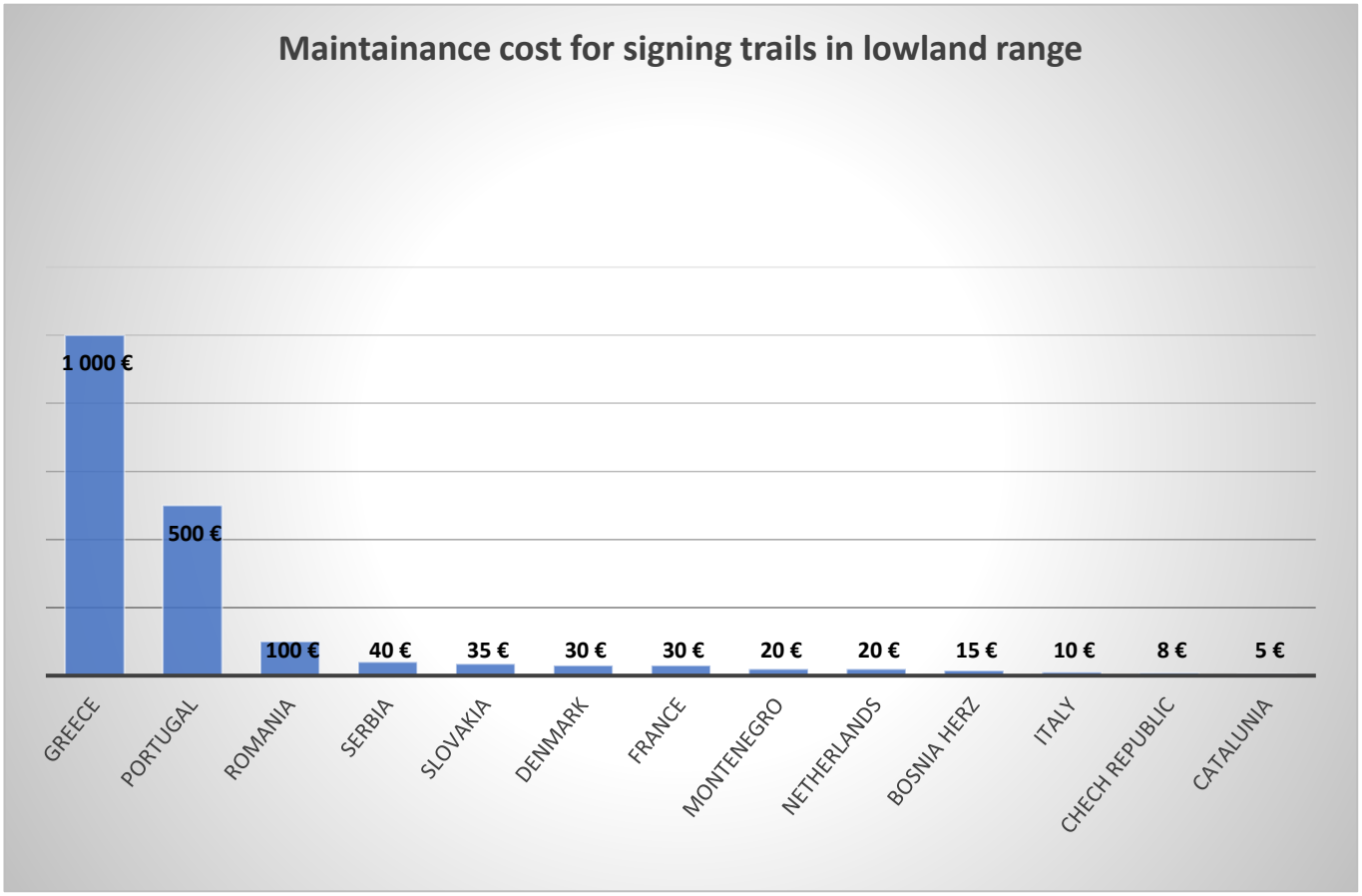
6.2.20 What are the average annual costs to maintain the signs and signposts of trails?

There is a quite big variance concerning the average annual maintenance costs for signs and signposts. 12 organisations name their costs in the mountains and 15 organisations in low mountain range regions. For the lowlands, 13 organisations answered this part of the question. Answers to this question are hard to compare because the organisations have different approaches to this topic, some do not even have data. Others have very precise data as, for example, Switzerland. As maintenance is often carried out by volunteers, personnel costs cannot be numbered. Others receive budget from the state or do the maintenance only when needed.



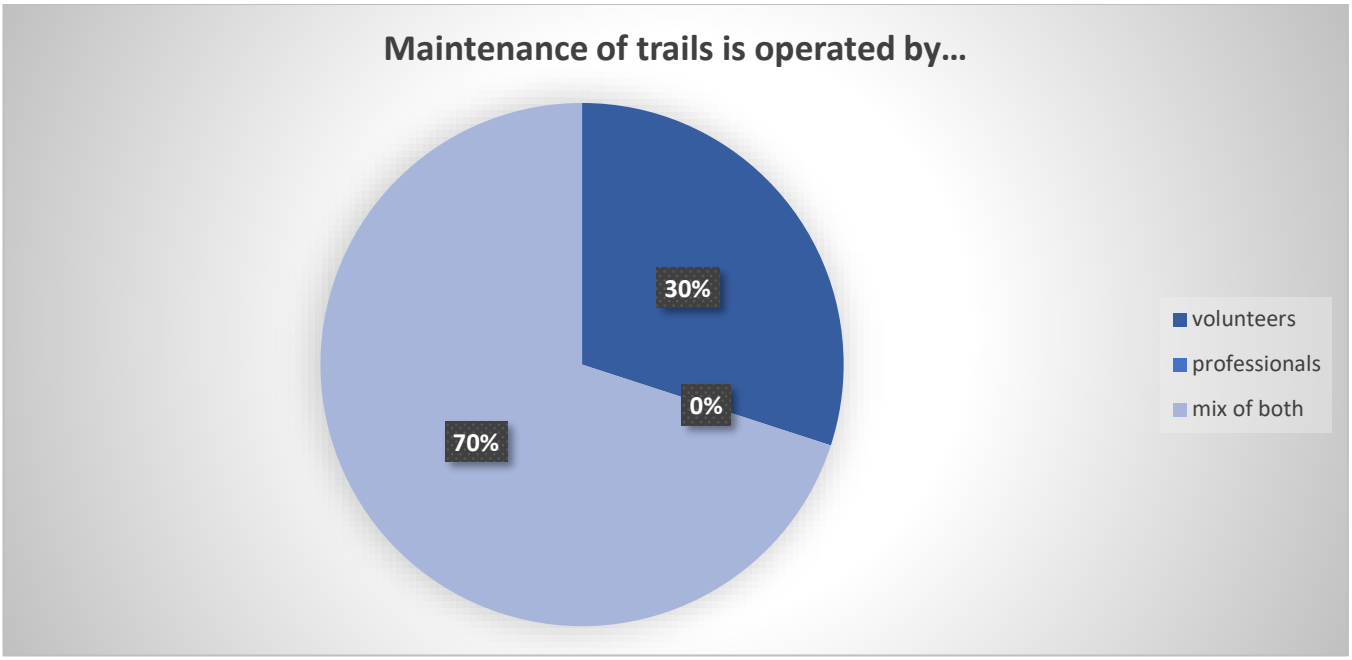



Maintainance cost for signing trails in low mountain range
2 000 €
500 €
150 €
75 €
50 €
50 €
50 €
35 €
30 €
25 €
15 €
15 €
10 €
5 €
5 €
GREECE
PORTUGAL
ROMANIA
SWITZERLAND
SERBIA
LUXEMBOURG
FRANCE
SLOVAKIA
GERMANY
MONTENEGRO
CHECH REPUBLIC
BOSNIA HERZ
ITALY
OEAV
CATALUNIA


Maintainance cost for signing trails in lowland range
1 000 €
500 €
100 €
40 €
35 €
30 €
30 €
20 €
20 €
15 €
10 €
8 €
5 €
GREECE
PORTUGAL
ROMANIA
SERBIA
SLOVAKIA
DENMARK
FRANCE
MONTENEGRO
NETHERLANDS
BOSNIA HERZ
ITALY
CHECH REPUBLIC
CATALUNIA

6.2.21 Is the maintenance of trails done by volunteers or professionals?

The maintenance of the trails of ten organisations is performed exclusively by volunteers. None of the organisations surveyed state that only professionals perform the maintenance. 23 organisations have a mix of volunteers and professionals for the trail maintenance. There is a special training for the different steps of trail maintenance in some organisations such as the Alpine Association of Slovenia, for example. The workload of the volunteers can be named by some organisations and must be seen in relation to the number of volunteers. If work is too difficult or special skills are needed, it can also be outsourced in some cases.



6.2.22 Are costs of maintenance and creation of new trails covered by public funding?

Six organisations negate the question about costs being covered by public funding. The costs are fully covered by public funding at six organisations. However, most of the organisations (22) get their costs of maintenance partly covered by public funding. The percentage of coverage varies though. It reaches from 5 - 98%, the average coverage is about 43%. There exist some conditions for covering the costs by public funding and it can depend on the location of the trail or other parameters, whether costs are covered or not. Some organisations have special funds to finance the maintenance, too.

6.2.23 Does your government recognise trails as important infrastructure component for tourism and sport for all, provides sustainable livelihood for the local community?

There is a great deal of contradiction in this matter. In most cases the countries´ ministries consider hiking trails as an important structure for territorial development. On the other hand, many say recognition should be compatible with action and steps be taken towards their support, which is not the case. Organisations are making efforts but the response from the government and the institutions is very weak. A law is strongly claimed in the countries concerned.
An exemplary approach is Switzerland, whosesurvey shows hiking as the most popular sport by far (more than half of the population (56.9%) indicated hiking as one of their sports activities). The naming of hiking in % of the population has changed by 12.6 percentage points from 2014 to 2020. Hiking remains by far the most popular sport and leisure activity in Switzerland. The nationally applicable Footpath and Hiking Trail Law in Switzerland and the corresponding ordinances were created on this basis. In addition, there are also laws and ordinances on a cantonal basis, but these must not break with national legislation.

Yes:	No:	Yes and no	no answer:
27 (75 %)	8 (22 %)	ES	NL, SE

Country / region	Comments
AL	But earthquake and Covid are the most important
AT	It should be more appreciated
BA	It is recognised but not systematic
Cat	There is this recognition but there is still no official law
CH	There is a law concerning hiking trails
De1	Depending on the state, on country level minimum interest to trails
ES	Local and regional public institutions do identify the paths with health, tourism, and local sustainable development. But state public institutions do not
GR	Recognition should be compatible with action and steps taken towards their support, which is not the case in Greece
HR	Government supports through proclamations
IT	A law is strongly claimed by the FIE and by the National Climbing Association (CAI)
PT	The Portuguese State considers walking trails as important structures for territorial development
RS	Government does not recognize trails
SI	Not yet, regardless the law, in some cases from municipal budget
UK	Lobbying for this to be the case post Covid
Cat: Federació d'Entitats Excursionistes de Catalunya (FEEC) De1: Spessartbund e. V.	

6.2.24 Has your organisation to agree when new paths are created or changed?

Two thirds of respondents are not asked when a path is created or changed. Some of these countries try to legalize their regulations for marked trails. The problem is not only in changing the location of hiking trails, but especially in changing their surface. In practice, it often happens that the trails are paved under the mistaken assumption that this is desired. Hard flat surface (asphalt, concrete, etc.) on hiking trails is not only harmful to the health of the hiker, but also attracts cyclists and thus increases the risk of injury on both sides.
One third of respondents are involved in changes to their routes. For some of them this only applies to selected routes, European or National paths or otherwise certified routes.

Yes:	No:	Yes and no	no answer:
17 (53 %)	15 (47 %)	CZ, FIE	NL, SE

Country / region	Comments
AL	Organisation doesn't have this power by the law
BA	Through mountaineering regulations documents
BG	Trying to legalize our regulations for trails marking
Cat	It must be approved by all members of the Catalan Committee of Trails plus ratified by board of FEEC directors
CZ	Changing the surface of the routes is not discussed
ES	Only for trails marked with the GR®, PR® and SL®
GR	Only for EU or national paths
HR	HPS is the only one that can approve

HU	We are planning with legislation to create a system where we would be involved in this process
IT	CAI is strongly convinced not to further expand the path network, but to reduce it in order to better protect the mountain environment
IT	FIE may be involved in the general planning, in some circumstances
MA	The Law on Mountain Trails defines the obligations of the Mountaineering Association
MK	They rarely receive information regarding the new trails
PT	Federation as the regulatory body must always authorize (or not) when new GR®, PR® paths are created or changed.
RS	According to the articles in the Rulebook
SK	Organisation is authorised to manage database of marked trails network
Cat: Federació d'Entitats Excursionistes de Catalunya (FEEC)	

On the one side there are organizations, which manage what is related to new trails or trail modifications based on local legislations and/or their internal directives. On the other side, there are organizations reporting a lack of national regulations or a lack of internal regulations regarding the trail management.

6.2.25 Are the landowners and trail keepers exempt from liability when hikers hurt themselves by using trails?

Yes:	No:	Yes and no	no answer:
22 (61 %)	9 (25 %)	IT	DE, PT, HU, NL, NL1, SE

NL1: Stichting Wandelnet

Comments:

AT	Except wilful negligence
Cat	The owners of the land and those in charge of maintaining trails are excluded from any liability in the event of a user's accident
CH	According to the Swiss Federal Law on Footpaths and Hiking Trails (FWG), article 6, the cantons shall ensure that footpaths and hiking trails are built, maintained, and signed and that these paths can be used freely and as safely as possible.
Ch1	In Switzerland, for hiking, the principle of great personal responsibility is central to the practice of this leisure activity. In principle, the municipality is liable as the owner of the works.
CZ	The forest owner is responsible for his forest. Otherwise, trails lead mostly on public roads.
DE	Hikers and bicyclists use the trails at their own risk. DAV holds the liability on the trails. The landowners are exempt from liability. Otherwise, they would not agree to the use of their land by hikers. The DAV's liability on trails is limited to hazards caused by the failure of artificial structures as railings, stairs, bridges ...
De1	There are judgements of the federal court of justice (BGH) that clearly define the self-responsibility of users of the trails.
EE	In some cases, trail keepers are liable.
ES	The owners are exempt from liability, because the GR®, PR® and SL® trails run on public roads. There is also a responsibility of the "trail promoter" regarding the maintenance of the trail.
FR	In which region (geographically) is that trail network located
GR	Not if it leads to a shelter.
BA, HR, MK	Generally, everyone uses the trails at their own risk
IT	Yes, for public administration

LX	A state insurance for all trails nationwide should cover most damages
MA	The trails are used at the users' own risk. The use of unpaved trails is not recommended especially in the zone of national parks
NO	If we arrange the hiking routes in a dangerous way, we must take responsibility
PT	This issue raises complex legal problems. We can say that if the responsibility for the accident is due to inadequate maintenance of the walking trail, responsibilities may be added.
SI	If trails are maintained according to law. The Law also states that mountaineering trails are used on the hikers' own risk.
SK	Risk of injury during the hiking is personal risk of hiker
UK	Unless it is as a result of poorly maintained access furniture
Cat: Federació d'Entitats Excursionistes de Catalunya (FEEC) CH1: Berner Wanderwege De1: Spessartbund e. V.	

In general, hikers use trails at their own risk, and trail keepers and owners must properly maintain trails and property.
In some cases, public roads are applied for trails.

6.2.26 Are your trails in accordance with the European Green Deal and the Sustainable Development Goals?

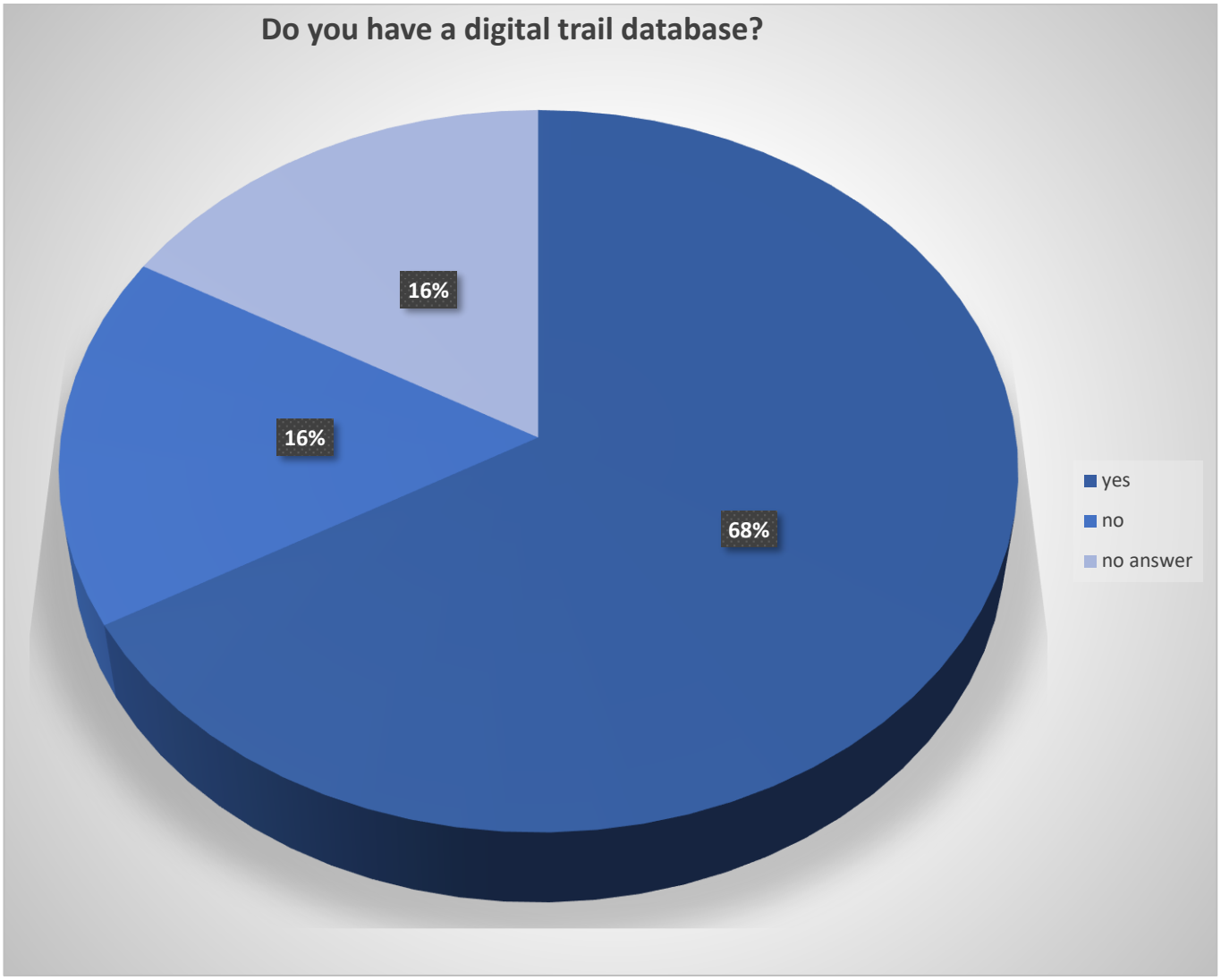
Yes:	No:	Yes and no	no answer:
20 (56 %)	9 (25 %)	ES	BE1, IT, DE, FR, MK, NL, SE

Comments

AL, NL1	We don't have this information
Cat	All approved trails must always use environmentally friendly materials and have their impact on the natural environment as little as possible
CH	Switzerland isn't a member of the EU.
EE,	I suppose
ES	It depends on whether the "trail promoter" follows the European Green Deal and Sustainable Development Goals
HR	Mountain trails are carried out in accordance with the general principles of nature and environmental protection. When tracing, building, maintaining, and preserving mountaineering trails, special attention is paid to the protection of nature and the environment
IT	We have no data on the question
LV	Those who are in Kemeri National Park are. It depends if there are but mostly only in National parks.
MA	Compliance was done with the Law on Mountain Trails, which is harmonized by the Government at the proposal of the relevant Ministry
PT	We highlight the program "Walk for your health and the health of the planet -Limit your impact when rambling: equipment, transport, food, and environment ", and the program "Mountain Activities –ecological footprint?"
RS	In general, yes.
Tra	Not all of them, in fact quite a few.
Cat: Federació d'Entitats Excursionistes de Catalunya (FEEC) BE1: Asbl Sentiers de Grande Randonnée Tra: Erdélyi Kárpát-Egyesület / Siaciateatea Carpatină Ardeleană / Transylvanian Carpathian Society	

In general, European Green Deal and the Sustainable Development Goals are not clear enough and most organisations cannot see their role in this proposal.

6.2.27 Do you have a digital trail database?



In most of the countries there are more or less developed databases. However, with the process of digitalization, further work is necessary for the full integration of the hiking trails. In some of the countries, there are no official databases by the state, but there are still some types of databases and path applications developed by various associations and individuals. If we talk about official databases of mountaineering associations whose main interest is mountaineering, only a few countries have systematized access to registered mountaineering trails with complete data, which are published on their websites. Some of the countries that use path databases are of different types and they are mostly paths that are promoted from a tourism standpoint and contain different data that are systematized with a different approach.

Comments:
Belgium: Asbl Sentiers de Grande Randonnée
We have a database in the cloud, and we offer web services like WFS and WMS.

BIH: Mountaineering Union of Federation Bosnia and Herzegovina
The mountaineering association does not have a digital network of hiking trails. Only individuals and different citizens' associations have digital trails which have free access.

Croatia: Croatian Mountaineering Association
Since 2013 the Register of mountaineering trails, mountaineering transversals, and markers in Croatia with accompanying contents, which is edited by the CMA is publicly available (https://info.hps.hr/putovi). There are currently 1,480 registered mountaineering trails. Their average length is 4.5 km, and the average altitude difference is 290 m. About 50 trails are missing in the Register, and 100 of them do not have complete data (GNSS track is missing). In addition, for now 4 trails that are not marked in the field with standard markings but are used exclusively with the support of satellite navigation (e-trails). In addition to data on trails, the Register contains other information of interest to the work of the CMA, such as persons trained for trail maintenance, inspection of transversals, etc. The Register also contains supporting contents and data that facilitate the work of the CMA. Two years ago, the public Interactive mountaineering map was made and offered to the public based on data from the Register. In addition to showing mountaineering trails, it also offers other interesting contents for hikers such as mountaineering facilities, information about transversals, mountain peaks, drinking water sources, caves, etc. (https://www.hps.hr/karta). It is worth noting that these applications are the result of the work of enthusiasts, mainly members and associates of the CMA, created and filled with data entirely by voluntary work without compensation. This reflects the approach of many people doing this socially useful work and represents a unique civilizational reach worth cultivating.

Czech Republic: Czech Tourist Club
Digital records and drawings - we provide these to municipalities with extended powers. We have records of recorded routes kept in an internal database system. Drawings in the OCAD system.

Germany: German Rambler´ Association / Spessartbund
A web-based application is used that supports management of the trail network. Routes, trail keepers, responsible volunteers, cost carriers and signposts are kept in this database.

Greece: Hellenic Federation of Mountaineering and Climbing Greece
In a few mainly local paths (GPS tracking: From Wikiloc).

Hungary: Hungarian Hikers Association
We got the right to register all the trails in the forests last year. So, a digital trail database is under development.

Italy: Italian Alpine Club
CAI is building a database of trails called Infomont. The individual sections are responsible for finding the GPS data for the areas of competence.

Italy: Italian Hiking Federation
We are developing a Database of E-paths in Italy and other FIE paths. An application both, for PC and smartphone will soon be available.

Latvia: Latvia Kurzeme Planning Region
We have the homepage baltictrals.eu, now there are 2 trails that cover 3 Baltic States.

North Macedonia: Mountaineering Federation of North Macedonia
Basic GPS tracks with short info are posted on www.planinarskipateki.mk. The database is not complete.

Norway: Norwegian Trekking Association
The website UT.no is a trip planner for everyone who wants to travel in Norway. For the mountains, in the woods and by the sea. Here you will find marked routes, tour suggestions, cabins, and destinations, as well as useful services that make it easier for more people to get out on a trip. UT.no is a service from the Norwegian Tourist Association, with content from a large number of other teams, organizations, municipalities and others that make it easier for more people to get out and about.

Poland: Polish Tourist and Sightseeing Society
We have approx. 90% of PTTK hiking trails digitalized. Almost 7,000 km are available for tourists on www map and mobile application.

Portugal: Portuguese Federation of Camping and Mountaineering
Our platform consists of a portal, a website and an APP (in several languages) that communicate with each other. The platform is based on web 3.0 technology, is the backbone of our system, allows communication between users (federated and non-federated), promoters, companies, government entities, emergency and rescue entities, among others. In face of COVID-19, the launch of the new system was postponed to 2021, as there is a whole communication strategy that involves advertising (video clips) on television, social networks, among other initiatives, to captivate national and foreign users.

Romania: Romania Alpine Club
There is an app “muntii nostri” with trails from the mountains. Also, some other digital sources.

Serbia: Mountaineering Association of Serbia
We have a digital database from the last several years. After control by MAS a trail is registered and it enters into the database. Work on it is continuous. One can see it with the link: https://pss.rs/planinarski-objekti-i-tereni/tereni/?tip=planinarski-putevi ;
The territory of Serbia is divided into 8 mountain regions. This division is the basis for trails signification.

Slovenia: Alpine Association of Slovenia
Alpine Association has a digital base with routes and attributes like keepers etc. At this moment, we are preparing new GIS called PlanGIS that will have even more information relevant for hikers. The trail network is also embedded in economic public infrastructure of Republic of Slovenia.

Spain: Federation of Hiking Entities of Catalonia
Any trail project, in order to obtain the homologation must provide the track of the same in computer support. We currently have the FEEC trail website (senders.feec.cat , where we provide all the tracks from the network of approved trails in Catalonia in four different formats (GPX / KMZ / PLT / TRK). The fact of providing these tracks from the FEEC, is synonymous with the fact that the track is correct, up-to-date and corresponds to what is signposted on the ground. We offer tracks for all GR®, PR®, SL® and GR-T®.

Spain: Spanish Federation of Mountaineering and Climbing Sports
There are two systems. The FEDME has a trail finder. There is a file for each trail where the gpx / kmz file can be downloaded for free. The route is presented on a map (orthophoto, topographic map and google); profile of the excursion; technical information (length, estimated time in two directions, highest point, lowest point, accumulated ascent difference, unevenness accumulated descent, if you are travelling through a National or Natural Park, if it is a European Path, etc.), the indication of the MIDE difficulty, two photos, the indication of elements of interest on the route, etc. Through a tab "More information" you go to the website of the regional federation where there is more information. The trails can be searched by location, by technical data, by elements of interest, etc. https://misendafedme.es/buscador-de-senderos/etapa/pr-av-9-camino-de-piedralaves Some regional federations have trail finders, in different ways. All the data in the FEDME are those that appear in the search engines of the regional federations or have been provided by these federations.

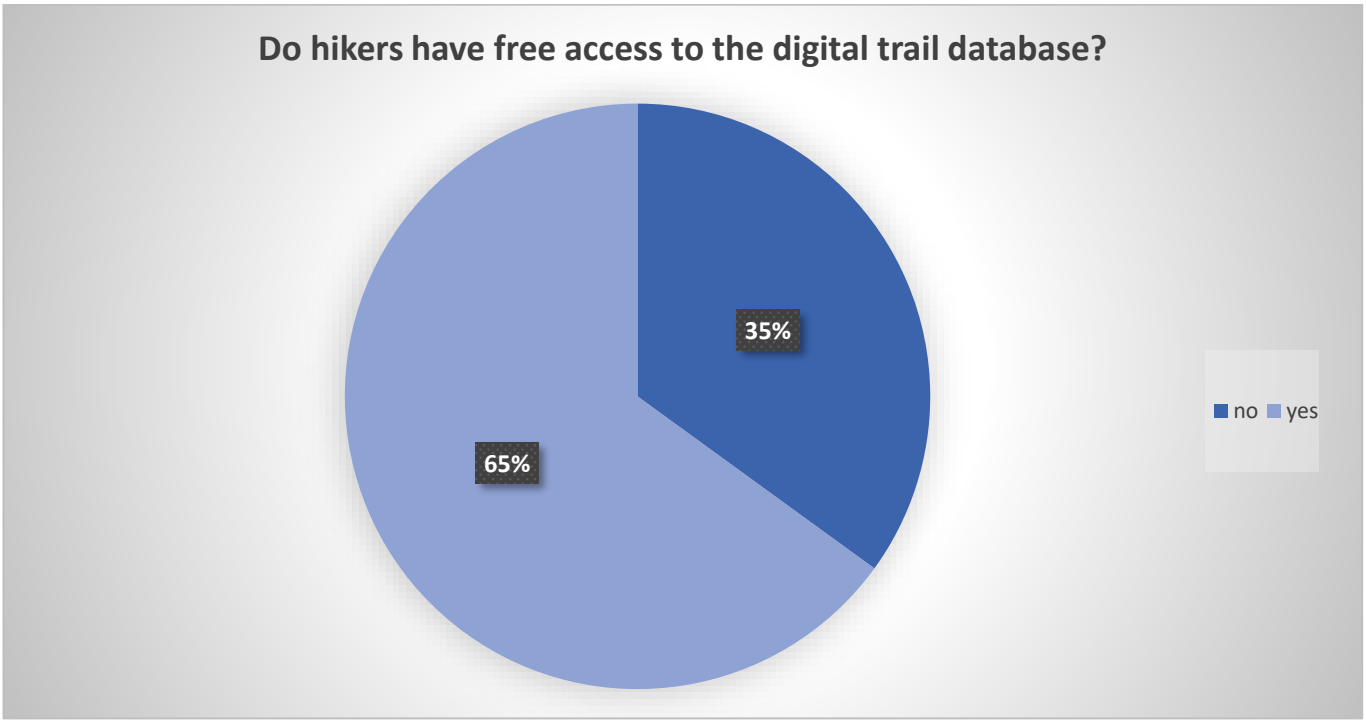
Switzerland: Berner Wanderwege
In Switzerland there are different data bases. In the Canton of Berne, we, the Berner Wanderwege (Bernese Hiking Trails Association), are the system operator of the platform GoWalk (administrative tool for route and signpost planning) and the municipalities and the Canton are users of the platform.

Switzerland: Schweizer Wanderwege

All officially signed hiking trails are shown on swisstopo. The date base is updated annually, if possible, for all cantons:
https://map.geo.admin.ch/mobile.html?topic=ech&lang=en&bgLayer=ch.swisstopo.pixelkarte-farbe&layers=ch.swisstopo.swisstlm3d-wanderwege&E=2609605.80&N=1103079.94&zoom=3&layers_opacity=0.8

Romania: Transylvanian Carpathian Society
The trails our members have hiked and tracked are stored in a database.

6.2.28 Do hikers have free access to the digital trail database.



In most of the countries, the access for free download of the hiking trails is provided in different types and formats. In some countries, however, these are not official sources offering that service, but are in close cooperation with providers that offer such services. However, in a small number of countries the digital database with hiking trails has not been implemented yet, but they are under construction. Part of the databases of the hiking trails are also located on commercial web portals where the access to the trails is possible upon payment of a certain fee.

Albania: Albanian Mountaineering Association
We do not have yet digital database. We are working on it.

Belgium: Asbl Sentiers de Grande Randonnée
Only GPX files on our website.

BIH: Mountaineering Union of Federation Bosnia and Herzegovina
The mountaineering association does not have a digital network of hiking trails.

Croatia: Croatian Mountaineering Association
Access to digital databases is free of charge. The only condition is that when publishing data from the Register, the source and date of download are stated. CMA have information that this data is used (and makes the appropriate financial profit) by travel agencies that guide tourists, individuals or associations that organise various long-distance walks, make detailed maps of individual areas with marked mountaineering trails and charge for their download,

etc. We know that some projects that used free data from the Register were realised and financed by the Erasmus Fund.

Czech Republic: Czech Tourist Club
The public does not have access to our internal databases, but they have access to the great www.Mapy.cz portal, with which we cooperate.

Germany: German Alpine Club
The trail database is a tool for tour-planning for a variety of mountain sports.

Germany: German Rambler Association / Spessartbund
There is no transfer of our records to publicly usable systems

Italy: Italian Alpine Club
There is a webpage under construction. https://infomont.cai.it/Sentieri/loader.html?ProjectID=CAI

Italy: Italian Hiking Federation
The trail database is a dynamic web-based application based on OSM data, enriched with a set of technical, touristic and historical and cultural information, easily maintained by people that does not have to be i.t. competencies.

Latvia: Latvia Kurzeme Planning Region
We promote the trail database in social media, tourism fairs and different events. All are welcome to use them.

North Macedonia: Mountaineering Federation of North Macedonia
Free access on www.planinarskipateki.mk. Download of the GPS and KMZ track is free and its official and certified trails from Mountain Trail Commission. The web page is not an official page of FPSM, and it is private financed.

Norway: Norwegian Trekking Association
The website UT.no is a trip planner for everyone who wants to travel in Norway. For the mountains, in the woods and by the sea. Here you will find marked routes, tour suggestions, cabins, and destinations, as well as useful services that make it easier for more people to get out on a trip. UT.no is a service from the Norwegian Tourist Association, with content from a large number of other teams, organizations, municipalities and others that make it easier for more people to get out and about.

Poland: Polish Tourist and Sightseeing Society
We provide to hikers data of approx. 15,000 km of trails of every kind (including 7,000 km of PTTK hiking trails) on the trail cyber platform: www map, touristic website and mobile applications.

Portugal: Portuguese Federation of Camping and Mountaineering
The system is free for all users (federated and non-federated), with the Federated having access to more options than the others.

Serbia: Mountaineering Association of Serbia
Hikers have free access to the database, without possibility to change it. The changes are exclusive right of MAS. Everyone can make remarks on the accuracy of database.

Slovenia: Alpine Association of Slovenia
Free access on internet to look at the routes and who are their keepers.

Spain: Federation of Hiking Entities of Catalonia
Yes, anyone has access to the information on the tracks on the FEEC trails website, but the option to download them is only enabled for those users who have the FEEC's annual federal sports license.

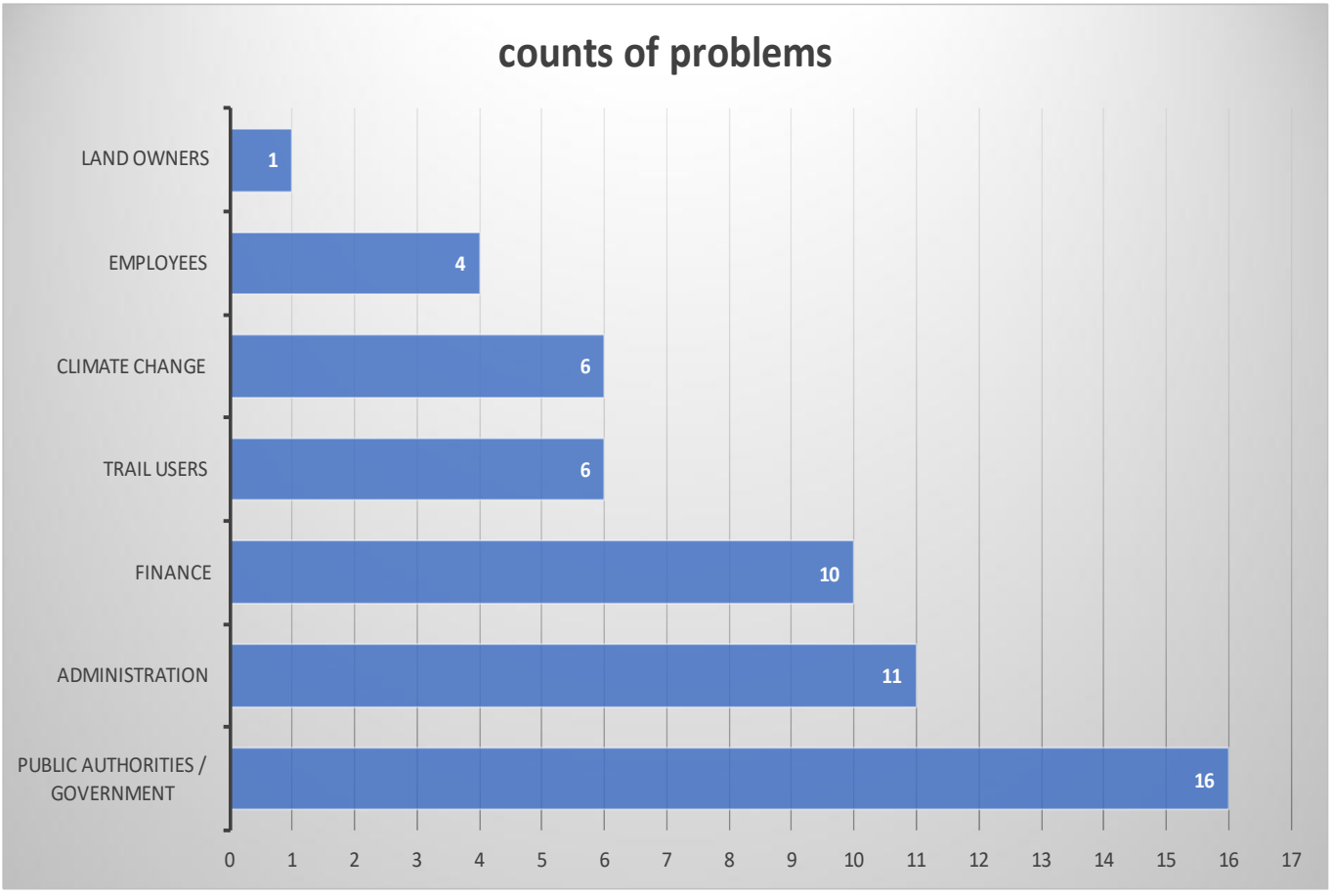
Spain: Spanish Federation of Mountaineering and Climbing Sports
Access is free for all hikers (whether Spanish or foreign). There is a FEDME policy that the trail finder has access from other websites; at present it is in the National Geographic Institute, in the Vías Verdes Foundation (trails on old railroad tracks) and on various websites of the regional federations.

Switzerland: Berner Wanderwege
There are various public planning tools such as wanderplaner.ch from the Bernese Hiking Trails Association.

Switzerland: Schweizer Wanderwege
Every person has access to the digital trail database, cf. question above. If someone asks for selected hiking suggestions, there are different providers that mostly charge fees for this service (e.g., via subscription).

6.2.29 Describe your main issues / problems in connection with your trails.

Our MOs were asked what they see as their main difficulties in managing their network of trails.
20 of them described their specific problem areas.



Authorities:
- Little involvement of public administrations.
- Inadequate legal status, faulty coordination and management by many bodies which causes overlapping of duties and responsibilities.
- Our plan and wish are to realise a law on mountaineering and hiking trails.
- This problem is the same as for construction of the new and maintenance of the existing trails.
- Unclear laws.
- Reducing the role of NGOs.

- Challenge is to get the authorities to approve the work.
- Insufficient support of state and local authorities for sustainable work of clubs.
- Insufficient equipment and professional training of expert commissions and clubs for the implementation of tasks and obligations determined by law.
- Legal restrictions under the Law on Sports (financing exclusively of sports activities).
- The line Ministries of Tourism, Planning and Spatial Protection and others do not invest enough effort, except declaratively, for the sustainability of the work of MAM on the issue of management, use and maintenance of resources in mountaineering (especially on the development of mountaineering infrastructure).
- Constant struggle for permeability of the landscape (insufficient legislation for the protection of marked hiking trails). Due to insufficient legislative protection of routes, the owner of the land can the route at any time (e.g., fences, plowing the route…).
- The approval of a new trail is difficult especially in the hill area and lowlands. The law is old, and the approval needs to be made with mountain rescue agreement. In the areas where we don't have mountains, we don't have mountain rescue for this approval and need to find other solutions.
- We don't have a central state platform for all the trails.
- No government support/strategy for extending and maintaining the trails, huts, refuge. Just local administration, and some projects.
- Main challenge is to get the authorities to approve the work. Hiking routes are very important for public health.

Administration:

- High administrative effort to certificate the annual inspection.
- For more of 50% of registered trails we have no GPS tracks.
- HPS has about 1/3 member societies and clubs that do not participate in maintenance of the basic mountaineering infrastructure - mountaineering trails.
- Challenge with the hiking routes is maintenance.
- The small number of clubs and the structure of club membership.
- Missing database
- No standards
- The main problem is the large number of kilometres that need to be maintained.
- There is not a single national contact person for the maintenance of paths because the responsibility lies at the regional level.
- At the European level, a harmonization of the protocols would be desirable.
- The biggest problem we face is to ensure the proper maintenance of the quality of the walking trails approved by the Federation.

Finance:

- Financing maintenance is a real problem.
- It is one of the key areas of countryside management that has seen its resources (both staff and money) be stripped over the past few years.
- It is not deemed an important area of work by the current Government and central funding has been cut dramatically.
- Lack of money, budget.
- No founding of maintenance costs
- Challenge with the hiking routes is economy.
- Sources and co-financing of MAM and clubs in the field of mountaineering are not defined at the state level in accordance with the adopted strategy.
- Financing (permanent and transparent) of international cooperation in the field of mountaineering MAM is not defined who is the holder.
- No funding by government.
- No funds availabie to complete our paths network.

Trail users

- More people are using the trails than used to do, so informing the public is also an important goal.
- The newcomers are not familiar with hiking culture in Slovenia, markings and how to use the marked trails (obligatory mountain wear, not using the shortcuts, taking the trash with you to the valley and recycling etc.
- Overtourism in certain regions causes damage to nature. We will put big effort into information and education, to make hikers aware of the vulnerability of nature. In addition, we will offer attractive destinations in less overrun regions.
- Heavy traffic at some hiking destinations.
- Bikers on hiking trails.
- Channelling traffic to the right places, heavy traffic at some hiking destinations.

Climate change

- Increasing frequency of natural disasters and erosion are a challenge.
- Climate change will increase damage to trails, through mudflow, rockfall or landslides. The decrease of glaciers will change the accessibility of summits. Some trails will disappear forever.
- Pressure from the environmental side on outdoor and recreational activities gets bigger regarding the NATURA 2000 area (1/3 of our forest) and other nature protection areas.
- Challenge with wear and tear.
- Another problem is climate change with increasingly frequent extreme weather events.
- Bark beetle calamity: the trees on which there are markings are disappearing.

Employees

- High fluctuation of employees.
- Lack of volunteer hikers to keep the signage with paint.
- It is increasingly difficult to motivate hikers to volunteer (free of charge) to maintain mountaineering trails.

Landowners

- Cuts or modifications of paths by owners or public administrations without warning and without creating an alternative route.

7 Overall summary

The existence of hiking trails is taken for granted by the population, as is their free use.
In times of pandemic, the pressure on users increases immensely, as hiking is one of the few leisure activities in the great outdoors that may still be practised. Hiking increases people's well-being and promotes their health.
However, hiking trails also offer the possibility to direct visitor flows and to protect our fauna and flora where necessary.
As a result of the survey, it can be stated that there are only few commonalities in the countries of Europe regarding hiking trails. These include the existence of a more or less closely meshed network of paths and the fact that this is always physically marked with signs and signposts.
The majority of the paths can be used free of charge, without special knowledge and do not require any special training or equipment.
In all other areas of trail infrastructure, there is a colourful diversity.
This begins, for all to see, with the type and system of waymarking. The information on the degree of difficulty or the quality of a hiking trail is also not uniform. This leads to considerable confusion when using long-distance hiking trails.
Among other things, there are no or different regulations on who is allowed to mark trails, how they are to be maintained and who is liable for damage while using them.
Trails are created in an uncoordinated way by all kinds of associations and their sustainability is insufficiently ensured. Also, there is almost no trail register in which all trails are listed with their basic data.
NGOs that try to counteract this with voluntary work receive inadequate support from the governments, neither legally nor financially.

7.1 Appendix

7.1.1 Budget for a 50km long hiking trail in Czech Republic

Budget for a 50km long hiking trail

ACTIVE FIELDS THAT CAN BE CHANGE	BLUE	LIGHT BLUE														
Length of the hiking trail in km	50													Exchange rate € k 16.2.2021		25,76
	LIGHT terrain					MEDIUM TERRAIN					HEAVY / COMPLEX TERRAIN					
Hiking trail	Entire route is new		Entire route is just a repair		Variation	Entire route is new		Entire route is just a repair		Variation	Entire route is new		Entire route is just a repair		Variation	
100 % = 50 km	100%	20%	100%	80%	20% + 80%	100%	20%	100%	80%	20% + 80%	100%	20%	100%	80%	20% + 80%	
PROJECT / specification of necessary supplies and works and negotiations with owners	256 667	51 333	73 333	58 667	110 000	303 333	60 667	86 667	69 333	130 000	350 000	70 000	100 000	80 000	150 000	
Work of destination management (securing financing, ensuring cooperation between cities and municipalities and obtaining grants)	214 400	214 400	214 400	214 400	214 400	214 400	214 400	214 400	214 400	214 400	214 400	214 400	214 400	214 400	214 400	
BUILDINGS	300 000	60 000	100 000	80 000	140 000	400 000	80 000	133 333	106 667	186 667	600 000	120 000	200 000	160 000	280 000	
Route furniture (rest areas,...)	140 000	28 000	70 000	14 000	42 000	140 000	28 000	70 000	14 000	42 000	140 000	28 000	70 000	14 000	42 000	
INFO. BOARDS 6x large, 6x small	180 000	36 000	66 000	52 800	88 800	180 000	36 000	66 000	52 800	88 800	180 000	36 000	66 000	52 800	88 800	
Small Information sings (services, sourc	39 000	39 000	39 000	39 000	39 000	39 000	39 000	39 000	39 000	39 000	39 000	39 000	39 000	39 000	39 000	
SIGNPOST (tourist information point)	32 500	6 500	16 875	13 500	20 000	32 500	6 500	16 875	13 500	20 000	32 500	6 500	16 875	13 500	20 000	
MARKING	25 000	5 000	17 500	14 000	19 000	25 000	5 000	17 500	14 000	19 000	25 000	5 000	17 500	14 000	19 000	
Route control (double control), est.	35 000	35 000	35 000	35 000	35 000	40 000	40 000	40 000	40 000	40 000	45 000	45 000	45 000	45 000	45 000	
TOTAL route without certification	**1 222 568**	**475 233**	**632 108**	**521 367**	**708 200**	**1 374 234**	**509 567**	**683 775**	**563 700**	**779 867**	**1 625 901**	**563 900**	**768 775**	**632 700**	**898 200**	
Price of 1 km route in CZK	24 451		12 642		14 164	27 485		13 676		15 597	32 518		15 376		17 964	
Price of 1 km route in €	949		491		550	1 067		531		605	1 262		597		697	
CERTIFICATION - LEADING QUALITY TRAIL - BEST OF EUROPE																
Certification - the work of a certifier + brand + promotion	75 103		75 103		75 103	75 103		75 103		75 103	75 103		75 103		75 103	
Certification - travel cost for 2 certifier	10 304		10 304		10 304	10 304		10 304		10 304	10 304		10 304		10 304	
Promotion	300 000		300 000		300 000	300 000		300 000		300 000	300 000		300 000		300 000	
TOTAL CERTIFICATION	385 407		385 407		385 407	385 407		385 407		385 407	385 407		385 407		385 407	
TOTAL route with cert.	**1 607 975**		**1 017 516**		**1 093 607**	**1 759 642**		**1 069 182**		**1 165 274**	**2 011 308**		**1 154 182**		**1 283 607**	
Price of 1 km route in CZK	32 159		20 350		21 872	35 193		21 384		23 305	40 226		23 084		25 672	
Price of 1 km route in €	1 248		790		849	1 366		830		905	1 562		896		997	

7.1.2 List of abbreviations used in this document

AL	Albania
AT	Austria
BA	Bosnia and Herzegovina
BE1	Asbl Sentiers de Grande Randonnée (SGR)
BG	Bulgaria
BIH/FBIH	Planinarski Savez Federacije Bosne Hercegovine Mountaineering Union of Federation Bosnia and Herzegovina
BTU	Български туристически съюз Bulgarian Tourist Union
CAI	Club Alpino Italiano Italian Alpine Club
CAR	Clubului Alpin Român Romanian Alpine Club
Cat.	Federació d'Entitats Excursionistes de Catalunya Catalan Mountaineering and Climbing Federation (FEEC)
CH	Switzerland
CH1	Berner Wanderwege Bernese Hiking Trails Association
CHS	Český horolezecký svaz Czech Mountaineering Federation
CMA	Hrvatski planinarske savez (HPS) Croatian Mountaineering Association
CUNI	Charles University Prague
CZ	Czech Republic
DAV	Deutscher Alpenverein German Alpine Club
DE	Germany
De1	Spessartbund e. V.
DNT	Den Norske Turistforening The Norwegian Trekking Association
DWV	Deutscher Wanderverband German Ramblers´ Association
EE	Estonia
EOOA	Ελληνική Ομοσπονδία Ορειβασίας Αναρρίχησης Hellenic Federation of Mountaineering and Climbing
ERA	European Ramblers´ Association
ES	Spain
EU	European Union
EUMA	European Union of Mountaineering Associations
FCMP	Federação de Campismo e Montanhismo de Portugal Portuguese Federation of Camping and Mountaineering
FEEC	Federació d'Entitats Excursionistes de Catalunya Federation of Hikers' Associations of Catalonia
FIE	Federazione Italiana Escursionismo Italian Hiking Federation
FPSM	Федерација за планинарство на Северна Македонија Mountaineering Federation of North Macedonia
FR	France
GPS	Global Positioning System
GR	Greece

GR®	Long distance hiking trail
HPS	Hrvatski planinarski savez Croatian Mountaineering Association
HR	Croatia
HU	Hungary
IT	Italy
KCT	Klub českých turistů Czech Tourist Club
LQT-BE	Leading Quality Trail – Best of Europe
LX	Luxembourg
m.a.s.l.	Meter above sea level
MA	Malta
MAM	Planinarski savez Crne Gore (PSCG) Mountaineering Association of Montenegro
ME	Montenegro
MK	North Macedonia
MO	Member organisation
MTB	Mountain-Bike
NGO	Non-Governmental Organisation
NL	Netherlands
NO	Norway
OeAV	Österreichischer Alpenverein Austrian Alpine Club
PR®	Short distance hiking trail
PSS	Planinarski savez Srbije Mountaineering Association of Serbia
PT	Portugal
PTTK	Polskie Towarzystwo Turystyczno-Krajoznawcze Polish Tourist and Sightseeing Society
PZS	Planinska Zveza Slovenije Alpine Association of Slovenia
RO	Romania
RS	Serbia
SAC	Schweizer Alpen Club Swiss Alpine Club
SDG	Sustainable Development Goals
SE	Sweden
SI	Slovenia
SK	Slovakia
Tra	Erdélyi Kárpát-Egyesület Transylvanian Carpathian Society
UK	United Kingdom

ERASMUS+ project

"EUMA - improvement of good governance of climbing and mountaineering in Europe"

No. 612970-EPP-1-2019-1-CZ-SPO-SCP

✓ Trails Definition

Co-funded by the Erasmus+ Programme of the European Union

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Trails Definition

Walking, hiking and mountain trails are footpaths of public interest for the purpose of walking, running or climbing, are located in any kind of landscapes, are visible and clearly recognisable in the terrain, and are physically marked and signposted.

In Europe, walking, hiking and mountain trails are part of the network of trails under the umbrella of one of the two European NGOs: the European Union of Mountaineering Associations (EUMA) and the European Ramblers' Association (ERA).

FINAL VERSION

Approved by Erasmus+ WG for trails on 25th of April 2022 and revised on 18th of May 2022.
Modified on 23rd of June 2022 by Erasmus+ WG for trails according to agreed comments from "1st Analysis Report of Erasmus+ project (WG trails)".
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ERASMUS+ project

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✓ **Walking, hiking and mountain trails – EUMA and ERA recommendations**

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Walking, hiking and mountain trails – EUMA and ERA recommendations

MISSION:

Walking, hiking, and mountain trails are supporting infrastructure for different kinds of outdoor sports (in particular walking, hiking, running, or climbing) and eco-tourism.
EUMA and ERA

- stand for freedom of access to walking, hiking and mountain trails in a responsible manner as a fundamental right,
- promote responsible walking, hiking, and mountaineering (in particular for nature protection and safety in the mountains) that balances the interests of the walkers, hikers, and mountaineers with the requirements of a prudent use,
- promote walking, hiking, and mountaineering as fundamental contribution to cohesion in Europe,
- promote sustainable development for rural areas and guarantee the provision of decent ecosystem services for the human welfare and the healthy lifestyle.

VISION:

EUMA and ERA strive

- to promote walking, hiking, and mountaineering as important part of outdoor sports and eco-tourism,
- to achieve freedom of access to walking, hiking and mountain trails in a responsible manner in all Europe,
- to include walking, hiking, and mountaineering in European Union priorities as an important factor of a good quality of life,
- to raise awareness of the EU that walking, hiking and mountain trails are important supporting infrastructure for different kinds of outdoor sports and eco-tourism,
- to raise awareness of the importance of a wide network of walking, hiking and mountain trails across Europe, proper maintenance, and appropriate promotion for use of this infrastructure in a responsible manner.

EUMA and ERA recommendations for walking, hiking and mountain trails:

1. Trails are of public interest for the purpose of walking, hiking, running, or climbing.
2. Users should have free access in a responsible manner (only restrictions regarding nature protection or for safety reasons could apply).
3. Trails should be visible and clearly recognisable in the terrain and physically marked and signposted.
4. Trails should exclusively serve for users on foot except where use by others is explicitly allowed, in that case, users on foot have priority.
5. Trails (especially starting points) should be connected to the public transport system where possible.
6. Trails should avoid sealed roads which should not exceed 20% and put a focus on a recreational/sport value.
7. Other organisations should use walking, hiking and mountain trails for their purposes only with permission of the trail keeper and/or responsible institution.
8. National or regional governments should
    a. define trail keepers and a responsible institution on national or regional level,
    b. arrange co-financing of costs of the creation of new trails and costs of regular maintenance of existing trails by public funding,
    c. define exemption of liability for the landowners and trail keepers on national/regional level when users hurt themselves by using trails,
    d. recognise trails as an important infrastructure for outdoor sports, nature protection, and eco-tourism,
    e. promote how to increase the self-responsibility of trail users.

9. The responsible national institution should
    a. align trails with the local, regional, and national legislation,
    b. define standards or recommendations on national level,
    c. maintain a digital trail database,
    d. organise meetings, conferences, or trainings for trail keeping experts at least once per year,
    e. promote how to increase the self-responsibility of trail users.
10. Trail keepers should
    a. inspect the condition of trails and waymarking at least once per year (if possible, in spring or early summer),
    b. maintain trails and waymarking if the need is indicated by inspection,
    c. present a report at least once per year to the responsible institutions,
    d. promote how to increase the self-responsibility of trail users.

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ERASMUS+ project

"EUMA - improvement of good governance of climbing and mountaineering in Europe"

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✓ **Trail Maintenance**

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Trail Maintenance

Focus on some key aspects of the process

8 Introduction

Organizations affiliated with ERA and EUMA often maintain a network of trails. This maintenance can generally be divided into ordinary (periodic) and extraordinary maintenance, i.e., for the improvement of infrastructure on the trails or to deal with damage caused by atmospheric or catastrophic events.

The aim of this document is to give general indications on legislative principles that associations should promote in their country as well as recommendations on how a trail maintenance activity could be organized. It gives indication of procedures that determine measurable activities which can predict budgets for future maintenance.

For example, once the typical cost items have been identified, a cost factor per km of trail network can be calculated and used to estimate the budget required for its maintenance.

Material requirements are to be considered separately, which, especially in the case of Via Ferratas, can have a major impact on economic requirements. It is suggested to carry out extraordinary maintenance in specific projects as will be described later in this document.

9 Terms definition and abbreviations

9.1 Trails

Walking, hiking, and mountain trails are footpaths of public interest, for the purpose of walking, running or climbing, located in all types of landscapes, visible and clearly recognizable in the terrain, and are physically marked and signposted.

In Europe, walking, hiking and mountain trails are part of the network of trails under the umbrella of one of the two European NGOs: the European Union of Mountaineering Associations (EUMA) and the European Ramblers' Association (ERA).

9.2 Ordinary maintenance

Ordinary maintenance of a trail includes all those activities aimed at clearing the pathway from leaves, dry branches, stones, brambles, and small trees that have fallen or grown back on the pathway and so on. All activities, therefore, that can also be carried out with the help of simple gardening tools such as a rake, branch shears, hacksaw and pruning shears for example. Tools, moreover, that need neither a license nor special experience to be handled; ordinary maintenance activities include the renewal of trail markers.

9.3 Extraordinary maintenance

Extraordinary maintenance of a trail, on the other hand, refers to all those activities aimed at restoring the site of a trail, or its viability, even with the aid of specific tools/machinery which may require a license to be handled, such asshovels, chainsaws, brush cutters, vibrating plates, earth moving machines or agricultural machinery. Extraordinary maintenance includes the replacement of signposts on the trail.

10 General legislative principles.

Regardless of the differences in various national practices, there are some general principles that should be present in any legal framework regulating the design, use, maintenance, and management of trails:

- The right of free access to natural habitats should be established and guaranteed, especially:
  - woods and forests
  - alpine pastures
  - rock faces and high mountain trails
  - wasteland
  - floodplains
  - riparian zones
  - cultivated areas
- Subject to the necessary safety conditions, the free use of the same resources must be guaranteed for horse-riding and driving in non-motorized vehicles. In the case of mixed use, pedestrians should have priority.
- A specific regulation should be formulated concerning the design, use, maintenance, and management of trails (including supporting facilities, such as rest areas, camping areas, bivouacs, shelters, information points and generally everything related to the tourist or recreational use of trails), whether it is organizations' strategy as an internal regulation or preferably local/state law
- A suitable commission for the approval of new trails, trails or any organized and/or equipped nature trails (via ferratas, adventure trails, etc.) must be clearly identified.
- Once new trails are included in public infrastructure, the obligation for owners to tolerate signposting and the passage of hikers along their properties must be defined.
- Criteria for the design of the hiking network should be clearly defined (including marking rules, rules for collecting technical and historical cultural information, rules for assigning a scale of technical difficulty to trails etc).
- Public and 'official' repositories for storing the technical data of the trail network must be set up, those responsible for entering and updating the data must be identified, and procedures to ensure that data is up to date must be established.
- Training should be provided for trail maintainers and way an person wo are involved in trail maintenance and way marking so that they can meet precise requirements for suitability.
- The requirements for organizations involved in the design, management and maintenance of trails must be clearly identified. These criteria form the basis for assessing and awarding maintenance and/or infrastructure management contracts. Organizations with an environment vocation and a vocation for the conservation of the territory and the historical and cultural heritage should be preferred.
- The rules for allocating maintenance funds must be defined according to precise spending rationales, (for example: hourly reimbursements, reimbursement of travel expenses, fixed quotas per km of newly marked or maintained trail, logistical and administrative support, etc.).
- A budged for trail maintenance should be funded from public funds.
- Out-of-pocket expenses for the purchase of material such as signposts, directional arrows for crossings and material for the construction of via ferrata routes should be financed separately. All funding should be provided based on a detailed cost plan from the organizations responsible for trail management and maintenance. Principles of transparency in the allocation of funds should be clearly defined in regulations and maintenance contracts. It is advised that funds for special expenses should be awarded if a detailed plan is presented.
- The organizational structure of personnel engaged in trail maintenance should be clearly defined.

11 Tasks carried out by the maintenance organization.

There are several tasks that should be carried out by the maintenance organization. These tasks form the basis of the organizational process from which the planning of ordinary and extraordinary maintenance activities derives. It is strongly recommended that all extraordinary maintenance activities be carried out in specific projects, in which the objectives and activities necessary to achieve them are established, financially estimated, and planned over time, with a precise allocation of resources.

An example of typical activities related to routine maintenance is given below:

- Maintain trail signs,
    - replace missing or damaged trail signs
    - clean if necessary
    - clear the view to trail signs (cut the vegetation)
    - additional check if hikers give notice to unclear routing
- Check of trail conditions periodically (once a year) and after damaging weather or geological events report damages of signposts.
- Clear overgrown trails.
- Temporarily close the trail if trail surface is impassable.
- Report damage of trails infrastructure (picknick rests and tables, shelters...).
- Communicate with communities, governments, nature park associations, local action groups (LEADER).

Extraordinary maintenance can consist of various improvements, for example to improve trails safety, traceability (replacement of signposts, additional signs, the construction, or repair of infrastructure such as bridges, bivouacs, steel cables, iron rods and other equipment to facilitate upward movement) and planning and marking of new trails.

12 The organizational process:

Generally, the association/organization (body) that maintains the trails copes with typical organizational processes that lead to the identification of certain roles and consequently the typical expenses of the activity, to be distinguished between current/recurring and extraordinary expenses.

Key activities affiliated with trail maintenance:

1. The organization proposes itself as the maintainer of the network of trails to receive an explicit mandate which may be exclusive or shared with other associations.
2. The organisation analyses and identifies its scope of operations, liaising with any other parties with whom it shares maintenance activities. At this stage, it sets up a land register, preferably a computerized one:
    a. of each individual trail forming the network, categorizing them according to some rational criteria that will be useful in drawing up the maintenance plan. The attributes that should be included in the survey:
        i. the identification number/name of the trail
        ii. locality/territorial area
        iii. trail keeper
        iv. length
        v. technical difficulty
        vi. type of waymarking (paints, signposts etc.)

vii. quality level [102]
viii. georeferenced information (route of the trail, type and location of individual signs and signposts)
ix. the type of trail surface,
x. any infrastructure such as wooden bridges, fences, handrails, etc.

b. Personnel database (with information on individuals in the organizational structure and their roles):
i. Reference person who can intervene in the various marking and maintenance activities, possibly geographically close to the places of intervention. These should be the territorial contacts for inspection and intervention activities. The Maintenance Manager, who will act centrally as project leader for the individual activities, (drawing up the ordinary and extraordinary maintenance plan, assigning the budget, collecting information from the various process players to compile the reports to be sent to the client.
ii. Area Coordinator - If the area of intervention is exceptionally large, area coordinators report to the project leader on the progress of the activities, described in the ordinary and extraordinary maintenance plan for the trails.
iii. Materials warehouse manager.
iv. Administrative and accounting support staff.
v. Information Technology specialists.

c. Of the material and instrumental goods available to local maintenance contacts
d. The technical and functional documentation of the trails, including periodic reports based on the annual activity reporting document to the client.

13 The Tools and documents used in the organizational process

Usually, an organizational process requires the use of tools and documentation to support it, here are some suggestions:

- **Cadastre of Trails**
  It is the principal database, containing, all the paths that form the network. For each one, useful technical data and, in particular, the gpx track and georeferencing of the signposts and markers are available.
- **Master Database**
  It contains the master and contact data of all personnel involved in the maintenance activity as well as the stakeholders of the activity.
- **Accounting Programme**
  This is the programme in which all costs related to the administration and maintenance activities of the organization are managed and documented.
- **Warehouse management programme**
  This is the programme in which the loading and unloading of materials necessary for the organization's activities, in particular trail maintenance activities, is managed.
- **Work Protocols**
  Individual maintenance activities are governed by certain protocols that provide a mode of engagement (usually through work orders) and a mode of activity reporting (usually through work reports)
- **Work Order**
  Individual/team order containing the maintenance task to be done, typically issued by the Central or the Area Maintenance Manager
- **Work Report**

[102] It is useful to define criteria for the quality of the trail according to the completeness of the signposting, the presence of services, and historical or cultural emergencies. For more information, please refer to the other project documents.

For each maintenance activity, the individual or the team of territorial contact persons, report on the activity carried out, including the condition of the trail, the travel or accommodation costs incurred, and the hours of work required to complete the activity.

- Annual report for the client
  This report summarizes all the activities carried out during the year, specifying the costs incurred and any extraordinary maintenance to be carried out on a project basis.

14 The roles involved in the organizational process

The number of organizational roles assigned within the process depends essentially on the size of the trails network, that is on the extent of the maintenance necessary.

For example, if the network of trails is very extensive, it will be necessary to divide it into areas. For each area there will be an Area Maintenance Manager with the task of coordinating and reporting on activities to the Central Manager. Whereas, if the network is relatively small, it may be sufficient to have a Central Maintenance Manager with the task of coordinating and reporting activities.

The main organizational roles that might be required by the process are described below.

14.1 Central Maintenance Manager

He/she is the reference figure for the entire waymarking and maintenance process and is responsible for drawing up the ordinary plan and any extraordinary maintenance plans, to be shared, prior to start-up, with the geographical area contacts, if any, or with the territorial contacts.

He/she collects the technical information needed to obtain funding for the activities from the commissioning body. He/she produces evidence of expenditure and integrates the reports produced by individual teams into a single document to be delivered periodically to the commissioning organization.

As project manager, he/she coordinates and monitors the execution of the work plans together with the geographical area contacts, to be able to intervene in case of problems and delays.

Meetings are suggested at the start of the activities and intermediate work progress, to be planned as needed.

14.2 Area Maintenance Manager.

In cases where the maintenance perimeter is geographically wide, it is useful to have Area Maintenance Managers who functionally report to the Central Maintenance Manager with whom they have the same tasks and responsibilities on a local level.

14.3 Territorial contacts

These are the people at the grass-roots level who are responsible for marking and maintaining the trails, receiving the necessary material, and planning the activities which they will carry out expertly, organizing themselves into maintenance teams.

They will inspect the condition of the trails at least once a year, if possible, in early spring, and take action to make them passable and restore any missing signs.

They keep a record of their travel expenses and working hours, in a maintenance logbook, and at the end of each maintenance session they draw up a report showing the expenses incurred, the hours worked, the needs encountered, the work carried out, any needs to relocate the trail in the event of landslides or other.

Special events such as the relocation of a trail, or a major rehabilitation of the road system, should be dealt with by drawing up an extraordinary intervention plan. This includes, for example, the total renewal of signposting that some organizations carry out every three years for trails marked with paint and not with metal markers.

14.4 Person Responsible for the material goods warehouse

He/she oversees storing material provided by the commissioning body, tools and other material goods that are needed by the maintenance teams.

He/she keeps accounts of stock entries and exits, drawing up a report on material requirements once a year, based on historical usage data. He/she is necessarily involved in the drafting of any extraordinary maintenance plans that could lead to greater consumption of material than planned.

14.5 Administrative and accounting support figures

They are responsible for the proper maintenance of accounting records, which are useful for producing the year-end profit and loss statement.
They support all others in carrying out activities within their own competencies.

14.6 Information Technology specialists

The cadastre of trails, the administrative and accounting activities, have an important impact in terms of the Information Technology needed, it is therefore necessary to have one or more support figures who can take care of the IT equipment available to the association in terms of software licenses and hardware devices.
They functionally report to the Central Maintenance Manager.

15 Activities resulting from the maintenance process

Some of the possible activities resulting from the analysis of the organizational project are described below. For each one, the type of remuneration is indicated. It is essential, for each activity, to measure the number of hours that were needed to carry it out, which is documented in the document "Report of hours worked".

In the case of out-of-pocket expenses, travel, accommodation, purchase of material, it is essential that these are documented.

Once the value of an hourly wage has been assigned, it is possible to obtain the total spent by adding up the amounts of all the hours worked and the necessary out-of-pocket expenses.

The ratio of total expenditure to total km of the footpath network provides an expenditure rationale that can be used for the maintenance budget request, for example:
If the trail network is 100km long and the final cost per km will be 30€, the budget to be requested will be: 1000km * 30.00€ = 30,000€, to which must be added the budget for the purchase of material to be obtained separately.

This metric makes it easy to put a value on the maintenance of newly established trails: take the average cost per km and multiply it by the kilometres of new trail.

For each activity, the potential roles involved, the input data used by the activity, the output obtained at the end of the activity, a proposal of documents to be drafted in each activity are indicated.

#	Activities	Roles involved	Input	Output	Documents / Product data	Type Cost
1	Definition of the maintenance perimeter	Maintenance Managers, client	Maintenance agreement, any maps and other descriptive data GPX tracks, Georeferencing of markings and signs	Organized data that can be uploaded to a trail register	Technical data sheets for individual trails Ratio of hours worked by figures involved	Hourly wage
2	Establishment and uploading of the trail register	Maintenance Managers, IT specialists, Regional contacts	Technical data sheets for individual trails Personal data of persons with roles	Data uploaded to the trail cadastre, including details of people involved in the activities	Trail network Data trails for classification criteria e.g.: geographical area, difficulty type Ratio of hours worked by figures involved	Hourly wage
3	Division of the maintenance perimeter	Maintenance Managers	Master data and skills of maintenance personnel	Maintenance project charter	Register of resources with assigned competences, roles and tasks Hours worked report	Hourly wage
4	Drafting and sharing of the routine maintenance plan and appointment of roles	Maintenance Managers Regional contacts	Data from footpath cadastre	Activity plan with estimated effort and costs per hourly wage and estimated expense reimbursement	Gantt chart Work Breakdown structure Cost Breakdown Structure Hours worked report	Hourly wage
5	Drafting of any extraordinary intervention plans	Maintenance Managers Regional contacts	Data from footpath cadastre	Activity plan with estimated effort and costs per hourly wage and estimated expense reimbursement	Gantt chart Work Breakdown structure Cost Breakdown Structure Hours worked report	Hourly wage
6	Setting up and managing the materialand tools	Material goods warehouse manager. Administrative	Material and equipment purchase documents	Stock journal. Opening stocks at year-end	Updated warehouse, Register of inventory entries and exits	Hourly wage

	warehouse	and accounting support staff			Report Hours worked	
7	Allocation of material assets to maintenance teams	Maintenance Managers, Regioinal contacts, Material goods warehouse manager.	Activity plan with estimated effort and costs per hourly wage and estimated expense reimbursement	Delivery of material to teams	Delivery notes for material Warehouse stocks Hours worked report	Hourly wage
8	Annual inspection and maintenance of trails	Maintenance Managers, Regional contacts,	Activity plan with estimated effort and costs per hourly wage and estimated expense reimbursement	Trail safe and passable by users	Maintenance reports and future needs. Final Hours worked Travel Expense Reimbursement Sheet	Hourly wage and Reimbursement of expenses. Reimbursement of mileage
9	Any extraordinary maintenance work	Maintenance Managers, Regional contacts,	Activity plan with estimated effort and costs per hourly wage and estimated expense reimbursement	Path safe and passable by users	Maintenance reports and future needs. Final Hours worked Travel Expense Reimbursement Sheet	Hourly wage and reimbursement of expenses. Reimbursement of kilometres travelled
10	Controlling and monitoring project activities	Maintenance Managers, Regional contacts,	Report on maintenance work and future needs, Report on working hours and travel expenses	Up-to-date status of works, possible corrective actions	Periodic progress reports. Hours worked report	Hourly wage
11	Periodic accounting closures	Maintenance Manager, Administrative and accounting support staff IT-Specialist	Periodic progress reports.	Reimbursement accounting movements and updating of balance sheet data	Periodic accounting progress reports Hours worked report	Hourly wage
12	Sending activity reports to the client	Maintenance Manager, administrative and accounting support figures	Periodic progress report Periodic accounting progress reports	Single document per client containing the activities carried out and the accounting cash flow	Periodic document for the client Hours worked report	Hourly wage
13	Next year's maintenance	Maintenance Manager,	Periodic documents for	Schedule of preventive	Document for budget request,	Hourly wage

	budget request The final cost per km incurred by the association is calculated	administrative and accounting support figures IT-specialist	the client	expenditure Estimate of hours worked Estimate of material assets needed Net maintenance cost per km.	contains needs calculated by net maintenance cost per km multiplied by the network of trails and apart from the budget necessary for the purchase of material goods. Hours worked report	

15.1 Focus on types of costs and their use for budgeting

It is strongly recommended to keep an account of the costs incurred during the maintenance activity. Having an effective administrative management is not only useful to manage maintenance activities well, but it could also be used to build rationales or indicators to be used in estimating new maintenance or simply to plan it correctly in terms of time and budget needed.

The subject of rationales/indicators is very broad; below, by way of example, just a few possible indicators are described, certainly not exhaustive.

15.2 For maintenance activities

The activities outlined in the previous paragraph give rise to three different types of costs, which together can pay for the work carried out by the various process roles; the people who perform the roles may be professionals or volunteers, and depending on this status, adjustments will have to be made to what is outlined below, immediately applicable to volunteer staff.

In the cost analysis below, we consider the maintenance of a trail which is 35 km long (Trail Length), 50 km away from the maintenance team's headquarters (Trail Distance) requiring 15 hours of total work (Effort), with the need to eat a packed lunch and stay overnight in a hotel (Accommodation Cost).

1. All work done can be measured in hours, the sum of the hours taken to complete a task is the Effort. To obtain an economic value it is necessary to establish an hourly wage, which multiplied by the Effort determines a first cost of the same, for example if the hours worked are one hundred and the cost per hour is twenty-five euros we will have: **15h*25.00€ = 375.00€** (**Effort Cost**)
2. In fact, to carry out maintenance activities it is often necessary to travel to the entrance of the trail by means of transport, normally a reimbursement per km is established, for example 0.35€/km, so if the total distance travelled is 50 km, round trip, we will have **100*0.35€ = 35.00€ (Travel Cost).**
3. As the maintenance activity is lengthy, the staff incurs expenses for food and accommodation; these will have to be considered in addition to the previous costs. Let us assume, for example, that we have 8.00€ for a packed lunch and 45.00€ for half-board accommodation. The cost that will be reimbursed will then be **8.00€ + 45.00€ = 53.00€ (Accommodation Cost).**

At this point we can calculate:

- **Effort Cost + Travel Cost + Accommodation Cost = Total Activity Cost** i.e.
  375.00€+35.00€+53.00€ = 463.00€ (Total Activity Cost)

- **Total Activity Cost / Trail Distance = Partial Cost per km** i.e.
  463.00€ / 35 Km = 13.22€ which rounded up to the next whole number becomes 14.00€ (Partial Cost per km)

It is very useful to have the maintenance teams draw up a sheet listing all the activities carried out, the critical points encountered, any needs for improvement and, of course, the representation of the values of

- Effort Cost
- Travel Cost
- Accommodation Cost
- Total Activity Cost
- Partial Cost per km

15.3 For administrative/accounting support activities

Generally, for all human activities it is always possible to calculate the Total Activity Cost in terms of the sum of Effort Cost, Travel Cost and Accommodation Cost.

It is essential to keep track of the costs of the activities because the final objective is to calculate the value of a parameter that we will call **Total Cost per km** that will be used to request the budget necessary for maintenance and to estimate the economic impact of the extension of the maintenance perimeter, for example with the addition of more km of trails.

The calculation is very simple, on the one hand we have the sum of all the Total Activity Costs of the activities carried out during the year, without distinguishing between specific maintenance activities and support activities. On the other hand, we have the value of the total length in km of the trails maintained.

Their ratio will determine the Total Cost per km:
SUM (Total Activity Cost) / SUM (Trail Length) = Total Cost per km.

Assuming that the Total Cost per km is 30.00€ per km, if we were asked to estimate the maintenance cost for a trails network having a length of 1000 km we would have **1000 km*30.00€ = 30,000.00€.**

15.4 Other Budget Items

It is suggested that the issue of tools, consumables and signs be dealt with separately. In this case, metrics using average values lose their effectiveness, as they may be inadequate on the downside for cases requiring heavy intervention and inadequate on the upside for cases where there is no major consumption of material.

In this case the geo-referencing of all the signs on the trail, including the signs, is helpful as this is a necessary parameter for calculating the materials required, for example: I am asked to replace all the signs at the crossings of a trail, as I have their geo-referenced position, I can know the number in advance. If I ask for a cost estimate per sign, my requirements will be given by the cost per sign multiplied by the number of signs.

Geo-referencing of markings and signs is useful in countless cases, for example to estimate the time needed to repaint all the markings: If the average time to repaint a sign is more or less 6 minutes and there are one hundred signs along the trail, I will calculate that the total Effort will be 600 minutes, i.e., 10 hours.

Obviously, we will also be able to anticipate the cost of the Effort since knowing the value of an hourly wage we will obtain the Effort Cost given by 10h * 25.00€ = 250.00€.

This is particularly important when it comes to the replacement of a steel cable along a via ferrata, where the calculation of the maintenance effort and the precise cost of the material requirements are of vital importance.

16 Focus on documents/data produced

In the proposed organizational process example, there are tools, supporting documents that use data that are collected and stored for future use.

The following is a small overview of what could result from the adoption of a process for the routine maintenance of trails. Technical data sheets for individual trails.

Starting from the technical data repository, detail sheets are produced containing the technical data of each trail, or section of trail, subject to maintenance. A data sheet will contain important data such as length, technical difficulty, number of markers used, number and types of signs, including positioning coordinates. On this sheet, the name of the maintenance team to which the trail or section of trail has been assigned is normally specified.

It is useful to have one or more note fields where particular needs or criticalities of the trail can be reported.

16.1 Ratio of hours worked by figures involved

For each process activity carried out, the person/role who carried it out reports the number of hours spent on it. This is a fundamental value for measuring the effort used for activities that are strictly relevant or that assist maintenance. The **Total Cost per km** is calculated based on the total hours spent.

16.2 Trail network

It represents the fundamental data for maintenance activities, it must be complete with all the fundamental technical data, so that it can be used to produce data sheets that are assigned to specific work teams.

This amount of information is preferably stored in electronic format, so that it can be easily navigated with data analysis tools.

16.3 Register of resources with assigned competences, roles, and tasks

It contains the biographical information, skills, and abilities of each individual maintenance person.

16.4 Gantt chart

It is a diagram showing activities along a time axis, including dependency relationships between individual activities, and is generally used in project management because of the intuitive way in which it can be interpreted.

16.5 Work Breakdown structure (WBS)

It is the decomposition of the project into atomic activities, the responsibility for the execution of which may be assigned to a team or a single resource.

16.6 Cost Breakdown Structure (CBS)

It shows the allocated budget and the actual costs for each of the atomic activities identified in the WBS; together with the WBS, it is a frequently used diagram in project management.

16.7 Delivery notes for material

The maintenance teams receive the material and tools needed to carry out maintenance from the warehouseman. Each of these assignments is documented in a material delivery note. It is the responsibility of the maintenance teams to record the use of the material and to communicate the stock at the end of the year to the warehouseman.

16.8 Warehouse stocks

The stock of material and tools is established by knowing the number of units present at the beginning of the activities (initial stock at the beginning of the year), withdrawal of material or tools is noted, reducing the initial stock). Supplies of new material or instruments, in the same way, are noted, increasing the stock. The records of all entries and exits constitute the Stock Entry and Exit Journal.

16.9 Maintenance reports and future needs

At the end of each activity, the maintenance team draws up a report summarizing the restoration or maintenance work carried out, indicating any critical points or points of attention that may require additional action.

16.10 Travel Expense Reimbursement Sheet

This is a report of the expenses incurred by the team members to travel to the maintenance point or to stay overnight if the activity cannot be completed during the day.

It may be integrated in the maintenance report or constitute a separate document, chosen by the maintenance organization depending on the complexity of the network to be maintained.

16.11 Periodic progress reports

This is a summary report on the progress of maintenance work, drawn up at a frequency agreed between the Maintenance Manager and the client. For its preparation, meetings are scheduled in person or online between the managers and the maintenance teams.

16.12 Periodic accounting progress reports

This is the economic and financial view of the periodic progress reports, which is necessary to promptly identify any deviations from the budget allocation that require corrective action.

16.13 Periodic document for the client

It may be prepared and provided at the same frequency as the Progress Report documents, or it may be provided at a different frequency, depending on the agreement between the maintenance organization and the client.

16.14 Budget request document

Before the end of the year, based on the costs incurred and the calculated cost indicators, the budget request document for the following year is prepared for the maintenance contractor. The more accurately costs and requirements are monitored, the more precise and accurate the budget request document can be.

It should be kept in mind how material and tools will impact on the planned activities, as these cannot be effectively traced to a cost-per-kilometre concept. With regard to material, it should be noted that there is a start-up cost for maintenance activities given by the purchase of tools (e.g., brush cutters, shears, brushes) and consumables such as paints, screws, etc. Obviously, with use, these tools will wear out and the consumables will run out.

The assessment of the need for tools and material is the responsibility of the Warehouse Manager together with the Maintenance Manager.

17 Conclusions

The contents of this document will need to be calibrated against the local, regional, and national regulations in which the organizations find themselves working, so it cannot be considered exhaustive.
Its aim was to encourage the use of systemic approaches and to use metrics to ask the respective funding bodies to provide the necessary funding for the maintenance of the trail network, which in our Europe is increasingly becoming an economic driver for the territories it traverses.

ERASMUS+ project

"EUMA - improvement of good governance of climbing and mountaineering in Europe"

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✓ **Responsible use of Trails**

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Responsible use of Trails

1. **PREPARE YOURSELF BEFORE EACH WALKING ACTIVITY**
   Check maps, trail difficulties and conditions, weather & daylight conditions.

2. **USE ONLY PROPERLY MARKED TRAILS**
   Use only properly marked trails with proper signposts and signs, respecting current trail conditions.

3. **NEVER LEAVE WASTE BEHIND**
   Never leave waste in nature; carry it with you to the trash bin.

4. **RESPECT AND PROTECT THE NATURE**
   Respect and protect flora and fauna of the trail environment, you are a guest in the animals' home.

5. **WALK IN THE MIDDLE OF THE MARKED TRAIL**
   Walk in the middle of the marked trail, and avoid walking on its edges for your security and the trail protection.

6. **NEVER TAKE SHORTCUTS**
   Never take shortcuts out of the trail. It can be very dangerous for you and can cause erosion.

7. **REPORT DAMAGES ON THE TRAIL**
   If you notice damages on the trail, please inform the responsible organization.

8. **LANDOWNERS**
   Respect the landowners, remember that you are a guest on someone's property.

9. **PERSONAL SIGNS/SCRATCHING IS FORBIDDEN**
   Leaving personal signs, graffiti, stickers or wood carvings on the trail is strictly forbidden.

10. **CAMPING**
    Be sure to camp and make fire only where it is permitted.

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✓ **Training programme for experts (on the European level)**

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Training programme for experts (on the European level)

Objective what we want to achieve during this session	Achieve the sustainable trail management
What is the rational explaining why	• Climate changes lead to troubles for the trail maintenance, we need proper strategies in order to overcome these challenges in the future • Nature protection through clearly indicated trails (waymarked) which keep hikers on the trail and prevent them from destroying nature by wild hiking • Through the proper trail management system we ease the conflicts between different stakeholders, especially between hikers and landowners which foster free access
Requirements for participants is any expertise / experience required? Do they have to read/prepare in advance?	• The participant should be responsible in the national trail management system • If the assocation does not have a trail management system it would be necessary to send the future or at least a permanent staff member of the national federation
Methods applied What methods will be used?	• Secondary literature research • Individual presentations • Group work • Best practice sharing • Secondary literature research • Focus groups • Group presentations and counter presentations • Brainstorming • Problem based approach • Outdoor activities • Local inspection walk
Materials and technics needed handouts, forms, specialized presentation device ….	• Fact sheets • Handouts • Evaluation form • Feedback questionnaire • Methodology catalogue
Outcome Summary, recommendation etc.	• Recomondations for a sustainable trail management system • How to set up a database • How to install a maintenance cycle with a semi-volunteer approach • Summary is given by participants
Recomended Agenda **For next meetings on Trail management**	**1.** Welcome note **2.** Presentation of current situation with rotating focus points, e.g. legal rights, methodology, assisting tools, new inventions **3.** Working groups **4.** Results presentation **5.** Synthesis of results **6.** Deduction of recommendations and best practice of measurements

	7. Practical outdoor activity – walking, mountaineering ….. **8.** Presentation of personal perception and identification of theoretical approaches on the practical example **9.** All over summary and outlook for the next topics to be discused

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✓ **Training programs on national level - examples**

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Training programs on national level - examples

Educations and seminars for volunteers involved in trail keeping activities at Klub českých turistů (KČT)

Waymarking has a unified system that is covering the whole area of the Czech Republic.
The waymarking has existed in the KCT since 1889, the contemporary waymarking with four colours has been used since 1916. The award-pin „Walker – trail-marker" has been available since 1958.

Waymarking of trails:
Part of the qualification system is training and further education of trail-markers, which is essential and has a significant impact on both, the permanent maintenance and improvement of their knowledge and on their stabilisation (low fluctuation). The trail-marker qualification system contains all the conditions for acquiring and maintaining qualifications and determines the methods of training and further education.

5 levels of trail-markers:

I. **Trained trail-marker - assistant to the head trail-marker**
at least 15 years of age; at least 10 km under the guidance of the head trail-marker

II. **Head trail-marker**
- waymarking of new trails and renewal of waymarking of existing trails, installation of directional signposts, maintenance of supporting elements (generally done together by I. or II. level)
- at least 18 years of age, active for at least one year; completion of training and successful completion of examinations; continuous renewal of qualification once per year, at least once in five years is required

III. **Trail-marker - technician**
- manages and performs technical work in the field - installation and maintenance of supporting elements, installation of hiking maps, installation and replacement of directional signposts
- at least 18 years old, active for at least one year; completion of training and successful completion of examinations for level II. + III.; continuous renewal of qualification once per year, at least once in five years is required

IV. **Trail-marker – Instructor**
- provides methodological and organizational work, especially at the regional level, carries out marking inspections; after specialised seminar, he/she also participates in the relevant activities at KČT headquarters
- at least 20 years old, active as a head trail-marker for at least two years; completion of training and successful completion of examinations, training focusing mainly on methodological and organizational work at the regional level

V. **Trail-marker – central instructor**
- Not a higher level, but a methodological and organisational function. The central marking instructor is one of the most advanced and experienced marking personnel involved in the KČT waymarking committee at a national level, in its entirety of marking activity, but especially in the organisational and methodological field
- a continuous activity in waymarking for at least 5 years is mandatory

Training = 2 weekends; Framework programme :
- Theory (17 hrs. in total): First aid and work safety; marking material; tools; marking of walking trails; equipment of marked trails with information elements; marker topography; marking orders and reports on the work carried out; classification of marking in the Club; organisation of marking; legal protection; construction of the network of marked trails; registration; maintenance systems; implementation of changes to the course of marked trails; qualification; walker-marker badge.

- Practical training (15 hrs. in total): marking of walking trails, equipment of marked trails with information elements, marker topography, marking orders and reports on the work carried out; examinations
- no special training programme available for the creation or maintenance of the construction elements on the trail – this work is done by volunteer trail-markers for a small fee, in case of bigger constructions, the work is done by a professional company

A qualification as a trail-marker is mandatory at least once in five years, otherwise it causes a loss of qualification. Function-independent trail-markers are informed once or twice a year about any new developments in marking methodology and the results of revisions and inspections at all levels, with emphasis on the description of defects, and an explanation of how to prevent the occurrence of these defects.

Possibility to waymark a temporary trail– only for special events.
Special education is focused on the waymarking and behaving in the National Park, in bird protected areas etc.
The waymarking must be done in both directions, except for the educational trails – they can be waymarked in one direction.

Trails maintenance:

New trails:

- proposed by a head trail-marker or a higher level on any existing paths
- approved by the regional waymarking committee
- agreement with landowners
- waymarked by the head trail-marker and implemented with supporting elements by the trail-marker – technician, construction elements done by volunteer trail-markers or by professional company
- the final new trail is drawn on KCT maps (1:50,000) and on mapy.cz

Repair/maintenance of trails:

- repair of construction elements done by volunteer trail-markers or by a professional company when needed
- regular maintenance of the waymarking and signposts takes place every three years

German Alpine Club (DAV) and Austrian Alpine Club (OeAV) Training Model for Trails

Basic conception:
In general, there is no regular conceptualized education program for the maintenance of mountain trails and also no standards which would apply to the construction of mountain trails. Nevertheless, the DAV and OeAV provide a set of different training measures which help the trail keepers to perform their task.

Seminar:
Precisely because there is so much to consider, it is important for the trail keepers to have an overview of the framework conditions in their area as well as special area knowledge. To meet these requirements, DAV and OeAV offer their trail keepers a joint trail keeper seminar every year.
Background information and basic knowledge are conveyed in a series of lectures. Experienced experts will talk, for example, about alpine path construction, marking and signage or safety on the construction site. Discussions will follow the lectures. The important part is also the exchange of experiences among the participants.
Seminars offer a handbook that brings together diverse challenges the trail keepers may face during their trail maintenance. The topics are:

1. Introduction
   (History of alpine trails, meaning of working on trails and volunteering, Work areas, Different concepts of trails at both associations and regions, Different types of trails, Mountain hiking: A risk assessment)
2. Geography of the Alps
   (The basics of geography, Nature protection and protected areas, Climate change and its consequences for mountain trails)

3. Inventory and maintenance of the trail network
   (The tasks of the sections, Geographical information system)
4. Project management
   (Project description, Work schedule, Transportation and Logistics, Calculation, Funding, Multi-year planning, Grants)
5. Organization of work
   (Cooperation, Special projects of the association on national level, Training and knowledge transfer, Trail communities)
6. Building techniques
   (Routing, Tools, building materials, building regulations, Marking, Signposts, Trail construction, Anti-erosion measures, Bridges, steps and passages, resting places, Iron rope and stepping aids)
7. Law and liability, insurance
   (Law on trails, Liability of trail keeper/owner, Traffic safety obligation, Trail closures, Jurisdiction, Insurance protection in the alpine clubs)
8. Safety at Work
   (Scope of labour protection regulations for sections, risk assessment, occupational health and safety, protective equipment and work clothing, emergency management)

Academy program:
The Alpine associations also offer interesting courses for trail keepers in their academy programs, mainly in the field of nature conservation and for the construction of safety ropes etc.
More options:

- External courses can also be useful for trail keepers. For handling a chainsaw, for example, a training is mandatory.
- It is best if a trail keeper who is leaving office trains his/her successor.
- Another good opportunity to pass on important experience is when an experienced trail keeper acts as a mentor for newcomer in a neighbouring section.
- With the development of a trail database in which events and activities are entered an archive of trail maintenance will be created in the long term.

Target group
All organizations that have an interest in having access to a well-functioning network of trails in the mountains (for example sections of Alpine Clubs, municipalities, tourism associations, National Park administrations, mountain railways, local gastronomy/hut tenants/alpine communities, mountain sports organizers/mountain guides etc.)
In any case, the prerequisite for participation is that all participants agree and identify with the goals of the Alpine Clubs.

Source: Wegehandbuch der Alpenvereine, 2011, Deutscher Alpenverein, Österreichischer Alpenverein, München und Innsbruck

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✓ Chapter IV - Management of Rock Areas Analysis

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Chapter IV - Management of Rock Areas Analysis

Foreword

This study was prepared as part of Erasmus+ Programme for EUMA (European Mountain Association) in a project **Improvement of good governance of climbing and mountaineering in Europe**. The participating members are all historically important climbing nations and their national associations, namely Slovenia (PZS) – rock areas group leader, Austria (OEAV), Germany (DAV), Czech Republic (CHS) and Northern Macedonia (FPSM), with additional intellectual input from CUNI (Charles University Prague) and ERA (European ramblers association).

While the whole project also consists of mountain trails and huts, the rock areas part is by far the most complex, complicated and under-developed. However, this is not the first such study, project or initiative. During our work we relied a lot on experiences from US-based **Access Fund**, UIAA Access Working Group and on Brigitte Hanemann's paper **The sustainable management of climbing in Europe**, finished in 2000. We also analysed many other studies from Europe and the world.

Despite some extensive preliminary studies, which provided a lot of in-depth analysis and strategies, we have to start our mission with one sentiment: the times are changing. Climbing community is growing each year. The sport is more popular than ever. There have been changes to socio-demographic profile of climbers, their approach to climbing as sport and activity, and to their mobility. While most of conclusions from previous studies are relevant even today, and there is no need for much re-thinking of their proposed strategies, they often share one major flaw, namely lack of impact. A lot of times their case studies represent older crags, whose genesis was drastically different from today's development, or crags that are losing relevance in the face of modern tourism-oriented approach that is going on in Spain, Greece, Croatia and other countries.

One important difference in this project is the involvement of EUMA, which will be a make-or-break stakeholder for our work. But I feel this is a responsibility and a challenge they will be happy to accept. If EUMA can become a relevant body, which represents all climbing community on a broader scale and is accepted as such by national associations, there is a great potential for lasting positive impact in management of rock areas.

Thus, our job is to prepare a platform for EUMA, to be used, developed and improved in the near future. A platform of good practices, theories, analysis of past research and current situation, of knowledge, models and strategies to work on. We will try to keep it simple and open. Simple because we are dealing with a complex subject where it is hard to think in absolutes and many definitions and ideas will inevitably overlap. Open because we have to keep an eye on the future and prepare a platform for all European nations and their associations, who need to embrace EUMA as their relevant representative.

This will not be an easy job. The main limitation being the fact that the core group does not consist of all the important European federations. We intend to include them at many points in the research process and will welcome all opinions and suggestions to make this paper as broad and usable as possible, while we also hope they will be motivated to contribute to EUMA in the future. The goal is not to enforce any vision upon already established models, but to try to find common denominators and provide assistance and information where it is needed. We will try to take into the account many different approaches to issues, different national laws and traditions.

This illuminates another problem, which we also encountered within our working group. We had fiery discussions on many subjects ranging from bolting, tourism, restrictions, ethics and similar, which only highlighted how differently some countries approach certain issues. Along with that, the levels of involvement of group members varied vastly from high enthusiasm to low involvement and ignorance. Management of rock areas is a fairly new phenomenon, especially from a broad, nation-wide perspective. Some countries simply lack specialists in this area as they prefer their work to be hands-on, like bolting new routes rather than dealing with a wide array of problems either because they don't yet exist or in hope they will simply go away. If experience taught the "older" climbing nations anything, is they almost never do. Only controlled, deliberate and responsible management can assure a bright future to the rock areas.

We will try to compile a pool of knowledge that has potential to grow in size and importance. But, more importantly, in relevance and pro-active involvement. So far, Europe is far behind in organisation and involvement compared to US or even UIAA initiatives. The way to reach the goals is long and difficult but ultimately necessary. I hope that we can add at least a small piece of mosaic of sustainable co-existence with many stakeholders of rock areas with this study. After all, we are investing in our future.

Jurij Ravnik

Introduction

Climbing is one of the **oldest human activities**. Scaling mountains and overcoming vertical challenges is present throughout human history. Usually the motivation for this activity was derived from **exploration, science and conquest**. Around the end of 19th century the climbing activity gained in prominence as an **adventurous activity**, which slowly started to shift towards more sporting aspects as opposed to conquering mountain peaks. At first this activity was practiced on shorter walls and boulders as **training for mountaineering** but during the 20th century it became objectively more challenging and physical while at the same time safer and more approachable. This trend kept evolving and differentiating into modern disciplines like **sport and trad climbing**, **bouldering** and **competition climbing**, becoming widely available sport for everyone.

Today the climbing activity is well recognized and established in the world. With the rise of popularity, many new challenges and issues emerged. Foremost, rock climbing mostly takes place in nature, so as an **outdoor sport** it has to include certain considerations about **nature protection**. Unfortunately, as with all human activity, we realized this retroactively, when we began to encounter problems or when we started to lose elements of natural environment.

The birth of sport-oriented climbing, detaching from mountaineering, historically often corresponds to some **rebellious**, non-conformist, anti-materialistic ideas and movements, like beatniks and hippies in USA, punk movement in UK and similar ideas throughout Europe. These movements were not inherently negative and often advocated some nature protection, but were mostly driven by young generation, very disorganized, focused on adrenalin, sporting achievements and freedom and contributed to somewhat negative early impression of climbers. Climbing was usually the sole focus of these groups with **little concern for local population**, nature and management. This led in certain cases to bolting sensitive areas without permission, illegal camping and at times disturbing behaviour (stealing, leaving trash, being noisy). Some old climbing centres like Buoux in France faced serious **overcrowdedness** with climbers outnumbering local population 10 to 1. Conflicts were inevitable and it led to some closures and bans throughout Europe.

Despite such cases being rare, they were widely publicized and led to an **early stigma of climbers** (in that period at times warranted) as unwelcome, disrespectful guests, bringing little money and many problems. It has to be said, that along with problematic areas there were also those, who embraced climbing early and started to promote and manage it. Some areas in France or Arco in Italy have overwhelmingly positive experiences with climbers, who revitalized the regions into **outdoor-sport-oriented tourism**. Later this concept was embraced further in Spain and Greece who had the benefit to come to the scene later with less negative preconceptions.

A lot of areas today are paying the price of this early stigma. **The profile of an average climber has changed drastically** as the sport and its practitioners grew up. Today, an average climber is well educated, high-income tourist, seeking well maintained area with local experiences and comfort.

Public image of climbing is also steadily improving as it has become a **serious competition sport**, recently joining the Olympics family. Due to improved safety standards and many climbing schools it has become accessible to everyone, from small children to elderly population, top athletes and people with disabilities. It is a recognized sport as well as light recreational activity.

While this improved perception of climbing in public sphere, it also brought another element, **overcrowdedness**. The number of people climbing outdoors (especially in sport climbing and bouldering) is rising every year. These numbers are welcome and are not alarming, however the need for **sustainable management of rock areas** is today even greater due to increased impact. There are many ways to address these issues.

Climbing community has inherently **good ethics and values**, originating from mountaineering, and most practitioners feel strongly positive about nature protection and respect for local population and traditions. However, this is irrelevant if the community is not **properly informed** about restrictions and guidelines and is not offered infrastructure to practice their activity in non-obtrusive way.

We also have to realize that **ethics** need to be ingrained further into climbing culture and not take it for granted. The community needs to be able to **self-regulate** and the ethics need to be constantly promoted to assure this. This is especially important in the face of the new phenomenon, where many climbers **transition to outdoor climbing from climbing gyms**, often lacking in this education.

As Europe (and the world) is becoming more and more **connected**, with travel getting easier and cheaper, the influx of foreign climbers – tourists are both a blessing and the curse for local communities. Only proper management of rock areas can ensure that the positive impact is maximized and it outweighs the negative one.
The aim of this paper is to **research the climbing situation in Europe**, provide definitions and different impact climbing can have, compile a list of issues and solutions and offer guidelines and models for successful management.
Climbers need a **voice in Europe**, a voice that understands that certain regulations and restrictions are necessary to both manage the crowds, preserve and maintain the areas and protect the natural habitat and avoid conflict with local population. Climbing needs to find the middle ground of all stakeholders and all sides need to be ready for compromise.
On the other hand, we need a strong voice against unjustified, unreasonable and illogical restrictions and bans, often enforced upon the weaker local climbing communities. The fact is, that climbing is **relatively uninvasive** as an outdoor activity and is largely beneficial for society both as a sporting outlet (with exceptional achievements) and for promoting active, healthy lifestyle of the population with possibilities to promote also nature protection and conservation as well as often revitalizing degraded rural areas, increasing mobility and tourism throughout Europe. This should be an important agenda, recognized by both EU and national governments.
Today, climbing community is widely dispersed and **loosely organized**, with different backgrounds and traditions. Some of those need to be preserved, while there is also great need to engage and connect the community towards **positive common goals**. The need to keep educating and promoting ethics and rules is as important as ever. Improper management and efforts that are too local and limited can lead to accumulation of problems and consequently to a hysterical reaction of some stakeholders, resulting in climbing bans that could be avoided with some dialogue and appropriate management.
A lot of these responsibilities will have to fall to **national associations**, many of which have been active in this field for years, while some didn't even start to tackle with the issues. There are many reasons why European national associations need to start working together toward shared goals, from **exchanging knowledge and experiences** to strengthening their position in certain cases. Climbing has never been limited by locality. A member of a climbing club in France can bolt routes in Spain for German tourists who have a Czech guide. The need for associations to come together under the same umbrella is more important than ever. Another problem is climbing community itself. Many participants are not part of any federation and are **individual climbers**. Our work must speak to them too and needs to be promoted as much as possible. Every climber must become a **guardian of climbing ethics**, in order for a wider organization to be able to argue in their interest. As climbing keeps evolving and growing in popularity it is up to everyone practicing it to make this a positive, respected and welcome activity of any region.

I. Structure of the study

18 Reasons for the study

As already stated, there are numerous reasons to start **unifying the approach across Europe**. It is in many aspects the birthplace of climbing with many historical centres, important traditions and the highest concentration of both climbers and climbing areas. Even though the management of the latter is not new and we have seen both good and bad cases throughout the decades, the activity was in most cases localized and played out within small local climbing communities. Not only in Europe, often the standards and activities were **uncoordinated** even within specific countries.
With formation of EU, Schengen border system and the rise of affordable air travel, the Europe got even more connected and **mobility of climbers increased**. Today, even a complete beginner can afford a climbing course on the other side of Europe, fuelling climbing tourism but also contributing to some overcrowdedness issues that are hard to control. The **rising popularity of sport climbing and bouldering** are adding both to positive and negative impacts.
As rock areas receive more and more visitors, the in-situ gear in rocks is also aging. Not so long ago, the standards for bolting and materials were much lower, while also bolting of certain type of routes was done much more adventurously and would in some cases be considered unsafe. The need to **maintain and rebolt areas** is an issue that has to be dealt with as well. The investment in the equipment usually comes from local sources, while the usage can, especially in popular areas, be widespread. Additionally, there is much less motivation for people to rebolt old routes instead of creating new ones.

The connectedness of Europe has many benefits as well. There is a lot of **know-how, experience and local studies** that could, combined, present an invaluable resource for future management of rock areas. Some countries have experience in providing access, some with nature conservation while others know how to **develop tourism**. A lot of emerging climbing destinations (as well as old ones) could benefit from this knowledge and avoid making typical mistakes. With increase in number of climbers, many areas will need some form of management, even if this wasn't the case in the past. They can rely on existing models from areas that already successfully tackled with this problem. The flow of ideas, models and knowledge and increased cooperation could also lead to creation of **Europe-wide standards for management of bolting**, ensuring a safer and more comfortable experience for all participants.
But, most of all climbing community needs a **unified voice in Europe**. There is often a big lack of understanding of non-climbing stakeholders what climbing represents. Some areas are in a constant tug-of-war between interests and climbers are usually the least influential group in any conflict, especially compared to nature protection and strong local lobbies. This can lead to constant threats of **climbing bans** that can stretch for decades or are implemented without much public forum as was a case in Grampians in 2020, where new management plan proposes a complete ban on historic bouldering area, despite climbers being active for decades in protecting cultural heritage[103]. This is only the most recent many cases throughout the last decades. Sometimes the restrictions are scaled back due to strong **community activism**, but sometimes the ban is successful. The reasons are often not justified, but climbers are easy targets for such restrictions. Usually only a small local group is involved at the beginning and national association, which could play a strong role in the conflict, joins the debate very late, poorly informed or disinterested due to one of many reasons (they may not have jurisdiction, the problems are legally complicated and generate no income etc.). A strong voice of support, with sufficient experience in dealing with similar issues could be invaluable for the smaller climbing communities. The same voice can also engage in positive promotion of climbing image and climbers throughout Europe and strive for a more unified approach to similar problems.
EUMA, as representative of most national organisations in Europe could fill this role.

19 Goals of the study

The main goal of the study is to address the above stated reasons for it and try to provide a **foundation for the future activities**. One of the primary goals is **creation of a working model for sustainable management of rock areas**. We hope that following such a model would involve and satisfy most of stakeholders of the area and alleviate most of the problems that might be a cause to ban climbing. It is understandable that there will be cases where climbing cannot be permitted, be it nature protection or some specific local problems, but we believe such cases are rare and there is a big area between total climbing ban and climbing with no limitations, which can be evaluated.
To accomplish these tasks, we will try to get a **good overview** of climbing situation in Europe, with the emphasis on sustainable management and problem solving. Through this document we hope to equip EUMA with up to date knowledge and case studies which will help climbing development in Europe.
We would like to create a solid foundation for future work and more proactive projects and prepare some strategies that will serve this vision. A part of the study will also be a working proposal on specific definitions, which will enable easier communication and understanding in this broad area. We will conduct a questionnaire to get a better insight into involvement of national associations and complement it with some useful case studies. We feel it is important to also put some emphasis on two main issues regarding rock areas: nature conservation on one side and climbing tourism on the other. Lastly, we would like to propose a unified ethical code for European climbers.

20 Limitations of the study

We are aware that due to short duration and financial limitations this study will not include many opinions and studies that were already done. Thus, the study will try to be an **open-concept manual**, which can be constantly revised and updated with new or better information. The countries participating in the project represent a significant, but in many ways similar climbing tradition. Most of participants also have a long history of involvement in managing rock areas. However, we must acknowledge the important absentees, such as UK, France, Spain,

[103] www.savethegrampians.org

Greece, Switzerland, Italy and others. We hope to get some insight from them during this study and even more in the future development of this project.
We would also like to avoid some outdated and controversial sources and avoid bias to specific sources from our countries. Participants have **practical experience with rock areas** and their management and we would like to create the foundation on those experiences rather than some less relevant quotes. Most of the study will thus be original work, even if it is based on many other sources.
It will be necessary to make some decisions when defining the scope, stakeholders or other definitions. Rock areas are a complex subject with many forms and variables and different levels of impact. We will try to find some **common ground and common denominators**. However, any rigid definition will inevitably be somewhat flawed or will overlap with another. We offer this document as a proposal to be further corrected and updated if necessary.

21 EU analysis and legal issues

21.1 EU analysis

An important part of the project is also an **EU policy analysis** with the intent for EUMA to understand the workings of the EU and the possibilities of lobbying for climbing related issues. This analysis will be prepared separately by Charles University in Prague but will influence our strategy phase as well. We will however not touch upon these issues in the analysis part, as most of the issues that affect managing rock areas fall under the competence of Member states and in some cases harmonization of legislation is even directly prohibited in EU.
We see the influence of EUMA within EU both on the **level of EU institutions** as well as on Member states in a **supporting role to national associations**. The most concrete area that concerns EU directly is support when applying for EU funds. We hope to develop some models in strategy part.

21.2 Liability issue

There have been many discussions about **liability in case of poor equipment**. Within EU, this issue will mostly fall under **Member states jurisdiction** and will vary from country to country. The only cases of liability being tried in court we are aware of, happened in France. The most infamous being the Vingrau[104] accident where FFME had to pay damages in excess of 1 million EUR. The reasons for the accident were supposedly loose rock or faulty glue, but as FFME was recognized as a guardian of the site it was ruled as its responsibility. This is a dangerous legal precedent which had many negative consequences in France, including closing of crags. In hindsight it is easy to see the mistake in agreement of FFME (convention d'escalade) with landowners and municipalities, but it is mostly a hard learning lesson for anyone trying to systematically manage crags on a large scale.
We have to take a strong position on no fault liability. **Neither the national association, manager or guardian of the site or the equipper can or should be liable for the safety of the route.** Of course, this is not a legal opinion and we also don't have enough precedents from other countries. We would advise such cases to go to civil court to establish legal opinion, if necessary. We can only provide expert opinion as certified and experienced bolters, and as such we would be eligible to testify in court if necessary.
The maintenance is in the interest of national association, municipality or any group that takes care of crags. The quality of the work, if it is commissioned, should be subject to contractual guarantees from equipper, but excluding **many factors not related to their work**:
- Loose rock, though it can be routinely inspected and cleaned can occur due to many reasons (climate, weather, earthquake, heavy machinery, etc.) and cannot be anticipated in such a way to prevent all possible risks.
- An accident can be a consequence of bad belaying or bad climbing techniques or failure to recognize dangerous situations from a climber. This is a personal responsibility of a climbing party and should have priority in judging the liability. If experience or proper technique in belaying or climbing could avoid the risk, the liability should lie only on climber.
- The equipment could be faulty either due to manufacturer's mistakes or due to deterioration. As with loose rocks, this could be avoided with routine inspection and maintenance, but it is not possible to determine all the faults in time to prevent all the risks. Some damage to the material is extremely hard to spot.

[104] https://www.escalade-montagne.fr/accident-de-vingrau-la-ffme-declaree-responsable-et-apres/

- It is hard to determine also if the positions of the bolts or their distances represent dangerous route that would not protect certain falls adequately. This should also be responsibility of the climber to be able to recognize the dangers in the route with his/her experience and avoid situations that put them in danger.

Due to all these reasons we can conclude that climbing activity is **inherently dangerous**. Any practitioner of this activity should accept these risks foremost. There are many legal precedents where people using certain products or practicing certain activity do it at their own risk. This is why there are warning labels on products or warning panels in situ, such as ski slopes. Some legal precedents in the USA state "**assumption of risk**" doctrine, which absolves landowners and government from liability.[105]

Mistakes in climbing or belaying can lead to risk of injury or death. Despite the huge improvement of safety standards, a climber cannot and should not assume that any gear or its placement is 100% safe. While this necessary experience to avoid risk is more obvious in adventure, alpine and sometimes multipitch climbing, many assume that single pitch climbing gardens are absolutely safe. While this is true in most cases, there is enough redundancy (bolts close together, two-point anchors) to even mitigate the risk of faulty gear. However, some **level of experience is still necessary** to recognize unsafe gear and take steps to avoid the risk or discontinue climbing. Any climber should invest in this knowledge and experience. It is their responsibility and they accept all inherent risks when they choose to engage in activity. In addition to that, any climber can and should have **personal insurance** to cover the potential expenses in case of accident.

The same principle should apply also to **owners of the land**, who should be absolutely **free of any liability**. We recommend that when an agreement with municipality or land owners is reached, they are legally cleared of any liability, which falls only on the user of the land. This should be promoted on in situ signposts and in guidebooks and should be part of common reason and practice, that is also taught in climbing courses.

There might be certain cases, where some liability of manager, equipper or other in-direct user of the gear might be applicable. These cases should be individually judged in civil court. Some obvious examples could be climbing guides and climbing courses, who get fees from their clients to ensure their safe experience of climbing. It is their responsibility to choose and check the gear and routes they use. Other cases might be if an equipper is contracted by another party to bolt or rebolt a route, where there can be a clause of guarantee for safe and properly done work. But it can't apply to bolt positions and potentially loose rock while it can also apply on a limited time scale as per materials guarantee. All such cases should be an exception and not common practice, and they should be tried separately.

In any case, certain care must be taken when municipalities and national associations get involved in maintaining the areas and bolting. Quality of work should by all means be supervised but this should not mean any guarantee to the user, who still accepts certain inherent risks with their activity.

Lastly, we want to again point out that the above stated is not a legal, but an expert opinion. Regardless, our models for management of rock areas will always assume personal liability of climbers before that of any other stakeholder. We do however recommend that this is communicated clear enough in situ, in publications and elsewhere.

21.3 Free access issue

Another legal issue that is complicated is the right for **free access to the land**. In EU, private property is highly protected and is often above general public interest. As such, if the rock area is completely on a private property and the owner is against its use for climbing, such area is not appropriate to bolt or use.

However, many countries do guarantee the general public the right to use the countryside, forest or agricultural land to some extent. The rock areas can also belong to larger public entities such as municipalities or state in which case the public interest should be emphasized and even prioritized.

Another possible case can be if only part of rock area, for example part of **approach trail** uses the land that the owner doesn't want to allow. Here we could argue (if there is no other way to solve the problem) that if the user does not cause any damage to the property, decrease its value, or infringe on the ability of the owner to use the land, the public interest could outweigh a private one. Such situation would vastly differ from one Member state to another and the extent to which their laws cover the right for free access.

Usually such national laws are known as "**freedom to roam**" or "**everyman's right**", which falls under jurisdiction of Member states and varies a lot throughout Europe. There can be different stipulations within these laws and

[105] Access Fund, Climbing management guide, 2008, pg. 36

some will only allow transitional use while others explicitly allow also climbing. In most cases these laws more broadly and clearly apply to state land and less strictly to private land, which is usually still included to some degree. Mostly the rights cover the use of forest and mountain or uncultivated land, which is where rock areas usually are. Some examples include Scandinavian/Nordic countries' "allemannsretten"[106], Austria's "wegefreiheit"[107] or Germany's "jedermannsrecht". In the UK, Rambler's association (among others) successfully lobbied for Countryside and Rights to roam act in 2000.[108] Slovenia has a law that provides free access to forest and agricultural land[109] and there is also a separate law that manages mountain trails and even strips the landowners of some rights[110], but it does not apply to rock areas. The situation is similar in Czech Republic and many other countries.

Because of the many differences in approach to these issues from different states, we cannot make any legal conclusions on this topic. We can recommend each national association to **carefully study the extent of protections of private property** and rights of general public and more importantly, try to maintain a respectful, responsible and clear communication and relationship with land owners and come to an agreement with them.

Luckily, rock areas are usually land that is of little worth to the owner and if managed properly will cause zero to little disturbance. However, if an agreement to use it as climbing site is reached, there should be some **protections to both parties** of continuous use of the site if it is within the conditions reached in the agreement. This should also protect the investor/developer of the rock area that the routes will stay and be used after a substantial investment of money, material and time, even in case the owner changes their mind, unless there are serious offenses or breaches of the agreement.

Of course, all this is much easier in cases where the owners are not private citizens but either state entities such as municipalities or larger private entities, such as village communities, church or similar. Investment into a rock area with a single private owner will always carry a certain risk to continuity of use.

There is also another possible solution, which is more prevalent in the US, where private property is much more protected. There, the Access fund along with other interested groups **usually buys the land of rock area and transfers it to some management group**. Due to low worth of such land, this is sometimes a viable and best solution to avoid conflicts. If there is (financially) strong entity behind such actions, acquisition of land is a simple way to preserve climbing in an area. We have to point out, that such acquisition does not absolve the owner from respecting other limitations such as nature protection. The practice of acquisitions in the USA has a long and successful history and they now make many yearly purchases.[111] This is a quick fix to the problem, provided there are funds available, but will mainly work in more remote areas where other local population is not affected too much. Otherwise, principles of good relationships with locals must still be a priority.

The **practice of acquisition is possible in EU** too, though the mechanisms to develop this EU-wide would be very complicated, mainly in regards to which entity gets ownership or guardianship. We would recommend a model where municipality or another state entity is encouraged to buy the land because of sporting, recreational and touristic incentive and then goes into agreement via a contract with national association or local climbing group to maintain and manage the area on a longer term basis.

22 Structure of the study

The study is divided in many parts.

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[106] https://web.archive.org/web/20060213175343/http://www.caplex.no/Web/Magazine.aspx?id=allemann

[107] https://web.archive.org/web/20070929100420/http://www.rockprojects.com/download/OEAV_Rechts_Infotext_2004.pdf

[108] https://www.legislation.gov.uk/ukpga/2000/37

[109] https://www.gore-ljudje.si/Kategorije/Informacije/prost-prehod-cez-kmetijska-in-gozdna-zemljisca

[110] http://www.pisrs.si/Pis.web/pregledPredpisa?id=ZAKO4767

[111] https://www.accessfund.org/meet-the-access-fund/our-history/acquisition-history

In the **first part** we highlighted the reasons why the study in necessary and the goals and limitations that come with the project. We also felt it is necessary to touch upon some legal issues that the study itself will not cover extensively and we explain the reason for it.
In the **second part** we felt it is necessary to provide clear definitions and nomenclature to the subjects we will cover. Even though most climbers and national associations as well as EUMA itself are familiar with the subjects, the definitions are necessary for other non-climbing stake who might use this study. There are also many discrepancies between certain definitions from one country to another. Same goes to other studies and various sources. Although we will try our best to create clear, logical definitions we do not claim these are the only proper ones to use. However, we want to make sure it is understood what we talk about in text when we refer for example to "climbing garden" or "adventure climbing". We also separated forms and styles of climbing to represent how different categorizations will affect the areas in reality. For the context of the study it was also imperative to define rock area in as much detail and clarity as possible and also to list all the relevant stakeholders, which are important subjects for any management.
The **third part** will deal with crag management itself. We would like to introduce importance and impact metric which we feel are the key to understanding the need and scope of management of a specific rock area. We will define legal status of a crag before we will research key principles and actions of responsible, sustainable rock management models. This part will also analyse impact that climbers have on rock areas, with a list of common issues and solutions. The two main topics that can shape the form and possibilities of rock area are nature protection on one side, which has mostly regulatory consequences, but as we point out, these do not have to mean climbing bans and closures. The second topic is the emergence of climbing related tourism which can provide a strong incentive to local population to support climbing development. We will study other impacts of climbing as well and present some solutions to minimize negative aspects.
In the **fourth part** we will tie a lot of the concepts together and try to present many principles, solutions and obstacles in successful rock area management. We will finish with a model of cooperation between various stakeholders.
One of the more important activities is a constant and clear promotion of climbers' ethical code, which we will attempt to unify for Europe-wide use. Many outlets for education exist and should be used. Also, apart from what, there are also questions about how and where. This is discussed in **fifth part**.
Sixth part will be establishment of a kind of database, which should be a dynamic and long-term project of EUMA to compile information from different countries, experts, national associations and similar. For this purpose, we designed a questionnaire and will complement it with some case studies of well-known regions. We will try to do a short overview of the situation in all of Europe.
Seventh part will finish with some further strategies and suggestions for the future that EUMA can undertake to become relevant stakeholder and representative of climbing community on EU stage.

23 Methodology

The creation of this study was based on many sources, studies and expert opinions. However, we decided to base and deduce most of definitions and conclusions on our **extensive real-world experiences** with rock areas and their management. As we realize these experiences may be somewhat lacking or limited, we would like to keep the study open for further revision and corrections.
Some of group members have had over a decade long involvement in managing rock areas, with different backgrounds, which include bolting, bureaucracy, nature protection or solving issues with local population, mostly done in practice and in situ. During the creation of the study we had many **expert discussions and inter-group meetings** to determine the subjects and scope of our work.
Regarding the **questionnaire**, we aim to get relevant responses from different experts who are actively participating with the issues of rock area management and we will try to follow up on those responses and not limit ourselves to one expert per country. Andreas Aschaber and EUMA were and will be key to establish relevant contacts through national associations and other entities and groups. We realized early that there is great importance in questionnaires being filled responsibly and in great detail. As the time limits of the study might impede on this process, we hope this process of data collection will continue beyond the project scope and benefit the completeness of the study also in the near future.

For the existing sources we relied a lot on already **published studies** like Brigitte Hanemann's[112], publications, pamphlets and studies done by our or other associations, guidebooks and relevant internet sources. In any case, we will not have enough responses from our questionnaire to statistically complete the analysis part of the study. Due to this, we intend to keep it broad, open and more conceptual.

II. Definitions and basic concepts

24 Short history of rock climbing and rock areas

We can track mentions and value of rock climbing to ancient history. Mostly, the first attempts were in the service of safety, food gathering or seeking shelter. Later, humans began to explore and conquer mountain peaks, which required some climbing skills at least at some part of the expedition. However, such activity was avoided if there was an easier alternative. The driving force behind these expeditions were scientists, military, shepherds and hunters or religion. Through time these activities began to form a new extreme activity of mountaineering, which was increasingly being done for sport, challenge or pleasure.

As the challenges and peaks got harder in difficulty, more and more rock climbing was necessary, and certain skills had to be practiced for it on shorter walls. This lead to more concentrated attempts to scale shorter, difficult cliffs as part of training for serious expeditions, mostly done by members of Alpine clubs which sprang up after 1857. We can track beginnings of rock climbing to Lake and Peak District in UK, to Elbsandstein area in Germany/Czech Republic, Fontainebleau near Paris and Dolomites region in Italy. The break of the century also gave us first serious attempts on climbing short boulders. At that time, the majority of mountaineers saw rock climbing, especially on shorter walls merely as practice activity not to be taken too seriously. However, even at the very beginnings some figures like Walter Parry Haskett Smith, Owen Glynne Jones, Fred Botterill, Siegfried Herford, Oscar Eckenstein, Pierre Allain, Oscar Schuster, Oliver Perry Smith, Rudolf Fehrmann began to practice rock climbing and bouldering as a full-fledged separate sport.

Around those small groups some rules began to emerge, mostly about creation of routes, the gear used, and about the means how the climb was realized. First grading systems were developed. With development of gear and especially introduction of nylon ropes the quality and difficulty of the climbs greatly increased. The period between the wars and shortly after WWII saw great focus on reliance on different aid to scale the hardest possible lines. This era is characterized by hard climbs in Dolomites and especially in Yosemite granite walls like El Capitan. This was a time when we start to see first rock climbing specialists, climbers who had no interest in scaling large mountains like Alps or Himalaya and were only focused on shorter and difficult routes.

This led to other advances in rock climbing. The first great schism was development of removable gear (like nuts, friends and stoppers) which divided rock climbing to trad and sport (with fixed protection) around 1970. Around this time the next division formed, which distinguished free and aid climbing. At the time USA was at the forefront of development and difficulty. But the change in approach shifted focus to Europe, especially in the 80s. The development of sport climbing, bolting from rappel and studying routes propelled France and Germany to leading position in Europe. New epicentres became south of France and Frankenjura in Germany.

Sport climbing became safer and more approachable, with climbing gardens close to urban centres. The young adrenaline sport got a lot of media attention, creating first sport climbing stars like Patrick Edlinger, Catherine Destivelle, Isabelle Patissier, Lynn Hill, John Bachar, Ron Kauk and later Jerry Moffatt, Ben Moon, Jean Baptiste Tribout and Wolfgang Gullich. The sport attracted mainly young, adrenaline and freedom seeking people, who often identified with other fringe subcultures like punk movement in Britain or hippy movement in the USA.

Although the sport became much more serious and even to some extent mainstream, with first competitions, sponsorships, magazines and rules, it was still very loose, individual and a little rebellious. Even the star climbers liked to sleep under the wall or did wild camping, there were some occurrences of shoplifting or stealing produce and aversion to staying in hotels or eating in restaurants. This was seen as the hardcore climbing lifestyle, which was also actively promoted. When the sport gained popularity among young population, the scope of problems this "lifestyle" causes, increased. Some early climbing centres like Buoux were overrun as they didn't have the required infrastructure to support the visitors which often outnumbered local population 10:1. After some climbing bans

[112] Hanemann B., Sustainable management of climbing areas in Europe, 2000.

and closures, the climbing community realized they have to start being more responsible and self-regulate. Nature protection too became a bigger issue that had to be addressed.
In the 90s climbing was not a fringe activity anymore. This is the time when different countries or regions started to take different measures to regulate or control it. In some cases, it led to heavy restrictions and closures (like Germany) while elsewhere it started to develop climbing and outdoor oriented tourism (Arco, Orpierre, Briancon …). In any case it became obvious, that some limitations and restrictions as well as some management is necessary. This is of course more prevalent in single pitch rock climbing gardens, which also became the most popular form of outdoor climbing. The emergence of large, popular bouldering regions started later, after year 2000. While the desire for higher difficulties increased the need for safety and different approach to bolting, also the gear for bolting became more practical (accumulator drills, better materials). Many crags became beginner and kids friendly. Climbing base was getting much more wider and diverse.
New millennium also saw emergence of new climbing destinations, like Greece, Spain and Croatia. Even though there was climbing there for decades, new trends and other beneficial factors (plenty of overhanging rock, nice weather) saw an explosion of new climbing crags and routes, often fueled by tourism money. Climbing in many cases literally revitalized some villages or whole regions. At times this was heavily promoted and lightly managed, which again led to problems that had to be solved retroactively. But the new destinations also paint a different picture of a modern climber, who has “grown up” from adolescent phase. Now they are people with families, regular higher income, seeking comfort and good experience. They no longer sleep in the car or under the wall but prefer to rent a house and eat in local restaurant, buy local produce and experience other regional attractions. Climbing tourism has become a serious tourist niche which can support less developed regions or summer destinations in the off season and creates sport-specific jobs like guiding and coaching.
Even though this greatly improves acceptance of climbing in local population, there is even greater need to properly manage rock areas. The infrastructure still has to be invested in, the areas need to be maintained and, even more importantly, the nature conservation is a static factor – present and crucial regardless of crag’s popularity. We need to educate and promote all the factors of sustainable management of rock areas and try to improve and keep climbing community as one that is responsible, respectful and reasonable and thus welcome in any part of Europe and worldwide. [113]

25 Definitions

There are many sources that already provide certain definitions. However, we feel that we need to re-evaluate these definitions to better serve our purpose of a very specific study. It needs to be clear what we are addressing at certain point. Sometimes our definition or classification will differ from another source that might also be completely legitimate. The reason for our decisions were at times practical to better serve our core subject of rock area and its management (that is why, for example, we classify forms and styles of climbing separately).
In any case, we hope our definitions and classifications will be precise and detailed enough to be used as broadly as possible for any interested party and not just for the purpose of this study.

25.1 Rock Climbing

Rock climbing is usually very loosely defined in common dictionaries like:
- Merriam-Webster: Rock climbing is mountain climbing on rocky cliffs.[114]
- Collins: Rock climbing is the activity of climbing cliffs or large rocks, as a hobby or sport.[115]
- Wikipedia: Rock climbing is a sport in which participants climb up, down or across natural rock formations or artificial rock walls. The goal is to reach the summit of a formation or the endpoint of a usually pre-defined route without falling.[116]

[113] Summarized from works 9th grade by David Chambre (2015) and History of climbing published in Planinski vestnik by Jurij Ravnik (2020-).
[114] https://www.merriam-webster.com/dictionary/rock%20climbing
[115] https://www.collinsdictionary.com/dictionary/english/rock-climbing
[116] https://en.wikipedia.org/wiki/Rock_climbing

- Dictionary: Rock climbing is the sport of climbing sheer rocky surfaces on the sides of mountains, often with the aid of special equipment.[117]
More specialized definitions of climber, as per Schurz (translated by Hanemann):
Constantly using hands and feet, rock climbers climb steep rock faces in the Alps and on crags in low-lying mountain ranges on routes ranging from the second to the eleventh degree of difficulty on the UIAA scale.[118]
We propose the following definition to emphasize certain aspects crucial for understanding of the subject:
Rock climbing is the sport or activity of climbing (mostly) rock faces in any direction and length with usually predefined start and endpoint, which are steep enough to require use of both hands and feet and present a challenge to the participant in an activity that is goal in and of itself.
With the definition we want to stress, that not any climbing of rocks should be considered rock climbing per se. Rock climbing can be a part of some other main activity like mountaineering but this takes place in different medium or is part of a larger scale effort. It can also be a part of exploration, rescue, military efforts, research, construction and similar. Rock climbers choose to engage in this activity for the activity itself and it is not just instrument to some other goal or even summit.
Further, we would not want to limit the definition with steepness of the rock or the need to use ropes and equipment, location of the rocks or their length.
Even though the definition stipulates the use of hands and feet to illustrate the difficulty of the activity for an average person, we have to note certain exceptions to this point. There were cases of people doing rock climbing routes without use of hands, and there are also examples of strong climbers with disabilities who climb rocks without one or several limbs. Our analysis will also include some disciplines which use tools, like aid, axes and crampons, but we feel that this generally still fits the definition.
The wide spectrum of activity which mostly corresponds to the base definition may also include other medium or surface. This can be ice and snow in case of extreme mountaineering and artificial surfaces and structures like walls and bridges, which can be seen as exceptions to the rule but nonetheless part of the climbing family.
We will exclude from the study (or limit it to minimum) purposely built climbing surfaces like artificial climbing walls, usually built from polyester, polyurethane, wood and similar. They form a separate field of so called »indoor« climbing (although it can also be built outside).
As already mentioned, some distinctions can be hard to make and lines between activities are broad and unclear. The point where mountaineering becomes climbing could be drawn at the necessary use of hands, however, a trail or route may only have a small percentage of such difficulty. This would also apply to via ferattas, which we see as an extreme form of walking trail, although it can be part of rock area infrastructure (such as approach).
One way to draw the line is the use of grading systems. UIAA, which took up international grading of rock climbing in 1967, has a progressive scale, where rock climbing usually corresponds to grades II-III and up.[119] In the USA, the YDS grading system was initially designed for backcountry travel, thus the rock climbing difficulty starts at grade/class 5 and subdivides to 5.1- 5.15 and up.[120] French grading system was developed specifically for rock/free climbing and goes from 1 (and more commonly from 2 or 3) to 9c and up.
The afore mentioned grading systems correlate to routes that can be free climbed. If the routes can only be climbed by the use of aids, YDS assigns class 6, while UIAA has grades A0-A5. There are many other similar grading systems worldwide. Some sub-disciplines like bouldering, drytooling etc. also developed their own grading systems. Mostly we will relate to UIAA and YDS definition as they designate when rock climbing separates from walking, scrambling or mountaineering.

25.2 Forms of climbing

The first categorisation to “forms of climbing” spatially affects the rock area and its infrastructure. It does not indicate the style in which the routes are climbed. From the point of impact issues and management this division is more important. Majority of our study will be aimed at managing single pitch climbing areas, because they tend to

[117] https://www.dictionary.com/browse/rock-climbing
[118] Schurz M. (1999): Ergebnisse demographischer Erhebungen zum Klettern. In: DAV (ed.): Konzeption für das Klettern in den außeralpinen Felsgebieten in Deutschland.
[119] https://www.theuiaa.org/mountaineering/uiaa-grades-for-rock-climbing/
[120] https://en.wikipedia.org/wiki/Yosemite_Decimal_System

have the biggest impact and the clearest spatial presence (usually they are relatively small and homogenous plots of land). They are also most popular and will remain so in foreseeable future.
This categorization looks at rock climbing from perspective of the climbing route: where it is, how long it is and such, its position and impact on the land/space. The style in which the route is climbed, is not important here and we will define it later. Although the style can have different impact (like trad vs. sport), most of the differences to management, sustainability and infrastructure will derive from the forms of climbing below.
Again, we have to mention that different sources will crate different classifications and will often combine classifications which we split into forms and styles.

25.2.1 Indoor or artificial wall climbing

The special category can cover most styles and forms of climbing and is defined by medium rather than the climbing style itself. It can also be practiced on artificial structures not primarily meant for climbing, such as walls, bridges, dams etc. We include it in our study for the sake of completeness but will not focus on this form in terms of issues and management.
Our focus will be on outdoor rock climbing which takes place on natural rock and surfaces, mainly due to the fact that indoor climbing is mostly maintained and managed by private entities or the management is well established by public organizations. These walls are not affected by most issues which are common in natural rock areas.
There are several distinctions to climbing which is not done on natural rock.
Gym climbing is the most common form of indoor climbing and represents the practice of climbing on artificial structures such as in bouldering gyms, on artificial climbing walls and similar. It can be done indoor or outdoor. The walls are usually commercial and self-contained within a certain, usually urban area. The most common forms are bouldering and single pitch sport climbing.
Buildering is a form of climbing done on artificial structures not primarily built for climbing. These can include walls, bridges, buildings and other urban structures. Thus, it is sometimes referred to as urban climbing. In rare cases some specific structures like dams, chimneys and bridge arcs can be used to create routes with polyester holds.
Here we have to mention that at times, almost completely artificial routes were created in natural rock, either by drilling and chipping holds or even by using polyester holds in the wall. As these routes are still part of the natural rock area, we will view them as such.

25.2.2 Bouldering

This is a form of climbing, usually performed on short rock faces or boulders without the use of rope. Despite it being practically as old as rock climbing and older than sport climbing, it is gaining popularity only in recent years. Some climbers are specialized boulderers while most engage in other disciplines as well. Usually (unless the area is one big boulder or rocky barrier) the bouldering area is spread over a larger space, as well as its visitors. The individual rocks or boulders are referred to as blocks. Presuming climbers follow ethical code and try not to leave any trace, their impact can be smaller as it is more spread and in situ gear is very rarely used. However, bouldering can have its own negative impacts with more intensive cleaning of rock (that can contain moss and lichens) and sometimes the need to clear space (or even construct landing zones). The base of the wall is usually wider in use.

25.2.3 Single pitch climbing

This is a form of climbing on routes of one rope length (usually up to 40 meters) with a fixed descent point to the ground. It is probably the most popular form of climbing activity as it can be the safest and easiest to approach for all age and experience groups. Most common style of climbing here is sport climbing with fixed protection points and anchors.
Single pitch climbing is the most common form of climbing and in many ways the easiest to manage, as it is spatially set to designated area and visitors spend most of their time in the said area. However, it can also have a much bigger impact to the affected area. The place is usually called 'the crag' or 'sport climbing garden'. They are usually at lower altitude, although there are exceptions to this too.

Sometimes single pitch areas do include short multi pitches of two or three pitches, but they can usually be done with one rope or allow rappel back to the base and are not as adventurous in character. Multipitch climbing can have distinct sport climbing character which is defined by routes that are safely bolted and enable the climber a logistically easy descent (either via a short path or rappel) to the starting point.
There can be some grey areas and overlap with multipitch and alpine climbing as well as bouldering (and in extreme cases, such as Edinburgh Ratho wall[121], even with indoor climbing).

25.2.4 Multipitch climbing

This is climbing of routes that are longer than one rope length, so they are split into pitches, where the team of climbers progresses pitch by pitch, usually (but not necessarily) exchanging lead. It is positioned between single pitch climbing in the approach to safety, equipment and route strictness and alpine climbing in the fact that it takes place in higher rock faces, which require a climbing team to complete many rope lengths (or pitches) to climb the route.
It requires additional knowledge and techniques. Usually the protection is spaced further apart or it has to be arranged during the climb. However, it can be in safer and more accessible environment similar to climbing gardens on bigger walls; or on more remote or high-altitude alpine walls. The routes and ends of pitches are clearly defined, split into many rope-length routes with in-between anchors and usually more difficult in character.
Multipitch climbing is usually more spatially transitional as the team constantly moves throughout the day. Most of the time is spent on the wall itself compared to climbing gardens where climbers spend the majority of the time at the base of the wall. But nonetheless some multipitch areas can still be crowded and have serious impact issues. However, it is much harder to define rock area of this type of climbing as a route can traverse the whole wall, without leaving much trace. A whole mountain face can have one or a couple or many routes that can be equipped or left blank.

25.2.5 Alpine climbing

This is sometimes referred to as adventure climbing. It also takes place on longer routes (similar to multi-pitch climbing), however the pitches themselves are not clearly defined or not defined at all. Here there can be big overlap with mountaineering and hiking as well as another form of climbing, scrambling. Protection is arbitrary and placed when and if necessary. There is no clear line where mountaineering becomes extreme to the point that it is referred to as alpine rock climbing.
Alpine climbing (and to some extent even multipitch climbing) has some additional factors which define it and separate it from sport climbing and add to inherent danger: rock crumbling, weather, route finding, ice, other dangers, day planning, harder descent. All these require a different set of skills (and gear) and are usually not practiced by pure sport climbers. Often this form of climbing includes long approach and climbing can include multi-day efforts.
There is great overlap with multi-pitch form of climbing, so we would draw the distinction where it becomes objectively dangerous due to any of the factors other than climbers' mistakes. Generally, multipitch climbs should be safe enough both at ascent and descent, logistically simple, well equipped and not too loose. This makes such areas much more approachable and popular and thus in need of management.
The impact of adventure/alpine form of climbing (considering that practitioners follow the ethical standards) is very low to almost non-existent also due to the fact that it is practiced by fewer people than other forms. The management of such areas will have a big overlap with trail management and general mountaineering and outdoor activity management. But, on the other hand, they would be much harder to manage.

25.2.6 Mixed areas

Those will be very common occurrence. All the forms of climbing can overlap in a specific region. A sport climbing garden can contain boulders either beside the wall or on parts of the main wall. An area of mostly single pitch routes can include some multipitches or a bigger wall can be split into a part with well protected multipitches on one side

[121] https://en.wikipedia.org/wiki/Edinburgh_International_Climbing_Arena

and more adventurous routes on the other. However, impact and importance metric of the most invasive form of climbing will decide the level of management and infrastructure.

25.2.7 Via feratta and mountaineering

Via feratta to some degree corresponds to definition of rock climbing and can contain forms of aid climbing, but, as mentioned before, it should probably be considered more like an extreme trail than climbing route.
It is also hard to draw clear lines between adventure/alpine climbing and mountaineering, which may include some parts where rock or ice climbing is necessary. We feel there is no great need to get philosophical about these issues.

25.3 Styles of climbing

The classification into the styles of climbing correlates to the way a route was climbed. This usually adds very little in the way climbing impacts an area, with few small exceptions, like using fixed protection versus removable protection. But this does not necessarily mean much. A trad area can still be very crowded and needs a lot of supporting infrastructure to mitigate negative impact.

25.3.1 Bouldering

Bouldering is a style of climbing without use of rope on usually shorter routes, called problems. Although rope might be used for studying the moves, for a clean ascent only special bouldering crash pads are used. Managing a bouldering area can come with specific set of issues, as it can be very wide spread over large area, so in theory the impact also spreads and is thus smaller. But this also means the disturbance, albeit smaller, is wider in area and the physical impact on the rocks can be even more aggressive, like cleaning lichens, building landing zones etc. Usually the supporting infrastructure needs more attention as well: there are more approach paths and parkings.
Bouldering in its basic form means climbing on top (or designated endpoint) of singular piece of rock or boulder, but it can also be done in form of traversing rock. There is also a style called highball, which designates high boulder problems, where falling on top can be dangerous even to the risk of death. It is even hard to distinguish between some highball boulders and free soloing routes. Mostly we can say that free soloing happens when we climb the route that was established as normal, protected climb, while highball was first ascended as a boulder and does not allow protection points.

25.3.2 Free solo

Free solo is a form of free climbing (ascending the route without the use of any gear), but as with highball bouldering, it does not change our approach and only adds danger to the activity. Climber ascends the route without rope or any other protection. A fall higher in the route usually means serious injury or death. A new, safer form of free solo emerged in the recent years and involves climbing the cliffs above water. It is called **DWS** (deep water solo).

25.3.3 Sport climbing

Sport climbing is in recent years the most popular style of climbing. Sport climbing refers to free climbing the routes on fixed protection points (bolts and anchors), which can only be used for safety. Due to increased safety it enables climbers the hardest possible moves in rock (together with bouldering). We have to keep in mind, that sport climbing can also be applied to multi pitches. A climber usually only uses rope, harness, quickdraws and belaying device (with climbing shoes and chalk). Sport climbing is done by at least two or more climbers, where one person climbs and the other belays them. Most of sport climbing is done on single pitch routes in climbing gardens. Most of our study will deal with this kind of rock areas.

25.3.4 Trad climbing

Trad is also free climbing, but the climbers have to place their own protection (such as nuts, friends) as they climb. Trad can also be practiced in multi pitches. It is somewhat less invasive than sport climbing, due to removable protection, but this distinction is very small to negligible. The issues associated with human presence and potential overcrowdedness are the same. Trad climbing is much less popular and there are fewer areas compared to sport climbing, especially if we are talking in the context of smaller, single pitch rock areas.

25.3.5 Toproping

Toproping is yet another form of free climbing, where the climber uses pre-fixed rope in the route. It is usually done by beginners and the climbs done in this way are not officially recognized. Some experienced climber usually has to fix the rope in advance. The impact of this style is the same as sport climbing, although top roping can damage the anchors faster due to more intense and continuous use.
The points 2.3.1. – 2.3.5. refer to free climbing, where climber uses potential equipment only for safety, but climbs the route only using hands and feet. We will add some more styles to the classification, which are less popular or don't necessarily belong strictly to rock climbing family, but can be very similar in the need for management, impact or can overlap in certain cases (like mixed drytooling and sport climbing areas).

25.3.6 Ice climbing and drytooling

Those are characterized by the use of climbing axes and crampons to climb the route on rock or ice or mixed surface. Although used in mixed alpine climbing, there are many drytooling / ice climbing gardens that function similar to single pitch sport climbing, even with fixed protection points. Usually these activities take place on separate locations, as drytooling can damage the rock, but on the other hand, they are not too bothered with damp or wet conditions, which are not suitable for sport climbing. It is also a common form of climbing in extreme mountaineering.

25.3.7 Aid climbing

Aid is another style which can be done on either fixed gear or with trad gear. The distinction here is, that climbing is not free and climber uses the gear to move forward in the route. There has been significant drop of popularity in this discipline (especially in Europe), but it is still practiced at some places. It can be done in single pitches and in multi pitches, but it is more common in big wall and alpine climbing environment. This can be also a form of extreme mountaineering, where the goal is not to climb a route free, but to reach the summit with all possible means. It may last multiple days and may require bivouacs. It can also be done solo.

25.3.8 Other

Other styles of climbing which we don't consider relevant to our study are competition climbing, which can be done both on rock or more often indoors and has a stricter set of rules, and speed climbing which can represent any of the styles above with the added factor of setting speed records on the routes.
Additionally, some alpine climbs may employ many styles of climbing, from trad climbing to occasional use of bolts and pitons, with rules being looser, but with elevated danger and higher need for experience.

25.3.9 Types of ascents

Types of ascents will also play little role in this study. They also deal with how the route was climbed from the climber's point of view. It can be done on sight (first try with no information), on flash (first try with any information) or on red point (second or further try). We can also distinguish first ascent, which is the first time a route is climbed by someone (who usually proposes a grade and name and potential rules and restrictions), pink point (where the protection gear is preplaced), green point (climbing a sport route with trad gear) and other similar nomenclature.

From the perspective of local ethics, it is sometimes important, how the route is put up. It might be only allowed to bolt the route ground up, use specific number of protection points or leave it strictly for trad.

Due to the recent rise in popularity as well as ease of management on one hand and the impact and increasing need for management on the other, the largest part of our analysis, models and guidelines will deal with single pitch sport climbing areas. However, a lot of issues, further definitions, elements and solutions can be applicable to other forms of climbing as well. Proper management of any area must take into the account all the possible forms and styles of climbing and their consequences.

25.4 Definition and analysis of a climber

A **climber** is a person who is participating in the activity of rock climbing.
For our purposes we will need to make some further explanations within this definition. They will mostly affect any discussion about liability issue, outlined in I.4.2. section and also point out some requirements for people eligible for management of an area or their roles in it.

25.4.1 Experience level

Novice climber is someone who can't climb independently and needs a guide to accompany him.
Experienced climber is someone with adequate knowledge to climb and belay independently and safely. This can however mean they are experienced only in one discipline (like sport climbing) but not in the other (multi pitches, trad). We will not go into this distinction for our study. Experienced climber usually finished some climbing course, preferably with exams by national association, earning them an official title.
Instructor / Coach is a climber certified to guide or teach other less experienced climbers. The titles vary from country to country and from one discipline to the other. They may have some form of liability for their clients. They also need to be part of or in touch with climbing community in areas where they are guiding/teaching and need to strictly follow ethical code with some additional provisions on how to manage larger groups and how to behave at the crag.

25.4.2 Membership status

A climber can be either a registered member of an organisation or an independent climber not part of any organisation.
The organisation can be an official national federation or some other sub-group (usually limited to a certain style or area and possibly in cooperation with national federation).
As the membership in organisation it is not an enforced rule for climbing, it can only have some statistical value. However, local climbing communities may use social pressure to enforce certain specific rules of the area. Management team of an area may condition membership status in certain group or organisation in order to allow guiding, teaching or bolting of routes in the area.
As more and more rock areas come under some sort of regulations, it is crucial that equippers follow the rules of when and where (and even how) to bolt new routes.

25.4.3 Special skills

A special subdivision of experienced/expert climbers could also be a route equipper (bolter), who cleans, maintains and bolts routes; and manager (who supervises the crag management, development and represents climbing community at a specific area). Both require substantial engagement and specific knowledge and skills and in the case of equipper preferably also an official license by national association.

25.4.4 Regularity, exclusivity and locality

The distinctions span from a regular climber (meaning someone who climbs at least a couple of times per month) to an occasional climber (who climbs a couple times per year). We can also mention incidental climbers, who may climb rocks as a one-time activity (as part of tourism) or very rarely. This paints a wide range of people, who all need to be reached and educated about rules and ethical code, often through different channels.
Rarely a climber is practicing all disciplines. But at the same time, exclusive climbers, practicing only one discipline, are just as rare. Most of the time a climber has primary interest, for example gym climbing, bouldering or alpine climbing, with additional, less serious engagement in other disciplines, either for training or for fun.
A climber may not feel like a part of any region. Apart from that we can have a local climber (a climber who is part of a specific community at the crag, knows the area and climbs there a lot) and a climbing visitor/tourist (who travels to another country/region with main reason to climb). As local climbers can be seen as guardians and promotors of local rules and regulations, it is imperative that visitors/tourists are well informed about them.

25.4.5 Profile of a climber

As we already mentioned many times, profile of a rock climber has changed a lot throughout the last decades. In the early times, most rock climbers were men, especially at the top level, with rare notable exceptions like Lynn Hill or Catherine Destivelle. Most statistics around 1999 count less than one third or even around one quarter of climbers to be women.[122] Talking with gym owners today, we can make an educated guess that this figure has improved, but men still represent majority of climbers. This is mostly due to increased accessibility of the sport via gyms and better equipped climbing gardens, which attract more urban population and has become an after-work activity, similar to fitness. Climbing is quickly losing its image of dangerous, adrenaline activity and is being marketed as the best modern workout for anyone. It has become approachable for kids, older people and even people with disabilities. Some larger cities have seen explosion of new climbing gyms, which also changed a lot in their function. They no longer serve as the training tool for climbing in nature and instead present activity and challenge in itself, which is promoted also in regular and lifestyle media.[123] [124] [125]
This recent popularity has hugely increased the number of climbers. While many of them are exclusively gym climbers, many will still transition organically to the similar outdoor venues, especially bouldering spots and approachable climbing gardens. This presents a modern problem, as a lot of times, these people know how to climb, but are rarely aware of differences in indoor and outdoor climbing, from increased danger, responsibility as well as necessary emphasis on respecting nature, local population and other climbers. In the older generation, these values were taught by their rock mentors and within the community, while gym climbers often lack this knowledge.
This can and does increase the risk of accidents as well as increase the conflicts with other stakeholders of the area. As this is a trend which we will continue to see in the future, we need to find solutions and activities to address this "new breed" of climbers and properly educate them. Creating proper managing system with agreements and contracts and regulations is just one part of the equation. Getting all the visitors to respect them is another, and it is arguably more important one. Lately, many printed and web publications have started to promote these issues in articles themed "how to transition from gym to the crag". [126] [127] [128]

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[122] Hanemann B., Sustainable management of climbing areas in Europe, 2000.

[123] https://www.mensjournal.com/health-fitness/fitness-goes-vertical-inside-crazy-luxurious-new-climbing-gyms-are-redefining/

[124] https://www.standard.co.uk/escapist/wellness/indoor-climbing-bouldering-fitness-workout-trend-a4367991.html

[125] https://www.theguardian.com/lifeandstyle/2018/aug/12/climbing-has-gone-from-niche-sport-to-worldwide-sensation-what-is-its-dizzying-appeal

[126] https://www.rei.com/learn/expert-advice/learning-climb-outdoors.html
[127] https://rockandice.com/rock-climbing-training/transitioning-from-gym-to-crag/
[128] J. Ravnik, Iz plastike v skalo, Planinski vestnik, september 2020, pg. 56

All this is also affecting other parameters of climbers' profile. Although newcomers to the sport, who are younger generation, still keep the average age fairly low, in the 30s, which hasn't changed from the surveys in Brigitte Hanemann's study. [129] But this is also due to many more kids starting to climb en masse at very young age, as part of sports training or school curriculum. At the same time, the young, rebellious generation of the 80s and 90s has grown up and approach climbing in a different way, as families and people looking for more comfort and to optimize their time spent abroad. It can still be said that climbers have on average higher education and above average salary. Even the statistics, that climbers are usually without children (around 80% as per Hanemann's study) is starting to shift, as we see more and more climber parents at the gyms.

What is interesting to see is that age does not necessarily affect the quality of climbing. [130] Many climbers from ages 11 to well past 50 can climb at elite level. Even if we take out the outliers and focus on gauss median, there is still a large age span of climbers at elite level. This is confirmed by USA study, which analysed demographics of infrequent climbers, indoor climbers, outdoor climbers and avid climbers and found that demographics were not significantly descriptive of any group, neither in age, sex, marital status or otherwise. This is consistent with similar studies. [131]

What has also not changed through the years is that climbers are avid travellers. While main means for travel used to be cars, this is slowly changing with cheap air travel. Most climbers still rent cars at destination because crags are rarely easily accessible by public transport. Many studies usually show a high percentage (close to 90%) of climbing visitors using cars to get there. This is information that is very important for crag management. Any management plan needs to approximate the number of cars, traffic and parking lots an area will require to function without disturbances. Parking problems are one of key issues for many areas, especially if crags are close to villages or at areas with limited parking options.

On the other side, this combination of desire to travel and change in demographics to more leisure- or family-oriented climbing trips gave huge rise to climbing tourism, starting already in the 90s but taking off in the next Millenia. Rock climbing tourism is one of the fastest growing areas in tourism today.[132] This creates new specific frameworks, with push and pull studies being done[133] and identifying tourism infrastructure as key pull factor. It is no longer enough to have great rock areas and many routes. Properly managed area that wishes to maximize potential and minimize negative impact must be much more active and involved.

But investment into properly managed area can be game changing for some regions. Climbing tourist is a welcome guest. They come in groups of 4-8 people and stay longer periods, between 1-2 weeks. They prefer to stay locally, renting a house or apartment or stay in camp or refugio. They like to eat and shop locally and otherwise spend most of the day at the crag, without disturbing village life. On rest day, they like to discover other nearby attractions or engage in other services. If they like the area, they are likely to return and spread good word in their home community. In summation, their money spent in the region vastly surpasses that of an average transitional tourist. It is no big surprise that tourism-oriented countries started to invest heavily into climbing tourism campaigns through their national tourist associations[134] and even provide funds to develop new rock areas for that purpose (i.e. Leonidio). [135]

So, who is a climber today? Anyone who puts on climbing shoes, actually. He or she has big potential as an athlete and as a tourist, generating income and word-of-mouth promotion for local people, but also needs to be informed and educated about nature preservation, restrictions and ethical code. As such they can be a great ally in a new group of sustainable, boutique, nature respecting and protecting visitor group.

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[129] Hanemann B., Sustainable management of climbing areas in Europe, 2000.

[130] https://rockandice.com/inside-beta/over-the-hill-or-still-ascending-an-analysis-of-climbing-performance-and-age/

[131] Brandon Wayne Rapelje, Rock climbing sub worlds – segmentation study, https://core.ac.uk/download/pdf/4268573.pdf

[132] S.E. Undheim, The potential of rock climbing as an adventure tourism product and the associated socioeconomic benefits, https://www.researchgate.net/publication/297363626_The_potential_of_rock_climbing_as_an_adventure_tourism_product_and_the_associated_socioeconomic_benefits

[133] M. Caber, Push or pull? Identifying rock climbing tourists' motivations, https://www.sciencedirect.com/science/article/abs/pii/S0261517716300152

[134] https://www.youtube.com/watch?v=pzBhlZO0TgQ

[135] https://climbinleonidio.com/wp/results-gr/

25.4.6 Differences in climbers' attitudes

Many studies focus on climbers' attitudes when constructing their profile. It is important to realize that different types of climbers have different motivations within climbing. Research done by Miller Ansari[136] shows that sport climbers are more motivated by safety and quality of the route, pushing physical limits, being in natural setting, good social scene, climbing with friends and completing projects. The social/group factor was even more prevalent for boulderers. By contrast, trad/adventure climbers are more motivated by being in remote setting, pursuing wilderness experience and having a more complex challenge. But contrary to many assumptions, all groups put a very high value on remote, quiet, wilderness settings. This should be used in messaging when promoting ethical code and restrictions.

25.5 Rock area definitions

Due to many different forms of climbing outlined in section II.2.2., and even with specific forms like single pitch climbing gardens being very different from one country or region to another, we designed the core definition to be as simple and vague as possible. We will explain the parameters later in the study. We would like to limit the definition of rock area to the part where most if not all immediate impact is done. This can be important for nature protection, as we know from experience that many species can coexist with climbers in a close vicinity if there is no direct activity there. This way we can have a monolithic rock barrier, part of which represents rock area and another part area closed for climbing due to nature protection or other reasons. Most of the area surrounding the rock wall is also fairly unaffected by climbing apart from some level of noise and in parts where supporting infrastructure is. These are some of the reasons we want to start with a simple definition and work from it.

Rock climbing area is a solid piece of rock with climbing routes, including its immediate base.

We will further define some elements of rock areas below. Our definitions may differ from other studies, but basic conclusions and solutions will be similar. For example, US-based access fund recognized these parts of climbing area: the approach, the staging area (base), the climb, the summit, the descent and the camping area.[137]

25.5.1 Rock area, immediate base and climbing routes

As an entity the rock area extends from its base upwards and to the sides where solid rock for climbing is available, unless limited by agreed upon nature or heritage protection or other decision by local management. If lower off points are available before the top edge of the rock wall, this is also where the rock area ends.

Immediate base of the rock area is land directly under the rock, which is the climbers' starting point to the climbing route or the point where climber lowers off from descent anchor, where people move between routes, leave their gear and is used by their partner for belaying. It usually extends outwards a few meters from the base of the rock wall.

Climbing routes are imaginary lines or paths a first ascender designates on the rock face. They normally have a name and a grade, a specified area on the wall that's used for climbing and a specified top (as marked in a topo or guidebook). The route can include safety gear like anchor and bolts but can also be without it (ie. in bouldering, trad climbing). Normally, a climber is free to use any combination of holds in the line of the route, while staying within some acceptable distance from the line/bolts, but there are also some examples where certain holds or parts of wall are forbidden, usually to make the grade harder. A climbing route can have also other additional rules, but they don't concern this study.

Rock area can also be referred to as a crag and sometimes climbing garden, bouldering spot or similar.

25.5.2 Spatial scope of rock areas

Rock area can represent a monolithic entity as a single, more or less continuous piece of rock with climbing routes. This can be a rock barrier, cliff or a rock tower.

[136] Amy Miller Ansari, Understanding the motivations of rock climbers, 2008, pg. 12

[137] Access Fund, Climbing management guide, 2008, pg. 7

Large rock area can be comprised of smaller rock areas, called sectors (or blocks in bouldering). They still represent one spatially and logically connected area on a relatively small and compact surface, which is usually served by the same basic infrastructure, like parking space and approach trails. The land between the sectors which is not used by visiting climbers in not part of this rock area.
Areas can be grouped into larger entities, referred to as climbing region. A region includes many distinct rock areas or crags, but is usually served by the same secondary infrastructure (accommodations, restaurants) and impacts the same area and settlements. It is usually (if at all) managed by the same local group or community.
There is no clear line between a crag with many far apart sectors and climbing region with many grouped crags. It can overlap even within the same area. The nomenclature in this case is of no great significance and can be different from one region to another. It is usually up to local climbing community to provide the definition.
We have examples of big climbing regions like Arco, which itself includes smaller regions or groups rock areas/crags in the Valle del Sarca.[138] As we can see in the multitude of climbing guides and internet portals, the definition of Arco region is very fluid, sometimes narrow and sometimes wide, including or excluding certain rock areas. Further examples of such regions my be Verdon, Frankenjura and similar. They may be similar to large rock areas in Spain, which are not formally considered "a region" like Siurana and Margalef, and exclude nearby rock areas like Arboli and La Mussara. Even if we consider regionalizing Catalunya it would be hard to draw borders between i.e. Tarragona and Lleida regions. Thus, this nomenclature should not be considered as essential and can serve only practical purposes.
A region can be managed as a whole (with some unifying rules), but within that certain areas might need more attention, regulations and management. So, a region can have one manager or many smaller groups that take care of climbing development. This is not problematic as long as they cooperate and share a common vision. This is where national association or even EUMA might be helpful to provide some guidance, know-how and support.
Similar problems were encountered by other studies, trying to count rock areas in specific countries.[139] It is important to properly quantify the extent of climbing in order to get a clear picture of climbing situation. For example, Siurana in Spain consists of many sectors with over 2000 routes,[140] but is considered one rock area, while the whole Istria has approximately the same number of routes,[141] spread over 30 rock areas. Even the information on number of routes themselves can not be descriptive enough if we consider that they can represent alpine multipitches or boulder problems. From the standpoint of management even number of routes or rock areas might not be too significant. A country can have few areas, which are very overcrowded and problematic, or many rock areas without crowds and problems. Proper statistics can have some value in the analysis, but to understand and evaluate situation and present solutions, more detailed and descriptive approach is necessary. This was one of the ideas behind the questionnaire we developed for the study.

25.5.3 Primary rock area parts

These are basic elements of the rock area definition, as already discussed in detail in section II.2.5.1. As already stated, it consists of parts of solid rock designated for climbing and containing existing routes (or suitable and acceptable space for new routes) and the immediate base of the wall used for other manoeuvres (resting, belaying, moving between routes). It also potentially includes in situ gear used by climbers, which is commonly bolts and anchors for protection and less common quickdraws and slings. There can also be other safety elements for approach or belaying (belay stations, steel cables, ropes). These are also areas of the biggest impact of climbing, both in the form of continuous human presence as well as physical impact (clearing the vegetation, loose rock, bolting) and the need for direct maintenance, mostly done by qualified climbers. This is also an area almost exclusively used by climbers (unless it is part of a trail or viewpoint or another attraction).
EUMA should focus to preserving free access to primary rock areas for all climbers (considering they follow the rules). We should not support any initiatives that want to commercialize or otherwise charge for this access, also

[138] https://www.thecrag.com/en/climbing/italy/northern-italy/arco-trento-area
[139] Hanemann B., Sustainable management of climbing areas in Europe, 2000, pg 20.
[140] https://27crags.com/areas/siurana#:~:text=Sport%20Climbing%20in%20Siurana&text=Siurana%20has%20a%20high%20concentration,before%20heading%20there%20will%20help.
[141] https://27crags.com/areas/istria; J. Ravnik, Istria climbing guidebook, 2019.

leaning to many Member states laws that guarantee this free access. There can be exceptions to this principle, mostly in form of entrance fees when entering a state protected national park. Exceptions to this are otherwise rare. We know of example from Croatia on island Hvar, where the owner equipped routes and charges entrance fee to rock area with advanced reservation.[142] Although this is private initiative, without which there may not be any routes here, we feel it is a dangerous precedence, which should be avoided and the owners have to find compensation through other sources.

25.5.4 Basic infrastructure

Basic infrastructure is an essential element of the rock area. It should not be viewed as part of the rock area itself as it can be used by multiple other groups (hikers, bikers, locals, hunters …) other than climbers and can move and change through time. Nonetheless, it is something that rock area should have sorted out (which is not always the case). We can even say it is becoming more and more a necessity in view of modern popularity and may even apply to some older areas which in past did not need extensive infrastructure. Today, it may not be enough to "piggyback" on existing local or tourist infrastructure. Some areas may need additional, exclusive infrastructure to accommodate climbers.

There are many ways to achieve this, as contrary to primary rock area parts, many more stakeholders need to be involved in the process, which in turn opens more possibilities for solution. The investment in infrastructure can come from state or municipality or even local community, as this investment improves tourist potential and solves local problem; it can also come from private initiative or the local climbing group or national association (even through EU funds). Usually the solution requires cooperation of many stakeholders, as it concerns land ownership, land laws and regulations, investment into building a parking space and further investment for maintenance.

The two main elements here are trails or paths (for approach, movement between sectors and for potential descent) and parking spaces.

Trails are used by visitors to reach the rock base. They should be determined in agreement with land owners and should be as short and non-invasive as possible. Ideally, already existing paths (walking trails) are used for this. On the opposite spectrum, there can be no set paths, which represents the worst-case scenario, but it is not in all cases problematic. Trails are usually low impact, with short time human presence and low maintenance, but not always. They may need in situ gear in case of steep or rough terrain to the extent of via feratta, steps, ropes or similar. Sometimes trails can be equipped with railing or fence to either help visitors or to limit their movement to the trail. Management of the rock area should try to avoid conflicts with land owners if possible, but should also be acquainted with national laws regarding the Right to roam (described in section I.4.3.) if no good alternatives are available and no damage to the land is being done by traversing it.

Basically, the trails can be split into further groups, like main approach trails, trails for moving between sectors and descent trails. Though they have some different characteristics their impact and management is somewhat similar.

Parking spots are also essential spatial objects connected to crag use. As we already pointed out elsewhere in the study, a large majority of climbers reach the rock areas by car. As with trails, it is preferable to use existing spaces, which already serve other groups, but it has to be agreed upon as climbing traffic can exceed capacity and impede on functionality of the parking. Additional parking spaces can be designated for climbing area only. The problematic of this is correlated with crag capacity and popularity, so it can sometimes be a source of many conflicts, more so with local population as incorrectly parked cars can obstruct movements of locals who work in the area (sometimes using tractors or other large equipment). In big areas involvement of local or state government is necessary to resolve the issue.

Depending on options and number of visitors, there are many options to solve this problem:

- Unofficial plots of land (gravel patches, unused land, side of the road). This is the least desirable option, which can lead to many conflicts if not properly agreed upon. However, it can be functional for some local, less popular, secluded areas.
- Existing parking. There may be already existing parkings that serve also other groups who visit the area. It is the best solution, under condition that the capacity is on pair with the demand.
- New free dedicated parking. Locals or municipality can provide an otherwise unusable plot of land to be used for parking. It can come with some rules, but is otherwise free to use and rarely maintained.

[142] http://www.otok-hvar.com/hr/d/1018/penjalista/suplja-stina

- New for fee parking. One or several stakeholders can invest in new, maintained parking where they charge daily or similar fee for usage.

Parking fees can be one of the few direct sources of income from climbing. If such parking serves only a specific crag this is de facto entrance fee to the crag itself. This can be dangerous area if the situation is not properly agreed upon with all the stakeholders. Fee for parking should usually provide some percentage for one or several of: secondary infrastructure, security of parked vehicles, other services (like toilets), investment in crag maintenance, road and parking maintenance, etc.

Not following these guidelines or overcharging for parking may lead to further conflicts and violations, illegal parking and dissatisfaction with the area. There are different examples throughout Europe, but in the better developed regions, the parking fees are seen as very sensible and acceptable. Many rock areas in Spain and France have free parkings (although their maintenance is minimum). One of the biggest Spanish crags, Siurana[143], charges 3€ daily fee, while the fee for Schleier in Austria[144] is 2€ per day.

This way, parking does not serve as the sole source of income, but more like an anchor and information point of a well-managed area, providing clarity and comfort to the visitors. Such area is viewed as welcoming, tidy and functional and attracting better profile of visitors or incentivizing them to respect the rules. Such visitors will want to stay longer and will likely return.

Additionally, at times, there might be need for use of physical barriers to prevent misuse of basic infrastructure, like closed trails or inappropriate parking.

25.5.5 Secondary infrastructure

Secondary infrastructure serves as additional elements of the rock area which helps to alleviate certain problems with over crowdedness, adds comfort to the crag or helps users to be informed about issues.

We can split it into several groups:

25.5.5.1 Comfort and services

These elements come in form of **tables** and **benches** and even warm up gear like hangboards and poles and can include potable water fountains, trash cans etc. These are “luxury” elements of the rock area, improving its comfort and functionality, making is a more desirable destination but are not as essential as other elements. Though they can be inexpensive to provide, some require maintenance or service (for example to empty trash cans).

25.5.5.2 Panels and signs

Another group of secondary elements are the **signposts** and **panels**. It is usually best to agree upon these with local population and other involved agencies as to determine the contents of the panels and their number. In some areas, panels or larger number of those is not welcomed or even allowed. Panels can come in many shapes, sizes and functions. The simplest ones are used as signposts to point the visitor in the right direction. Areas with more crowds should also have panels with climbers’ ethical code and any other restrictions they should follow in the area. This can be communicated in the form of pictograms or they should be multilingual and at least translated to English.

More advanced panels also present the map of the area with marked parking spaces and trails that visitors are supposed to use. Panels can also serve larger area to introduce visitor to other options (be it climbing or other information) in the region.

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143 https://www.google.com/maps/place/Parking+Siurana/@41.2584836,0.9361018,15z/data=!4m5!3m4!1s0x0:0x5b6914160406619a!8m2!3d41.2584836!4d0.9361018

144 https://www.google.si/maps/place/Parkplatz+H%C3%BCttling/@47.5298481,12.3555775,17z/data=!4m5!3m4!1s0x47764f929d1a55ed:0x24a5f3b5db541604!8m2!3d47.5305419!4d12.3543962?hl=sl

If panels are done in cooperation with various agencies and local population they can be used for other purposes as well, such as commercial information (i.e. accommodation, restaurants, produce, services) or to inform visitors about nature protection status, protected species or heritage, local history, attractions and so on. Parking lot is the best place for bigger panels.

25.5.5.3 Toilets

Potentially important part of secondary infrastructure are **toilet facilities**. These can be a complicated issue as they may require sewage system and water installation. Popular solutions include chemical toilets (which can be rented) and dry toilets (which need some construction work). The connecting issue with any toilet facilities is that they have to be regularly maintained and cleaned, which means the area needs a manager with some funds for this. In very popular and overcrowded areas this in one of the necessities that needs to be solved as sometimes defecating in nature can have detrimental effects on both nature and local population. Less ideal solutions in this case include: designating a specific spot for defecating (a dug-out hole, that is changed periodically), encouraging the use of shovel and bio degradable paper, or even using a plastic bag to dispose of waste later. Similar to parking spaces, this issue can present a negligible or a significant problem for the area, depending on other characteristics.
Other than that, overcrowded areas should also actively promote using toilets before climbing (in coffee bar, hostel, camp), at in situ facilities or at the very least following certain rules. This is an issue climbers are least likely to respect as they prefer to defecate quickly in nature close to the crag (if this is possible). The whole community should be educated to frown upon such behaviour.

25.5.5.4 Other

An optional part of secondary infrastructure can be **small buildings** and facilities, which come with higher commercial potential and interest in the area. They can be in form of information booth or small kiosk, a stall or small shop which can sell climbing articles (chalk, T shirts, guidebooks etc.), local produce, food and drinks and offer other information. They are usually connected to municipal, local or private initiative.

25.5.6 Wider area

Wider area is all the land, settlements and infrastructure, that is positively or negatively affected by climbers. It includes all the land (apart from primary rock area) where climbers move and spend time, the roads and facilities they use and the businesses they help sustain. Climbing visitors can have a significant impact on local accommodation facilities (camps, apartments, refugios, hotels etc.), restaurants and bars, shops and services. For more on this see the analysis of climbing tourism. The impact can also have some negative consequences, like increased traffic, trash, human presence and noise.
Depending on involvement of stakeholders, this can be very organized (additional rules, signposts to crags, pamphlets with information, involvement with guidebooks) or completely disorganized and left to private initiative or small disconnected groups. Popular regions can benefit greatly with a more connected approach. This can help control and disperse visitors, points them to services and points of interest in wider region, promotes different rock areas and gives them more options to explore and can make their stay more enjoyable, comfortable and organized. Thus, such visitors are more likely to stay longer, return, recommend the area to others and also follow the regulations.
Wider area can represent natural environment and wilderness. This requires additional management and recommendations to visitors as they are more likely to camp in nature or bivouac there.

25.5.7 Conclusion

As can be obvious from analysis of the rock area parts, some crags are more complex and problematic than others. It could also be concluded that some areas are in bigger need of proper management, while some may not necessarily need it at all. Handling and managing areas differ also with the type of climbing area. Each type of climbing area brings unique challenges on top of its own local specifics. For example, visitors of bouldering area are

usually more spatially spread as opposed to a simple sport climbing garden. Visitors of alpine style multipitches are even more mobile and their only set location may be parking space.
The management should be suited to each area individually. The practices and guidelines of this study only serve as ideas and suggestions, but any area needs its own analysis and may require additional measures. Sometimes solutions can also be only short term, to address the spikes of visitors during certain parts of the year. These can include ad hoc parking spaces or more tolerance to increased traffic, renting toilet facilities etc.

26 Stakeholders

Many different groups may have use or interest in the area and in order for it to function, a proper cooperation, communication and balance between all of those needs to be obtained. A lot of infrastructure of the area can serve many groups, but it has to be well-thought of and in adequate capacity. A parking space that is good for climbers may not be adequate if it also serves locals, tourists, hikers, bikers etc.
Any successful management plan should include the needs and cooperation with all relevant stakeholders. Decisions done by only one group may lead to potential future conflicts with others.

26.1 Climbing community

Climbing community refers to all the climbers that use the area. They can be organized or non-organized, locals or visitors, individuals or groups. Usually the visitors are a mix of all these.
The main interested party here is **local climbing community**, usually (ideally) in form of organized group of climbers who manage the area, maintain and rebolt the routes and communicate with other stakeholders. They should cooperate at setting of rules and communicating them to other climbers, such as visitors (domestic or international).
Concerning managing rock area, they need to be active and involved. They should participate in and promote decisions, suggest solutions etc. To ensure some continuity this should not be based to heavily on voluntariness and should have access to some funds to operate. They could be funded by municipality / local community; taking part of parking fees; national association; other initiatives (donations); guidebook sales and other sales; or a mix of all those.

26.2 National federation / association

This is the representing body of climbers on the national level. It should provide assistance, guidelines, licenses and potential rules for the management of the crags within its country, ideally in cooperation with local groups (or individuals). It is especially important to involve it if there are complex legal issues that need to be resolved. It should connect local groups to other institutions (EU, EUMA, state, ministries). They also serve as a safeguard that certain standards and practices will be followed.

26.3 Public institutions

They can be various entities: EU, Governments (Member states, ministries); Local authorities (municipalities). They are not directly affected by climbing, but may have interest to regulate, encourage, prohibit or preserve it in some areas. They provide more general rules, laws and regulations, which are the framework within which also climbing must operate. It is best that communication link goes from national federation to those entities, while local groups deal with local situation. A special kind of stakeholder can be park authority, which already has mandate and responsibility to manage the area. There is increased need for presence in these institutions, to cooperate with planning, decision making and lobbying. Those groups can also be a source for some funding.

26.4 Local population

They are people living in the directly affected areas. They may also be land owners or its managers. The impact of climbing activity for this group can be very positive in form of tourist income and spending (food, accommodation,

shops, visits to attractions, use of services) as well as negative (increased traffic, illegal use of land, trash, noise, etc.). It is of utmost importance to communicate with this group and try to respect their wishes and strive for the best co-existence with maximizing positive and minimizing negative impact.
Local population can be represented/joined in some form of local organization (village community etc.), which makes it easier to approach and communicate. But there may also be some need to address some individuals if they live next to rock area (and may be owners or otherwise more heavily affected by climbing traffic).

26.5 Nature / cultural heritage protection

Those stakeholders come in two variations. Official decisionmakers are usually government agencies and ministries, often tied also to European legislature like Natura 2000. Apart from those there can be many other interested and influential groups that are non-government but dedicated to nature protection (local nature guardians, bird watching societies etc.) or local culture (local cultural heritage groups) or promotion of the area (tourist societies/groups). It is important to cooperate with these groups as well.

26.6 Other land users

Other land users are usually not in conflict with climbers (with possible exception of hunters) and can represent a wide spectrum of people, from tourists, hikers, bikers, forest fruit pickers, geocachers, miners, farmers etc. Some agreements may be necessary to provide a satisfactory environment for all parties. Another problem that needs to be addressed is the infrastructure, which has to serve all the groups in the area. Sometimes the rules and prohibitions need to address these groups separately and more extensively as they may impact other parts of an area than climbers.

26.7 Land owners

They can also represent a wide variety of entities. They can be an individual or a group representing state or private property, which can be a part of local community or not. A lot of rock areas are located in natural regions, which is often owned and regulated by the state/municipality (even though climbing can still affect other local population regardless). Private property can be more complicated. Land can be owned by individuals, who either live on it or in vicinity or they may live elsewhere. Other owners may be formed into groups/ private entities like village communities, church, companies etc. Furthermore, a rock area or its secondary parts can be owned by many different stakeholders. In any case, a formal agreement to use the land for climbing must be obtained regardless who the owner is and how many owners there are. It is best to approach many owners through intermediary (like municipality), who represents them collectively.

III. Impact of climbing

Despite characteristics and nomenclature stated in section II.2.5.2., as an area can be one small single rock face or a huge area of many sectors and sub-sectors with thousands of routes, the two defining characteristics that will apply to any area are its importance and its impact.

1 Importance metric

Importance can be measured by many factors and can be somewhat subjective. Usually the elements that contribute to importance are: quality of routes→ number of routes→historic significance→ ease of access, location, infrastructure→other factors (special type, good equipment, atmosphere, season, only crag in the area...). This is closely tied with **popularity**, and in turn **crowdedness**, **tourist (economic) potential** etc., but not necessarily the need for management. Crag can be important and popular, but on the whole not problematic. It is either because private initiative is strong enough to take care of needs of visiting climbers and there are no immediate issues or because the area is already efficiently managed by another entity (national park, local community) and climbing is just a part of this management.

However, we feel that in general, important/popular crags, that tend to be overcrowded, would always benefit from some kind of management and it is usually necessary.

Factors for crag importance:

1. Routes: The quality of the routes is somewhat subjective but, on the whole, there can be a consensus that an important area has a large number of long, continuous, style- or grade- specific, safe routes in larger homogenous sectors. The number of routes is a simple quantitative data. The higher the number, the more important the crag generally is. Another possible factor influencing the popularity is the perception that the routes are soft or hard for their grade.
2. History: The area can have historic significance or famous routes that are important in climbing history.
3. Location: This can mean beneficial exposition of the wall (southern exposition for winter climbing and vice versa for summer), closeness to urban centres, good connections. Another positive factor is ease of access and short access with suitability for families and other groups. Connected to this is good supporting infrastructure like adequate parkings, maintained paths, toilet facilities and other comfort.
4. Other factors may include: crag being the only or the biggest crag in the wider area or having a specific season (the only crag for summer/winter) or being rain-proof. It can include some other specifics like being very scenic, having a special style or other "draw" factors (being known for excellent equipment etc.).

Many national associations and other groups may assign different levels of importance to their rock areas. They range from local, regional, national and international importance. There are no set parameters for this and the use of such levels is mostly internal within different groups.

Importance of the crag is one of the main criteria for determining the need to manage, fund, develop or protect climbing in an area. The less important the crag is, the more management can be done locally with less oversight. It does not necessarily mean that less important (local) crag needs less management or have lesser impact (as it also depends on other factors like sensitivity of the environment), but as management requires manpower, funds and commitment, it has to be balanced with pros and cons even to the point of closing the most problematic crags if there is not enough local interest to manage them. Associations should focus on nationally and internationally important rock areas primarily and assist with management of other areas where necessary in cooperation with local groups.

2 Functionality of rock area

2.1 Types of functionalities

In present times the functional situation of the crag is more and more important. In many countries certain paperwork and permissions are necessary for rock area to be considered legal/functional. Usually these consist of a permission from the land owner and permission from nature protection and cultural protection agency (which may present certain conditions).

Despite having necessary paperwork, a functional rock area also needs to sort various other issues, mainly the adequate infrastructure for the expected number of visitors.

In accordance with this crag's status could be determined:

- Fully functional area: has all necessary permits, is accepted by local community, has adequate infrastructure, nature protection in place and proper maintenance. There are always issues that can emerge, but they are promptly dealt with.
- Semi-functional area: is similar to the normal legal area but there are issues that need to be resolved or worked on. Climbing is tolerated/accepted but not all permits are in order, there are tensions with nature protection and no active management; area is however usually known and published.
- Illegal/wild area: Area that was bolted without any permits or consultation with local population or other agencies. It may have higher or lower potential for issues and problems, which, with proper management could or couldn't be sorted. In latter case the area should be closed.

The genesis of such area is characterized by initial enthusiastic bolting of available lines, sometimes with some minimal communication with local owners. The expected and initially experienced pressure is usually low and acceptable, but the scope of later problems it hard to determine and can be hard to resolve if not addressed early on.

This kind of areas are sometimes not advertised or published and are called “secret spots” if there is assumption that opening them to public could cause more problems. Generally, we would advise against supporting such areas.
Two additional options apply to non-functional areas:
- Closed area: area with issues that cannot be resolved. Unless the situation changes (change of ownership, other positive developments), the area should remain closed for climbing.
- Potential area: is any rock area suitable for future climbing, but as of the present moment, without climbing routes. Ideally, when local government is spatially planning the regional development, also climbing should be considered on any potential area without other issues.
It has to be said, that in many countries, these definitions serve only practical use, as “rock areas” as such are often not recognized as legally defined entities in national laws. Sometimes they don’t even fall under “sporting infrastructure in nature” or “recreational areas in public interest” definitions.

2.2 New vs. old rock area

In past, many climbing areas were developed without any paperwork (sometimes the process for it did not even exist or was ignored), without nature or ownership considerations. Problems, that arose in such areas later, were dealt with retroactively. A lot of times, when an older area was established, it had few visitors and its lacking infrastructure was adequate. But rise in popularity of climbing changed that. It is always harder to manage old areas, where issues and resentment from local population has accumulated over the years. However, issues there are clearer and some solutions may have already been tried.
Opening a new area today should be a more responsible process. Instead of first bolting the area and deal with problems as/when they emerge, the algorithm has changed and many more factors should be considered and weighed in advance, and this is often done by outside institutions who issue permits. Initial cooperation with area’s stakeholders may ease this process and ensure its potential success. Before the physical work begins, a plan has to be produced, presenting spatial and seasonal requirements, having a natural protection and local impact assessment done, with proposal od solutions and potential limitations. Trails are thought of in advance as well as parking spaces suitable for expected number of visitors. Bolting standards are set and carried out by licensed expert bolters.
The first question for some smaller areas should be: are they worth the disturbance, impact and investment in view of their potential? A rock area with only a couple of routes, no infrastructure (and few options to develop it), in sensitive natural environment, with few benefits (long approach, low quality of the routes) may not be worth the work. Climbers have to realize that we cannot and should not bolt every piece of rock available.
The situation is a little different with opening new routes. Here the considerations are:
- If new sector is being opened in an established and functional area, the new zone should be assessed for potential and issues. Many countries already successfully practice the principle of microzoning within a climbing area or region. This divides specific crags into different categories and levels from those, that should be closed for climbing, to those that have some restrictions and rules or where bolting is not limited. Such cases are found in many developed areas, like Snow canyon in Utah, USA[145] (which divides areas to high, medium, low impact zones and specially managed areas), or Frankenjura in Germany[146] (which has 3 zones). Many areas in Spain also follow this principle (i.e. Abella de la Conca[147], Rodellar, Collegats and others), where some crags are bolted, some are closed for wildlife protection and some are open only in certain season.
- If a new route is bolted in existing sector and the area is not problematic for nature protection, some ethical standards for bolting can be observed (depending on specific area ethics), like not bolting routes too close or not bolt routes that require too much cleaning or keeping part of the wall for trad climbing only. Otherwise this is not problematic.
- Also, less problematic may be adventure/alpine routes. They may still be subject to environmental rules and restrictions as they are more likely to be found in a very sensitive, pristine, protected natural environment.
Any impact from new development should be viewed two-fold:

[145] Access Fund, Climbing management guide, 2008, pg. 53
[146] https://ig-klettern.org/klettern/
[147] http://abellaclimb.com/

- Initial impact includes cleaning the route from vegetation and loose rock and installing potential bolts and anchors. This is usually a one-time impact.
- Consequent impact comes from increased visits to the area/route and creates different pressure.

3 Impact metric

3.1 What is impact

Impact is the most important metric for maintenance. A smaller or less important crag might need more maintenance then a big, popular crag (although it's not usually the case). The main reason can be that the crag is located in a very sensitive environment (be it local population or nature protection), it has fragile situation and history or its carrying capacity is severely limited by some outside factors (like lack of accommodation or parking spaces).
Usually impact is viewed as any change that causes damage or deterioration to environment or local society. But according to most definitions, impact can also be a positive change.
Impact can be seen as a correlation between **sensitivity** of an area (protected nature, carrying capacity, etc.; the more sensitive the area is, the more impact any activity will have) and number, concentration and type of **visitors** (one day vs. multi day visitors, popularity/importance of the crag, typical behaviour of visitors etc.; the more concentrated and numerous they are, the bigger the impact will be, which can be multiplied by their behaviour).[148]

3.2 Types of impact

Impact can be positive and negative.
Positive impact can mean tourist and other economic potential (with accommodation, eating facilities, selling of local produce, climbing equipment, offering other experiences and attractions) and certain development of degraded areas (cleaning of trash, building of paths which can be used by hikers, maintenance and improvement in functionality of the area).
Negative impact is any impact with undesirable consequences for the area. It can be closely connected with positive impact (i.e. more tourists mean more money but also more problems) and should be addressed and managed as much as possible. The end goal being to maximize the positive impact and minimize the negative one. The most common problem areas are **nature protection**, **local population** (noise, illegal camping, defecating in nature, trash) and **over crowdedness** (carrying capacity of the crag and parkings is exceeded, overall experience is reduced).
Impact factor defines how much management and limitations are needed for an area. It has to be carefully evaluated for each area separately.
Impact (via climbing traffic and pressure) can come from: local climbers; domestic climbers; climbing tourists and other non-climbing entities and groups (industry, local population, other tourists and other outdoor sports, hikers).

3.3 Impact from different climbing groups

3.3.1 Bouldering

Bouldering as a climbing style has many distinct specifics, most notably the use of minimal equipment. Usually only crash pads, climbing shoes and chalk is used, but not rope or any other gear. The safety of the climber is provided by crash pads and other climbers (spotters). Along with the fact, that bouldering is a young and social sport, this means, boulderers usually come to the area in larger groups, compared to for example adventure climbers. More often, boulderers will transition to nature from gym, as this activity is more accessible even to beginners and little additional knowledge and mentorship is required. Thus, they might be even less informed about ethical code and proper behaviour.

[148] George Stankey, The role of management in wilderness, 1982.

Bouldering as a form of climbing is also specific. Their rock areas usually cover larger space, with rocks, boulders and problems scattered around. Bouldering can have lower impact, as the visitors are dispersed around the area, but are also harder to manage, require more trails, affect certain wildlife and decrease functionality of in situ toilets. Also, their impact can be different from other climbers. Use of crashpads may damage some vegetation, while they sometimes build special landings under the boulders or dislodge large rocks in the landing zones for safety (all affecting the erosion). Usually the route cleaning process is more intense and can mean more impact on lichens, and there is also more residue from chalk use and rubber traces from smearing with shoes.
Boulderers are a group are more prone to use internet and social media for information than other groups. It is imperative that any management also extends to such pages. Information panels, signposts and detailed guidebooks can help with sharing the information, especially to keep climbers on limited and existing trails. Ethical standard should be promoted, especially cleaning the chalk and tick marks, and collecting all the trash, including leftover finger tape. Proper pad placement and spotting techniques should be promoted.

3.3.2 Single pitch climbing

With single pitch / predominantly sport climbing, the impact has two phases. First, when the route is created it goes through cleaning process (loose rock, vegetation) and potential placement of bolts and anchors. Later, climbers will stay in the rock wall or its base for duration of activity. This means more impact on this smaller, concentrated area on and under the wall. Such long-time presence has more impact on soil and may also disturb some wildlife. But it comes with a compromise. Usually, where climbing is allowed, we also accept that these areas will have considerably higher impact. So it is best to designate areas for climbing and those where no climbing is allowed to preserve nature.
There are some considerations with single pitch climbers:
- we recommend putting anchors for descent below the wall edge to avoid climbers going to the summit or use trees for abseil.
- we can try to limit the base of the wall, also using natural or artificial barriers
- we should discourage bolting of routes that require excessive cleaning
- we should promote ethical code with special consideration to large climbing parties (such as climbing courses)
- we should use panels and signs at the parking area to direct visitors to established paths.

3.3.3 Alpine/adventure climbing

The impact of this style tends to be lower as it is also less practised by climbers. But there are also some specifics: climbers may need to bivouac on the wall; it happens in more vulnerable, pristine natural settings; especially alpine environments are more vulnerable and climbers need more information and guidance; in case the area becomes more popular it will be harder to manage as it is spatially more spread.
Apart from that, there are many discussions how to approach adventure climbing also for the sake of climbing experience. The main discussion here is placement of permanent bolts as it is often tied to trad approach to climbing. “Bolt wars” are very old phenomenon and go back from discussion of piton vs. bolt to the more modern bolt or no bolt. UIAA itself vocally supports protection of some rock areas from bolting.[149]

3.3.4 Locals vs. visitors

Most of the time, local climbers are more respectful of the rules and limitations and more engaged in preserving and maintaining the area. Even though most climbers will have high ethical standards and will support nature protection, the visitors might not be aware of specific regulations and restrictions of the area. Groups coming from abroad might also have different values or ideas what is acceptable. For example, to visitors from some countries it might be “normal” to sleep under the wall or “wild camp” in the meadows or to throw biodegradable trash (tissue, fruit peels) or cigarette butts on the ground or to defecate in the forest. This does not derive from their lack of ethics but from the fact, that in their community this is generally acceptable. The solution to this problem goes both

[149] UIAA Recommendations on the Preservation of Natural Rock for Adventure Climbing, 2016

ways. Any climber travelling to other area should educate themselves about local rules and ethics; but on the other hand local climbing community should try to communicate all those often and clearly to the visitors.

3.3.5 Gym climbers

Gym climbers (especially more exclusive ones) are a modern phenomenon. However, a lot of them will inevitably come to climb also in nature. This in itself is not problematic, but they may lack some practical experience and education on ethical code and how to behave at the rock area. This can be mitigated by constant and active promotion of both, also preferably at climbing gyms via posters and pamphlets.

3.3.6 Other

There are other styles that may overlap with climbing, especially stemming from mountaineering. We can look at two specific styles: Ice climbing and drytooling.
There has been almost no research on ice climbing impact. Generally, it is practiced by fewer climbers in winter conditions, which is less likely to affect vegetation. Also, the locations tend to be more remote. We should nonetheless consider some specifics, especially burying of trash or human waste and usage of nylon slings for abseils and protection. As the snow and ice melts, those will be left over on the ground. A special problem can also be the development of artificial ice ("ice farming"), which uses nearby water sources and can be a big and specific environmental and even legal issue, which should be analysed elsewhere more in depth.
Drytooling, especially in modern form, can be managed more easily, as its bolted routes are very similar to single pitch climbing gardens. Most of the considerations that apply there apply here as well, with the special issue, that such climbing may visibly and functionally damage rocks. As drytooling does not require dry, compact and heavily featured rock, they often can choose locations unsuitable for climbers. In most other cases, drytooling and rock climbing will not mix, despite the existence of some areas, where rock is divided in separate parts. Drytooling should not be excluded from nature protection considerations, and there may be some additional issues with specific, damp, often extremely overhanging environments.

4 Environmental impact and nature protection

Environment with its ecosystem is self-sustainable community of living and non-living components, where every human activity will inevitably have certain impact. However, some parts of this community are more robust and many activities can be successfully managed to minimize the impact. But to be successful at that, we need to be aware of all potential issues and possible solutions. Most of the animals and plants, which are present in rock areas are highly adapted specialists and extremely vulnerable. The nature experience during the climbing activity depends to a great extent on an intact nature environment and serves in the long run for our sustainable human livelihood. We should never let a species die out because of leisure activity such as climbing. Therefore, it is inevitable that in such a nature-entangled sport there are measurements taken for nature protection.
Although nature protection should be applied every time when managing the rock, this is mandatory and enforced by law in protected areas. Due to its characteristics, many rock areas are within protected area of some kind.
A protected area is a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.[150]
Protected areas come in many forms, from garden monuments, national monuments, national parks, protected forests and other biotopes, protected caves and so on. They may be protected by several different laws or internal regulations, which any potential manager of rock area must be aware of. Many of the laws and regulations come from international recommendations.
While it is true that damage and impact in rock areas is not only caused by climbers, as also other groups (hikers, walkers, forrest fruit pickers) are present, climbing causes more direct damage and their presence is less transitional as they can stay at one spot for the whole day. On the other hand, not all rock areas are suitable for climbing: if they are heavily vegetated, with not steep enough rock or loose rock with many ledges, they will not be interesting

[150] IUCN (International Union for conservation of Nature)

for climbers. With increased awareness about nature protection, active management and effective tools (panels, seasonal closures, zoning), the impact of climbing has been and can be heavily reduced.

4.1 Impact on land

Impact on land, most notably soil erosion is often overlooked by area managers. The key areas of this problem are the creation of approach/descent trails and base of the rock wall. They are part of the horizontal perspective of a rock area.

Often, the trails of rock areas are created ad hoc, without planning, following the shortest path to the wall or the route of least resistance and effort. If trails are not well defined or even signposted/marked, several alternative trails can be created, which all serve the same route. If the area is spatially spread (like bouldering area or area with many sectors), this may lead to creation of additional, "social trails", that connect the sectors/blocks, and may also overlap or be excessive.

The most critical problems associated with trails are soil compaction, trail widening, trail incision and soil loss.[151] The amount of use is not the only factor in those issues, as we also need to consider type of use, site durability and land composition. Damage to soil can limit aeration, affect soil temperature, moisture content, nutrition and soil microorganisms.

Some of these issues cannot be mitigated, but if managed properly, the impact can be minimal. This includes the proper choice of trail (on more desirable surface, like rock), stabilization of existing trails and managing the minimum of trails necessary to service the area. The redundant and excessive trails should be eliminated and at times sensitive areas must be physically protected with fence or barrier and trails there rerouted. This was done for example in Osp area in Slovenia, where a slope containing scree and protected steppe grass, was closed off by a wire fence and the trail rerouted over a more acceptable terrain.

The use of official trails should be promoted and clearly communicated with panels, signs and in guidebooks. Some similar considerations should be taken at the base of the wall and also at potential sites for wild camping and bivouacking (if such activity is permitted in the region).

There was also some criticism[152] about the use of pegs and pitons in alpine climbing, about damaging the rock, but such effects are minimal and criticisms exaggerated.

4.2 Human waste and nitrification

Human waste is an important issue, which can be limited in impact or can cause displeasure in local population, other visitors or even present a health issue and changes to the soil with high nitrification of the soil.

With few visitors, this may not be such a big concern, but if the area gets crowded, this issue needs to be dealt with. The most common solution is the construction of toilet near the climbing area or at parking space. Proper toilet facilities may need access by vehicle. There are many options, which range from toilet that requires water/sewage connection to chemical or dry toilets.

Another solution, which can be transitional and is not ideal in long term is construction of a simple pit latrine, which consists of a dug-out hole somewhere far from the base of the crag or trails. Some areas promote digging a small individual hole ("cat hole") and usage of little biodegradable paper in case of emergency. Again, this solution will not work in overcrowded areas. Any kind of other defecating in nature, especially near trails should be actively discouraged. If no other options are available, using toilets at home, in campsite or at coffee place should be encouraged – it only requires some advance planning. [153]

Lately, other initiatives are emerging and should be introduced to areas and promoted if possible. They include Restop[154] or Wagbags[155] and come in form of disposable bags that can contain human waste and even urine, and are disposed of later. Big wall climbing also uses so called poop tubes, a PVC pipe used to store waste.

[151] Access Fund, Climbing management guide, 2008, pg. 8
[152] Giuliano W., The impact of hiking and rock climbing in mountain areas, 1994.
[153] https://www.climbing.com/skills/guide-to-going-number-two/
[154] https://restop.com/product/rs-2-disposable-solid-liquid-waste-bags-24/
[155] https://www.cleanwaste.com/go-anywhere-toilet-kit

Such methods are less common in Europe and some climbers may have problems accepting such solutions and changing their attitude, so effort must be put in promoting modern ways of disposing human waste.

4.3 Impact on vegetation

Plants on rocks are exposed to harsh conditions. They have to cope with extreme temperature changes, wind, extreme dryness and extreme precipitation. Most of them are specialists and are extremely sensitive to damage. Even larger trees may be damaged if used for abseil.
Here is an incomplete list of some specialist species: alpine thristle, steppe plants, Hart's tongue, hawkweed, yellow whitlow grass, cheddar pink, shad flower, maidenhair spleenwort, fescue grass, stonecrop, bladder fern societies, shadbush, broad-leaved willow herb, sedges and several alpine flowers or mediteranean plants or plant colonies. Especially in high mountainous regions of the sub-alpine, alpine and nival zone cushion plants and grasses are existing, which are exposed to cold temperatures, snow, wind, short vegetation period, nutrient poor soil in thin layers. These are highly sensitive to damage from trampling and need more time to recover than plants in lowlands. Lichens are also sensitive to damage by trampling. The radial growth for crust lichen is about 0,1 to 2 milimeters and for leaf lichen about 1 to 5 milimeters per year.[156]
Climbing can affect vegetation in many ways and most of this impact can be influenced and reduced. Main form of impact is trampling when moving on trails or at the base of the wall; and vegetation removal when cleaning new route or space under the wall. Cleaning is more aggressive at bouldering. This can affect all types of plants: lichens, grass, ferns, mosses, bushes and trees.
Rock biotope, also in its vertical component is a place where many specialist plants thrive. Some species may be more resistant to climbing than others, but some must be strictly protected to preserve them. Many endemic plants may be found on rock faces, such as *Moehringia tommasinii*[157], found only on the Karst edge rock faces and dependant on rock cracks that provide its water and nutrients. Special care must be taken to catalogue it and close off sections of the wall from climbing, where it is found. This was the case in Istarske toplice in Croatia[158] where large section of climbing routes were closed for the protection of this plant (although this is also an example of excessive, illegal bolting and excessive, non-coordinated restrictions, but it should be discussed elsewhere).
Not all plants have the same susceptibility to impact and some may be more resilient than others. All vegetation is however part of the ecosystem and affecting one species may affect the others. Alpine environments are especially sensitive due to short growing season that often coincides with climbing.
Some initial studies done in cliff ecology reported very high damage done by climbing to vegetation communities.[159] However, later research and studies[160] disputed these findings, due to poor methodology of comparing cliffs with climbers and those without routes and ignoring the fact that climbers usually choose less vegetated, overhanging walls and other factors. There is certainly impact of climbing on vegetation[161], but recent studies are inconsistent and inconclusive. More study is needed as a lot of research has "protection" bias against climbing.
A comprehensive overview of studies was conducted in 2016 by Andrea Holzschuh[162]. With increase in popularity, many studies about rock climbing were done in the new millennium. A lot of them gave support for further climbing restrictions and even climbers' acceptance of restriction is correlated to scientific evidence. However, the review shows little to no impact of climbing on species diversity and overall number and shows that methodology of the studies is often biased and weak. Majority of published reviews may be confounded by systematic abiotic differences between climbed and unclimbed cliffs (mictotopography, cliff slope, exposure and the insolation) with lack of proper controls, leading to overestimation of negative effects of climbing. Systematic abiotic differences can arise because sport climbers choose preferentially dry, steep and unbroken cliff faces without large number of

[156] Ahmadjian, V., Hale. M, The lichens, 1973.
[157] Živa Fišer, Elena Buzan, Boštjan Surina, Moehringia tommasinii, an endemic chasmophyte from the Karst edge, 2014.
[158] https://www.glasistre.hr/istra/endemska-biljcica-koja-uspijeva-samo-na-sjeveru-istre-dobila-zasluzenu-pozornost-motiv-tommasinijeve-merinke-na-postanskoj-marki-637628
[159] Hans Peter Rusterholz, Effects of rock climbing on plant communities, 2004.; M. Farris, The effects of rock climbing on the vegetation in Minnesota, 1998.;
[160] Kathryn Kuntz, Douglas Larson, Influences of microhabitat constraints and rock climbing disturbance on cliff face vegetation communities, 2006; Access Fund, Climbing management guide, 2008, pg. 13
[161] Vogler, Reisch, Genetic variation on the rocks, 2011.
[162] A. Holzschuh, Does rock climbing threaten cliff biodiversity?, 2016.

ledges and crevices, which may differ from unclimbed cliffs even if they are unclimbed. Many studies therefore suffer from selection bias instead of rock-climbing research. Very few studies conducted actually meet the quality criteria.

Of the 16 studies reviewed, all compared climbed cliffs with unclimbed cliffs, however no studies monitored the same cliffs before and after climbing routes were established. If we look at the studies about lichens, which are generally the most abundant and species rich vegetation group, out of 7 studies, only 3 had control for potential selection bias. The other 4 showed negative impact of rock climbing. Out of the controlled 3, one study found that rock climbing reduced species number and cover, but only 10 and 12% of the variance was explained by climbing; one study showed significant positive effect of rock climbing on species number and cover; and one showed no effect at all. Study done on differences in community composition, which included microtopographic features also showed that it was not affected by rock climbing at all. [163] Interestingly, it even showed greater genetic diversity for a rare glacial relict plant species *Draba aizodes*, with possible explanation being that climbers removed vegetation and opened gaps, which were colonized by weak competitors like lichens. Another interesting point is, that the harder the routes are, the less impact they have, as such routes do not provide enough soil for colonisation of vegetation and the effects of rock climbing are thus absent.

This does not absolve area management from taking every possible consideration to avoid any more damage to vegetation than acceptable/necessary however, there are many less radical tools at disposal than climbing bans. The fact that scientific evidence is inconclusive does not suggest that there is no impact, it just may be vastly overestimated.

Another specific issue is also potential introduction of invasive / non-local species, but on the other hand climbers can help with their removal. Studies however do show higher proportion of alien species on the base of the rock area. [164]

4.4 Impact on wildlife

Climbers share cliffs with wildlife, who use it for feeding, breeding and nesting. As the wildlife is more mobile than vegetation, the disturbance can be less obvious, but in case large areas are used for recreation, this can lead to significant disturbance of wildlife and change in its behaviour. Most wildlife living in rock areas is highly specialized. Many of the quotes that apply to vegetation, also apply to wildlife.

4.4.1 Mammals

Bats and dormice are using rocks partially as their habitats for sleeping or hibernation in cracks, holes or caves. Especially bats are highly endangered group of mammals. Stone martens also climb rocks in search of food.

In mountainous regions other larger mammals may be affected by climbers' presence, like Capricorns and Chamois. Also, some other ungulates may seek shelter in the rock caves and under overhangs in the winter.

4.4.2 Birds

Certain birds use rocky areas, rock faces and cliffs for their habitat, mostly for breeding or nesting. The peregrine falcon is one of the most famous and also endangered rock nesting birds which are vulnerable during their breeding and brood caring time. The same goes for owls, such as European eagle owl, which are less demanding concerning their breeding habitat but more demanding about their hunting habitat, which needs diversified landscape with freestanding rocks, water bodies, mixed forest and open areas. They are nevertheless also sensitive to the disturbances.

The common ravens, daw and the rock daw could also nest on rock terrain, but not exclusively. In the alpine regions the climbing could interfere with the Alpine accentor, Bearded vulture, Wallcreeper and the highly sensitive Rufous-tailed rock thrush. In contrast, alpine daw is much more used to human presence and disturbances. Alpine swift is

[163] Kuntz K.L., Larsson D.W., Influences microhabitat constraints and rock climbing disturbance on cliff face vegetation communities, 2006

[164] McMillan M.A., Larson D.W., Effects of rock climbing on the vegetation of the Niagara escarpment, 2002.

also known to co-exist with climbers as long as its nest is not disturbed. Blue rock thrush needs its peace only in the early morning so climbing during the day does not generally disturb it.
Negative effects of climbers also include flushing a bird from its nest, leading to nest failure, opening nest to predation (but it is inconclusive if climbers also scare the predators and thus desrease predation) or exposing eggs to weather conditions; startled bird may even knock eggs or young birds from the nest or the feeding is disrupted if the adult bird avoids returning to the nest.
There are huge differences between sensitivity of species to human presence. While some species don't seem to mind human presence if they don't directly disturb their nests, some are sensitive only in breeding or nesting season, while some species are very sensitive to human presence all year round. This sensitivity can be auditory or visual.
Research in this area is inconclusive. Some research has found no conflicts between climbers and raptors[165] (though it acknowledges its potential), and black vulture's tolerance to climbers[166] (with necessary protection of nests). In Europe, many crags were closed due to nesting of European eagle owl, with excessively wide buffer zones, despite some research suggesting it is not disturbed by human presence[167] or some crags having active nests along with climbing activity. In Slovenia, Osp area, a Peregrine falcon was successfully breeding in 2019, with routes closed about 10 m to each side, despite constant climbing presence, while in some areas whole crags are banned for climbing due to Peregrine falcon.
Again, we can refer to the review of studies done on climbers' impact[168]. Study done on peregrine falcon showed highest reproductive success at unclimbed cliffs and intermediate one when only climbers or ravens were present. The lowest success was measured at cliffs containing both climbers and ravens. It also cannot be excluded, that hiher reproductive success at unclimbed cliffs was a consequence of the vicinity to urbanized land and not the absence of rock climbers. Another example is a study on total bird communities, which shows that species numbers were not affected by climbing. Total individual numbers were even higher at heavily and moderately climbed cliffs than on unclimbed cliffs.
While good practices should include seasonal closures, route or section closures, much more active study needs to be done about the scope of closures. At the moment this seems too arbitrary, subject to personal decisions from nature protection agencies, varying from region to region and not wholly supported by studies. It is understandable that not taking risks at protection or overdoing the protection may seem the best solution, but we feel that with closer cooperation and trust we can elevate both science, protection and sporting aspects of this issue. Nice example of such management is Abella de la Conca in Spain, where climbing is actively managed and planned with nature protection.[169] There, climbing community cooperates with ornithological projects that informs about local griffon vultures and even organizes bird watching tours.
Future studies are also required to identify and test the required minimum size of buffer zones around nests for species of interest. [170] Many practical experiences and examples show are these are usually set too wide.

4.4.3 Reptiles, insects and spiders

Certain species of lizards and snakes are using rock areas the whole year round. They are seeking secure spots for heating up, mating, oviposition, hunting, hiding as well as for hibernating. Species include but are not limited to: sand and wall lizards and the smooth snake which is mainly feeding on them; the crossed viper, nose horned viper and the Aesculapian snake. Their habitat may reach up to 3000 meters.
Among the insects we find one of the most specialized animals in the rock areas. The larva of Apollo butterfly is specialized on the leaves of the white stonecrop, which grows mainly on rock areas. The butterfly is extremely endangered and protected.
The *Chondrina avenacea* (oat corn slug) grates endolithic algae, lichen and detritus from the rock surface of lime stones and covers itself with grey stone dust. The Pyramidula pusilla (rock pyramid slug) lives on limestone or at least calcareous rock and could be present up to 3000 meters where it feeds on lichen. The sand lion (larva, which

[165] Cymerys, Walton, Raptors of the Pinnacles national monument, 1988.
[166] Mohonk Preserve, Black vultures expand northward, 2008
[167] Matyas Prommer, Preliminary study on the tolerance to human disturbance of Eagle Owl, 2018
[168] A. Holzschuh, Does rock climbing threaten cliff biodiversity?, 2016.
[169] http://abellaclimb.com/wildlife/
[170] Whitfield D.P., Ruddock M., Bullman R., Expert opinion as a tool for quantifying bird tolerance to human disturbance, 2008.

is similar to a dragonfly insect) builds its catching funnels at sandy spots on the foot of rainproof crags. Some spiders use the heat conservation characteristics of the rocks and become already active during late winter and early spring. The ancient jumping bristletail feed on algae, lichen and mushroom threads and it is due to its grey camouflage hard to spot.

4.5 Water resources & other considerations

The impact of recreation on water resources is the least mentioned and understood feature of visitor management[171]. Climbers may unknowingly impact the quality of surface water through improper human waste disposal, trampling of soft soils and vegetation and poor camping practices. The presence of humans may even lead to contamination of surface water with giardia and other protozoan and viruses. Though there are many practices to avoid this damage, like limiting the number of visitors, a lot of time water sources are protected and even fenced around.

Natural environment also consists of special morphology and features that are sometimes protected. This includes climbing in semi-closed and open caves, especially when fragile structures like stalactites and anemolites are concerned. Due to special climate conditions and different biodiversity there can be additional issues. Some states have separate laws regarding the caves. Morphologically some special features like rock pillars and towers can be protected as national monuments with prohibitions that include climbing.

Some important considerations also apply to camping in nature. This should be guided, informed, regulated and managed to minimize the impact. Wild camp sites impact the land, soil and vegetation in potentially large diameter, disturb wildlife and come with issues of waste management. It may also be highly undesirable or forbidden to build fires in nature.

Last but not least we always need to address appropriate levels of noise and visual disturbance, which will be also discussed elsewhere in study but nonetheless affect natural environment.

On the other hand, while all the impact may seem dramatic, we have to add, that while being spatially “compact” creates more pressure on specific area, this limits the impact overall. National parks are usually large in areas and rock-climbing areas comprise only small parts of these lands. Usually there is suitable rock for plants and animals, which are not suitable for climbing, or microzoning can be put in place. And, as with every issue, some rock areas will experience much larger pressure than other, depending on many different variables.

5 Cultural heritage and other impact

5.1 Cultural heritage

Compared to nature protection, cultural heritage is less prominent and less common. However, there are instances of special sacred, archaeological and historic sites, pictographs and petroglyphs that may need to be protected from climbing.

Often there can be some compromises regarding the access and use of nearby areas. It is fairly easy to protect cultural heritage simply by restricting or fencing off the sensitive area. Apart from that, most of the sites are already accessible by walking trails and usually represent a local attraction. The attitude towards climbing may depend a lot on the management plan, initial approach and the attitude of people in charge. Such attitude can also change through time. One negative example for climbing is the case of Grampians in Australia, where new management plan, without much consultation with climbers, closed most areas where climbing existed (while still allowing heavy tourist traffic in the same region), which resulted in outrage, online petitions and revolt from climbers[172]. What it will mean in practice remains to be seen. Australia in general has a lot of issues with cultural heritage from Aboriginal people, who often consider climbing sites as sacred. But, according to the historical record of climbing and management in Australia along with reasoning for closures, it is obvious that many of the closures were based on poor understanding of climbing impact and with some personal resentment towards climbers by people in charge of parks (who were in dispute with climbers for many years).

[171] Kuss, Graefe and Vaske, Visitor impact management 1990.

[172] https://savegrampiansclimbing.org/

USA has similar, although less unreasonable issues with Native American heritage. Places where climbing is allowed to some extent despite important cultural heritage include Devils's tower, City of Rocks or Hueco Tanks[173] (although there many areas were closed and bolts were banned). Especially if the monuments are federally protected, a management plan is devised with all stakeholders. This for example resulted in climbing ban in Devil's Tower only in the month of June.
Other places may choose to cooperate and evolve the area in cooperation with all stakeholders. In Slovenia, one of the most important archaeological caves at Gorje near Bled was evaluated and decided that rock climbing will not damage its function. The area was developed and in cooperation with municipality and tourist society new information panels and trail will be set up, increasing the experience value for all visitors. Similarly, Old Neihu Quarry in Taiwan is an important cultural heritage. A new plan to reconstruct it with environmental sustainability also plans for a space for expositions and a place for rock climbing as an added value.[174]
A lot of times when cultural heritage is present, a plan to protect it is decided and implemented, without infringing on most climbing, except in the affected area. This way archaeology is protected by fence in Oliana or seasonal closure in St. Linya, Spain and routes in that part of the wall were removed. Three routes were closed / moved the anchor because of medieval tower in Črni Kal, Slovenia. There are rarely any reasons to completely close rock area due to cultural heritage as many more tools are at disposal, which are effective enough.
It might be worth mentioning, that also alpinism was accepted as part of intangible cultural heritage of the world by UNESCO. [175]

5.2 Other

There are other possible stakeholders, which are impacted by climbing or are not inclined to support it. Those can be local groups like hunters, some industries, infrastructure projects, presence of military or other sensitive areas (closures of crags because of religion sensitivity). Crag may also be closed due to objective danger to its users (unstable rock, rockfalls, landslides). Climbing as a leisure activity is usually in weaker position in such cases and this results in climbing ban.

6 Social impact

Social impact may be more problematic than environmental one for the practical reasons. Even though nature protection may hold more importance, it is more clearly regulated in best and easier to ignore in worst cases. On the other side, social impact concerns people who live in direct vicinity of the area and are in constant contact with climbers. Their arguments may be weaker, but they are more willing to enforce them or create problems. Often, they are also land owners which gives them additional power if they decide they do not want to tolerate climbing. Because of this, special attention must be put in communication and cooperation with local community. There is no predefined blueprint as interactions are highly subjective and individual. Honest, clear information, continuity of cooperation and availability of climbers' representative are important for good relationships. It is best to work on agreements sooner than later, react quickly and proactively to complaints and support local requests if they are reasonable.

6.1 Visitors

For starters, climbing activity does not only affect local population. There can be many other visitors to the area apart from climbers, like hikers, mountaineers, walkers, bikers, forest fruit and mushroom pickers, birdwatchers etc. They share infrastructure, but come to the area for different experiences. Most of the time they share in common the love for pristine nature, solitude, views and recreation.
These groups and climbers are usually both visitors and don't impact each other too much, though there may be some conflicts with these groups as well. For all of them, sustainably developed and even well managed area is highly desirable.

[173] https://www.climbing.com/places/when-legends-die-the-changing-face-of-hueco-tanks-state-park/
[174] https://www.tandfonline.com/doi/abs/10.3130/jaabe.6.17
[175] https://ich.unesco.org/en/RL/alpinism-01471

6.1.1 Visual/ aesthetic factor

Increased human presence has many impacts to the environment, which include lesser experience value of the area for other visitors. All this reduces the aesthetic and natural value of the area, its tranquillity and peace. Luckily, either climbers are concentrated in smaller area where the crag is, or they are less disturbing when they transition over bigger walls.

Aesthetic factor can also be reduced at the rock area itself. Some crags have route names written at the base of the wall, which many find inappropriate. Metal bolts and anchors are also a visual presence that may not be welcome, especially if the routes also contain in situ gear of perma-quickdraws or slings. A careful judgement must be made, which areas can support such gear and where it is not appropriate.

Metal bolts can also rust as they age and may leave stains on the wall. This can be avoided by the use of glue-in/resin bolts, which are also less obvious and longer lasting. There are also some possibilities to camouflage bolts and anchors.

Another problem can be chalk residue and tick marks from chalk. Usually, climbers are asked to clean chalk after themselves, while some areas also ban the use of chalk. In the past, there was some experimentation with different colours of chalk, but it didn't prove long lasting. Today, chalk balls and liquid chalk are promoted to reduce chalk stains on the wall. The trends actually speak in favour of chalk. Czech Republic reversed its long-standing ban on chalk in 2009.[176] Also in Fontainebleau, where chalk use was frowned upon, its use is more and more common, even among locals.

Regarding the other visitors' disposition towards climbers, it has to be said that not everyone considers climbing as a negative factor. In many places, it is an added value to the area and other tourists enjoy observing climbers in the wall (Yosemite, Arco, Thailand). In the Yosemite, on El Capitan meadow, this is so popular it can even cause problems with crowds and it is advertised as a tourist attraction.[177]

6.1.2 Litter

Litter is one of the worst ethical transgressions, simply because it is so easy to clean after yourself and there can be no excuse for climbers to leave any trace on the site. It has to be said that out of all outdoor groups, climbers have whole heartedly embraced leave no trace doctrine.

As the Leave No Trace initiative suggests: plan ahead and prepare; travel and camp on durable surfaces; dispose of waste properly; leave what you find; minimize campfire impacts; respect wildlife; be considerate of other visitors.[178] These ideas may seem simple and logical, but the fact is, that a lot of visitors are not educated enough about them. Climbers are probably better educated than average outdoors visitor, but still, spreading this information and solidifying it as part of climbing core experience remains one of the most important missions for any management. Research even suggests littering is behavioural problem and can be changed/influenced by proper awareness and education[179]. It needs to be communicated. All the time and everywhere.

Sometimes, the problem is with different definitions of litter. While most people would agree that leaving food wrappers is unacceptable, some people don't consider fruit peels, cigarette butts, paper tissues, leftover tape and similar to be litter. It is. Other problematic "traces" like human waste was already discussed in chapter III.4.2.

On the other hand, very positive actions from climbers are known in many regions, where they dedicate a day in the year to clean their crags. [180]

A special issue that is most of the time overlooked is when visitors pack their trash from the site, but then use local dumpsters and trashcans in the village to dispose of them. This can be completely acceptable, however in heavily crowded areas near small villages, trash cans (privately owned and paid for) can fill up quickly to much annoyance of their owners. Either climbers should dispose of their litter at home or organize setup of dedicated trash can (which can imply some annual costs).

[176] https://www.planetmountain.com/en/news/climbing/winds-of-change-for-climbing-on-czech-sandstone.html
[177] https://www.visitcalifornia.com/uk/attraction/rock-climbing-yosemite
[178] https://lnt.org/
[179] https://issuu.com/keepamericabeautiful/docs/annual2006
[180] https://www.thebmc.co.uk/how-to-organise-local-crag-clean-ups

6.2 Local population

As national and other protected parks are usually internally managed by some agency to ensure preservation of environment and to enable various groups (including rock climbers) to sustainably use the area while maintaining good relationships and following restrictions, areas close to populated areas are usually less protected due to already heavy human presence and use. This can be a complicated issue. As stated in the introduction to social impact, locals are usually more emotionally involved with rock areas. However, this does apply to specific areas that are a bit less common. More rock areas are situated in wilderness without local population present (although they may still use certain infrastructure, like forest roads for their work in the woods).
This chapter will address the areas in close vicinity of local population and also the consequences climbers have on a wider area. The "rules" are less clear and can be quite arbitrary, subject to profile of local population and their wishes. Often the attitude towards climbers is shaped by only a few "influencers", be it local leaders or other interested individuals. This is why it is important to approach local communities soon, with honest and clear ideas, to be part of this attitude-forming process from the beginning. Once the relationships are bad, it takes a lot of effort and time to repair them. On the other hand, locals can be helped at developing a welcome area and maximize their benefits/profits from visitors while keeping them under control and respecting local rules and traditions.

6.2.1 Overcrowdedness & Visitor capacity

While the area is still new and less known, the impact of rock climbers can be minimal. It is possible it will stay this way in the foreseeable future if the rock area does not have many push/pull factors that shape its popularity. But with increased popularity, overcrowdedness can become an issue that needs to be addressed.
Especially in small local communities, increased crowds may mean a lot of pressure on local infrastructure. Measures should be taken to impact the local roads as little as possible and have dedicated parking spaces that do not disturb local traffic. Any parking on driveways, local and forest roads, blocking normal movement of locals, should be strictly avoided. Use of local drinking fountains and their personal trash cans should be moderate and, in a way, that it does not infringe on their daily life. Rules for camper vans, parked overnight and wild camping on meadows need to be addressed and negotiated and communicated clearly.
Larger crowds inevitably cause much more noise. Much effort must be put in educating people to keep noise levels to minimum and keep the village peace. This includes the sometimes-necessary noise of drilling holes for bolts and limiting or banning the portable speakers, which also affect experience of other climbers. Noise affects everyone in the area: from local population to other visitors, wildlife and other climbers. This is especially problematic when dealing with large groups or kids. Group leader and parents should be held responsible for others' behaviour as well.
In multi pitch climbing, some communication is necessary. If this is done close to the village, climbers should try to minimize shouting, use brief and clear and even non-verbal communication or use walkie talkies.
While clear communication of rules and ethics is the best solutions, other methods were tried as well, from shuttle services to enforcement of visitor capacity.[181] Both are generally impractical and should be last resort of area management. Visitor capacity can be an especially controversial issue, as it is hard to calculate. One method is using the weakest link of the area to do it, like parking size or base of the crag. Some past methodology also included misguided attempts to calculate visitor capacity by multiplying number of routes with 2.[182] This is not only unrealistic, but also fails to take any other considerations into account. Serious calculation should explore many factors like intensity of impact, duration of stay, seasonality, availability of facilities etc. A formula for maximum capacity can be calculated by multiplying the total surface area with correction factor of the environment and divided by normative area for any visitor. [183]It has to be said that, especially in regards to rock climbing, this formula is overly simplistic. Luckily, the impact of climbers is relatively small compared to other mass tourism impact and it can only be a problem in extremely sensitive areas or if it is combined with other visiting groups. Any serious limitation to visitor capacity should always be based on careful and extensive study.

[181] https://tpwd.texas.gov/state-parks/hueco-tanks
[182] https://zrsvn-varstvonarave.si/projekti/like/
[183] Stanev P., Harmful ecological consequences of the development of the tourist industry and their prevention, 1976

As already suggested, this is not optimal solution and many other tools are more useful, like improving infrastructure. As climbers themselves usually don't like crowded areas, we can help informing them of other available rock areas in vicinity, developing new areas to disperse the crowds and their pressure and informing people of seasonal peaks, so at least domestic climbers avoid certain areas at certain times of the year.

6.2.2 Etiquette and empathy

Climbers must be aware that they are guests in local environment and in nature. Rock area is not a climbing gym, even if at times it looks like one. Climbers are guests in an established community, who resides there, has its own rhythm to life, habits and traditions.
Rules like trying not to argue senselessly with local people, not parking on their driveway, not throwing trash on the ground or picking fruit from local gardens, should be logical and self-evident. The sad thing is, they still do happen. Often stupid acts are done by individuals, but the whole community suffers the consequences. Only by being present and vocal about ethics and respect, will the local community be able to distinguish from whole climbing community and disrespectful individuals.
We travel to rock areas often to change scenery, to escape urban environment and to challenge ourselves in unique settings. All climbers must come with deep respect to these places, not only for rock and routes, but all elements that create them. This includes respect for people. Usually it is customary to greet people in village settings and accompany it with a nod or a smile. Climbers should approach locals and related issues with a lot of empathy. They have to understand that local people often are not interested in climbing at all and they have other things in mind. When traversing the village, climbers should also use pre-agreed paths and roads and respect privacy of local people. Where it is not wanted, they shouldn't "explore" the village and enter the courtyards without invitation and least of all they should not pick any fruit or other produce from the trees and fields unless they have permission. A lot was already written about defecating and wild camping, but climbers need to realize that a lot of time locals also work in woods to cut trees, gather wood, recreate, pick fruits and mushrooms or work on land. Maybe a climber feels he has gone far enough from the crag to defecate, but it may be on the path of some local farmer, who may in short time be affected by any "hidden" traces left by visitors. It is up to every visitor to present themselves as a guest that will be welcome again or one that locals will not want to see anymore.

6.3 Climbers

The least concerning part of impact and ethics applies to other climbers. However, rock areas are there to serve every climbing visitor equally. No one has more rights than other. It is up to all climbers to maintain the area as a functional, welcome, social, positive place that everyone will like to visit and experience.

6.3.1 General ethics

The main principle of intra-climber ethics is politeness and respect to one another. Sometimes some patience is necessary. Some climbers are still beginners. Instead of being a negative elitist who is rolling their eyes, we can help those less skilled with assistance, information and advice. It is considered unethical to climb under /behind someone who is climbing on top rope.
If the area is very crowded, it is crowded for everyone. Some more patience is necessary, along with some other considerations, like not keeping the rope in a route for the whole day (reserving it for yourself), alerting others when you pull the rope from the route, refraining from studying the route too long and so on. It is good to keep all your gear and clothes neatly in one small spot at the base of the wall, so people have place to put their own, move around and belay.
Another issue is taking care of the rock area itself. This includes not climbing routes that are wet if the rock is too fragile when damp, to avoid breaking holds. Climbers should not chip holds or damage rocks or any vegetation, that is not required for cleaning and safety. Climbers should avoid climbing with muddy shoes and should brush off any tick marks and leftover chalk in the route as they lower down.

Sometimes, routes already contain pre-clipped quickdraws and slings. Climbers (unless they own them) should not take or move those quickdraws. At best, they may replace them with new ones if the quickdraws are too worn, and leave the old ones at the base of the wall or return them to their owner.
Climbers should always respect a red ribbon in first bolt or any other sign that the route or project is closed for climbing. This may be due to many different reasons and it is not up to any climber to question them. If an equipper wants to bolt a new route at the rock area, they should always seek permission and opinion from local climbers or managers of the area.
If a climber brings their pets and/or kids to the rock area, they are their responsibility. If they cannot control them, provide for their well being and keep them from disturbing other visitors, they should not bring them along. More on pets will be written in a later chapter. A lot of those points (with no disrespect intended) will apply also to children.

6.3.2 Guiding

Guides are usually normal, albeit more experienced climbers, but they will however carry more responsibility. Apart from legal responsibility in case of accidents, they are also responsible for their clients and their behaviour. Guides should be well aware of local ethics and rules. They are in a way role models, examples of behaviour and promotors of etiquette. It is appropriate that they give back a small percentage of their guiding fees for area maintenance, as they use its infrastructure to make money.
Normally, guiding is not a big disturbance to the area. However, guiding can have big influence on rock areas around tourist hot spots, especially if those rock areas are smaller or have only a few beginner routes. In Slovenia we have an example in Bled area, which is a world-famous location that attracts many tourists. Climbing guides offer a fun day of climbing to complete beginners and first-time climbers. To maximize profit, one guide may take up to 8 people climbing. The only good rock area in vicinity has 4-6 nice, long, beginner friendly routes, that are in shade for half of the day. If a guide gets there early, all the routes will probably be in use for the rest of the afternoon. Any other individual visitors, who want to come climbing there will be unable to get their turn. In addition to this, some guides can be rude to them as they feel it's "their" area, while they never contributed any work or money to set it up or maintain it. As the guide per client ratio is so high, they also teach first timers to belay top rope on grigri, adding to improper safety education. This is an extreme example, but I am aware of at least a couple more in Slovenia and Croatian Istria.
It is a good idea that local climbing community talks with these guides and sets some good practices and minimal standards to their work. Sometimes this can also be solved with guiding permits if the area has the means to enforce them.

6.3.3 Large organized groups

A similar, but more disruptive example are larger, organized groups, who can affect the functionality of the rock area even more, especially if it is small. Such groups can come from climbing gyms, climbing courses and schools, summer camps, college and university programmes, scouts etc. They can be kids or adults.
Here are some recommendations for group leaders[184]:
- Plan carefully. Limit the group size and choose the right crag and the number of other staff for their experience level. Try to avoid the times when areas are already known to be busy.
- Inform the climbing community of your planned day via internet platforms, social media or message boards.[185]
- Give part of the income to area maintenance. Try to use your own carabines when you set up top rope.
- Designate and limit the area where you will climb. Control your group and keep them together.
- Be vary of their noise level and take care of safety, especially when you are guiding kids.
- Group leader is responsible for the whole group, also for cleaning after climbing. Leave no trace!
- Support local economy by visiting local camps and restaurants.

[184] Access Fund, Climbing management guide, 2008, pg. 34

[185] https://www.facebook.com/Pisgahclimbing/

- The group is an opportunity to teach people how to behave at the crag in the future. Educate, inform and spread climbers ethical code. Be the role model.
- Respect other climbers who visit the area. Apologize if necessary and help them with alternatives or let them climb "your" routes.
Some rock areas already have climbing route reservation system for large groups. [186] Also, minimal standards could be developed for large groups too.

6.3.4 Maintenance

The use of rock areas will inevitably result in some wear. The most susceptible to this are anchors with biners, that get worn out quite fast in crowded areas. Many crags need maintenance, either because they are old or the traffic is high there. To some extent it can be done by local climbers, but for large areas and to ensure continuity, oversight and planning, some management should be put in place.
Maintaining anchors, rebolting routes, and dealing with other issues (like loose rock after winter or new vegetation) should be done by licensed equippers who know the rock area, its specifics and ethics. A well-maintained area is more comfortable and safer. In case some routes are used heavily by beginners and groups on top rope, it is advisable to use anchor rings that can rotate instead of anchors with biners.
Maintenance will be a crucial part of any seriously managed area. It is in the interest of all stakeholders that the routes are in proper condition to avoid damage and accidents. If the area generates any source of income (local tourist industry, guides, parkings, guidebooks), those benefiting from it should also contribute some part of the income towards maintenance. It is national association's role to provide general guidelines and standards and to issue licenses and courses for route equippers.

6.4 Pets

The issue with pets touches a little on all topics, from nature protection to local population and other climbers as the can be a disturbance to all these groups. If unleashed, they can cause problems, starting with local (village) dogs and other animals, disturb wildlife to which they have an innate tendency, and dig in the ground and chew on vegetation. There is even a cumulative effect of their urine and feces accumulation.[187]
Here are some considerations for dog owners:
- Maybe leave your dog at home when you visit crowded crags, go to multipitch climbs, climb on a hot day, or if there is a long approach.
- Respect right of others. Some people may be afraid of dogs. Tether your dog if you're not around. Dogs can annoy others, steal their food, potentially bite, and disturb bouldering spotters or belayers.
- Respect the rights of the dog. Take care of its needs, like food, water and shade.
- Keep your dog under control. It should be well trained, should not chase wildlife or wander around village or rock area.
- Clean up after your dog. Carry out the faeces in a bag or bury it in a hole.

7 Positive impact of climbing

7.1 Role in society

Climbing has a much wider role in society than just in rock areas. As a sport and recreation activity it plays important role in healthier, active society. Such lifestyle is promoted in all modern societies as recreation in nature improves health and relieves stress. Climbing is activity that employs many different muscle groups and has often been named an "ultimate full-body workout".[188] In addition to this it increases confidence, problem solving, planning, social skills and other mental attributes. It is suitable for children and all age groups up to old age. It can be practiced

[186] Steelhammer R., At the end of their rope, 2000.
[187] Access Fund, Climbing management guide, 2008, pg. 30
[188] https://time.com/5158732/rock-climbing-workout/

by professional athletes, amateurs or people with a wide range of physical and mental disabilities. It can be used as team building or as therapy and rehabilitation.
Climbing is a branch of sport with serious competition circuit, also present at Olympic games, while world records and other amazing sporting and human achievements can be reached by athletes in nature. A lot of these achievement are widely publicized to inspire people (Dawn Wall, Free Solo…).
Climbing as sport supports big industries and creates countless jobs. Most of them are on the rise. For example, just indoor climbing industry in US alone has seen double digit growth in the last years, reaching almost 1 billion dollars in gross earnings in 2020 alone.[189] This in turn influences companies that make climbing walls and holds, climbing coaches and instructors and climbing fashion. Then there are companies that make climbing equipment, clothes and footwear. Even rebolting can be an occupation or source of income in some countries.
The value of climbing for society is huge. Part of its infrastructure are rock areas. Within this, rock areas can either be primary infrastructure (for people who climb mainly on rock and still use gyms to train, spend money in shops, hire guides…) or secondary infrastructure (for competitors or kids who mainly climb indoors, but use rock areas for fun or for training). In both cases the activity supports employment and large economic potential beyond direct impact of tourist visitors.
As a natural sport object, rock area adds value and function to the space with minimal physical impact, which often protects the area from degradation or from potential other uses which are more destructive. It can work hand in hand with raising awareness about nature and environment.
It can function as a field for high sporting achievements, fun recreation ground or training and learning ground for other activities (like mountaineering). Of course, the biggest direct benefit for communities around rock areas is tourism. This can be pure rock-climbing tourism, which will be described in next chapter, or an additional service for regular tourists, a leisure activity which they can try with a guide. The link between undertaking sport and vacation has been long established and has been reinforced recently as tourists increasingly seek a unique form of experience.[190] Outdoor sports play a major role in this trend, particularly in tourists' search for adventure and new emotions. They can be seen as integrated part of tourism product as well as a primary activity motivating tourists toward particular destination.[191] It improves the image and tourist offer of the area. Many times, rock climbers are used on pamphlets and in commercials when presenting an area (or even some regular product). The reason climbing is used increasingly in advertising is because of its image; climbing is seen as young, energetic, positive and confident.

7.2 Direct economic impact – climbing tourism

Tourism is divided into two main categories: mass tourism and alternative tourism. Mass tourism refers to activity of many different people, while alternative tourism goes beyond these standards and defined as form of tourism that are compatible with the environmental and social values of the region and which allow both the host society and visitors to enjoy a positive and valuable interaction and shared experiences at all levels.[192] Alternative tourism escapes from the standards of mass tourism and has more prominent features, such as contact with nature, avoidance of shared destinations and tourist packages, sports, authenticity, respect for the environment, controlled and regulated development, the emphasis on acquiring experience for local cultures and preserving traditional values.
Even though climbing is often seen as outdoor, nature or leisure sport, climbing tourism is most often grouped into "adventure tourism". Ewert and Jamieson defined adventure tourism as a self-initiated recreational activity, typically involving travel and overnight stay component that usually involves a close interaction with natural environment, structurally contains elements of perceived or real risk and danger, and has uncertain outcome that can be influenced by the participant and/or circumstance. [193] Study findings however reflect that "risk" plays a minor role in rock climbing (especially sport climbing), as rock climbers being aware of risks, tend to choose the style of climbing appropriate to their skill level and follow risk control precautions.

[189] https://www.99boulders.com/the-growth-of-climbing
[190] Weed M., Sports tourism experiences, 2008
[191] Hallman K., Feiler S., Muller S., Breuer C., The interrelationship between sport activities, 2012
[192] Karagianni M., Georgakopoulou S., Delitheou V., Agrotourism, 2018
[193] Ewert A., Jamieson L., Current issues and future directions in the adventure tourism industry, 2003.

Whether experienced or not, rock climbers combine sport and tourism and explore human-nature connection in the closest way. That is why many climbers give importance to wilderness and destination attributes related to wilderness such as solitude and isolation. [194] Moreover, rock climbers seem to be more concerned with the attributes of the rock-climbing route than the general recreational setting.
Climbing tourism has evolved to be one of the fastest growing sectors across the globe, attracting high value customers, promoting the environment and supporting local economies.[195]
According to IFSC, 35 million people all over the world are regularly climbing,[196] with the number growing every year. Most of the climbers come from more developed parts of the world like Europe, USA and some countries in Asia. In the tourism and travel industry, rock climbing is considered as an alternative type of tourism where people travel to other countries or to destinations in their homelands with the purpose of rock climbing. Like many alternative types of tourism, rock climbing is done principally in small groups, thereby, having a limited negative effect on the natural environment, and offering sustainable development opportunities for the tourism destinations.[197]
Local economies can benefit significantly from climbing activity in nearby locations. Climbers travel long distances to popular locations, spending money for fuel, food, accommodation, fees, souvenirs, products, services etc., preferably from local business. However, if those services and facilities are not available, the amount spent will be much lower. 10 years ago, only a few places recognized climbing as an important source of income. Today many places actively promote and invest in climbing tourism.
As a final note, I should mention that although tourism potential is an important consideration, it should be secondary in rock area management. It is much more dependent on private initiative who benefit from it, while even areas with less tourism potential can need a lot of management.

7.2.1 Tourist profiles and motivations

It is important to understand the push and pull factors of climbing tourists. In this theory, push factors reflect the psychological drivers of behaviour (like desire to escape, relaxation and adventure), while pull factors are considered to be external, situational or destination attributes and leisure infrastructure. Research shows that most tourists are motivated by push factors, and pull factors play a more important role in extension of stays and repeat visits.[198]
The findings of the study done by T. Albayrak and M. Caber[199] reveal that accommodation, geography, infrastructure and ambience are the main destination attributes, with geography being the main one. Another interesting finding emerging from the study was the significant differences between first-time and repeat visitors. Accommodation and infrastructure were the most important determinants of overall satisfaction for first-time visitors, although they were the basic necessities for repeat visitors. In other words, for the repeat visitors, while excellent performance on these attributes may not increase overall satisfaction, their poor performance will have an adverse impact on overall satisfaction. For the repeat visitors, geography was the only determinant of satisfaction.
Research on main motivations of rock climbers regarding the choice of rock area are climate/weather conditions, variety of routes, closeness of the camping area and the comfort of the accommodation facilities and cheap and easy access to the area. The most important pull factors that emerged were “climbing novelty seeking” and “climbing tourism infrastructure”. Interestingly “non-climbing sport and leisure activities” had negative effect on overall satisfaction. [200]
Studies highlight crucial importance of the natural environment, since “physical setting”, “geography” and “ambience” were identified as the most important push motivation of rock climbers. People like to visit new, secluded, scenic areas that they saw on photos or in films or heard about them elsewhere. Thus, protecting and

[194] Monz C.A., Smith K.E., Knickerbocker L., Climbers' attitude toward recreation resource impacts, 2005.
[195] World Tourism Organisation, 2014.
[196] https://www.ifsc-climbing.org/; https://www.theguardian.com/lifeandstyle/2018/aug/12/climbing-has-gone-from-niche-sport-to-worldwide-sensation-what-is-its-dizzying-appeal
[197] T. Albayrak, M. Caber, Destination attribute effects on rock climbing tourist satisfaction, 2016
[198] Caber M., Albayrak T., Push or pull? Identifiying rock climbing tourists' motivations, 2016
[199] T. Albayrak, M. Caber, Destination attribute effects on rock climbing tourist satisfaction, 2016

[200] Caber M., Albayrak T., Push or pull? Identifiying rock climbing tourists' motivations, 2016

promoting the attractiveness of the natural environment as well as unique characteristics of the climbing areas may generate considerable advantages for destinations.
The high "climbing novelty seeking" and "high variety of routes" pull motivations can also be promoted and improved by developing new quality routes and areas. So, we can see, that the main motivator for visit is something local communities cannot influence: quality rock faces, geography and natural scenery. Either they have it or they don't. But they can influence proper sustainable development and protection of those via good management and investment in infrastructure. Curiously, if infrastructure is good it does not influence overall satisfaction greatly, but if it is bad or lacking, its negative influence is much bigger.

7.2.2 Significance of tourism

Lately, there have been huge improvements in how climbing is perceived as potential tourist niche.
In the past, rock climbers were often considered as low budget tourists,[201] and received little attention apart from France and some other areas like Arco in Italy. It is difficult to calculate proportion of local turnover from climbers, as they are often not recognized as such. Through time, this began to change with more obvious examples of places, where large majority of visitors were climbers. Studies were done (more in the USA) and to some they were shocking as income from climbers not only sustains whole regions, it can be measured in millions of euros or dollars (see some of the cases later in the study).
Even if Travel Cost Method is used to put valuation of ecosystem as a rock area, the values will usually be very high and worth any potential investment to preserve and develop the area.[202] This is because climbers are willing to travel long distances to reach rock areas and visit it many times per year. Their length of the trip is substantial, as per statistics the most common trip is between 1-2 weeks long, followed by 2-3 weeks. Most of the time is spent at the site, with other services, accommodation and restaurants used in the nearby area. On top of that, average climber usually has above average income. TCM value for any rock area will usually be very high.
The first to realize that in Europe were the French, who started to develop climbing oriented tourism in the southeast of France. Areas like Ardeche, Orpierre, L'Argentierre and Briancon started to invest into rock climbing to counter balance the winter season and diversify opportunities available to tourists. In those regions, affected by emigration, economic decline and ageing of population, climbing proved to be a genuine lifeline,[203] generating new employment and attracting new residents. One similar example to recognize climbing potential was also Arco in Italy. Curiously, despite many advances and examples through the years, Ardeche plan, which was one of the first in Europe, to be developed for long term for investment in climbing and associated tourism (in 1990), already included national association FFME, use of EU funds, local authorities and consultation with nature conservation bodies. It supports its own guidebook and specifies which areas will be developed with what restrictions and plans for maintenance and care. Perhaps we didn't need to write this study at all if so much was figured out already 30 years ago.[204]
According to recent research, this was the right direction.[205] The region acknowledged the various stakeholders in the area, ranging from small, independent businesses to political and institutional actors to negate the negative environmental impacts and problematic social issues and promote collaboration between public and private sectors, which even includes involvement of government institutions and sports federations. The area created a network of local producers and sellers, who collaborate both horizontally (between different sports) and vertically (with related services) and create a sense of community, sharing similar social and cultural values and objectives. Due to the effects to recreational changes in the area, the region is continuously being repopulated, while outdoor tourism replaced industry and agriculture as the driving force for local economy. One effect was the creation of large number and range of campsites in the Ardeche region. In 2017 tourism there generated more than 16 million tourist nights and over 440 million euros of expenditure.
Countries have different attitude towards climbing tourism, with main factor being if they are tourist originators (source) or destinations. In past the main destinations for climbing tourism in Europe were France and Austria,

[201] [201] Hanemann B., Sustainable management of climbing areas in Europe, 2000, pg 21.
[202] https://www.ecosystemvaluation.org/travel_costs.htm
[203] Hanemann B., Sustainable management of climbing areas in Europe, 2000, pg 22.
[204] Bourdeau P., L'escalade, entre sport et tourisme, 1993.
[205] Langenbach M., Tuppen J., The concept of localised outdoor sports tourist systems, 2017

followed by Greece and Italy. The main originators however were Germany and France, followed by Austria, Switzerland, Great Britain and Netherlands. [206] Countries like Netherlands are obvious originators due to their complete lack of rock areas, while some others like Germany or Great Britain can be explained by the lack of optimal weather conditions all year round or specific climbing style.
Today the list can be upgraded with countries with favourable climatic conditions, many rock areas and potential and high affinity for climbing development as the major destinations: like Spain, south of Italy (Sicily, Sardinia), Greece, Turkey, Croatia, with France and Austria remaining popular as well. Major originators are also becoming Eastern European countries. Most of foreign tourist visitors are usually visiting neighbouring countries.
We can evaluate an example of local expenditure by a low-budget and average climbing tourist.
- Sleeping: usually low to mid end accommodation will be used, like camps, hostels, refugios and apartments, which discourages investments in hotels or other large projects: 10-25€ per person/day
- Eating: climbers usually prefer local restaurants with local cuisine: 10-25€ per person/day
- Local shops, cafes and bakeries for daily supplies, fuel and other expenses: 10-20€/person/day
The basic expenditures total: 30 – 70€ per person/day
Potential additional spending may include:
- Climbing equipment, guidebooks 50-100€ per person/trip
- Other visits, sightseeing, attractions (on a rest day): 50-100€ per person/trip
- Use of guides and services, sports and activities: 100-200€ per person/trip
Total additional spending: 200-400 € per person/trip
Estimates may vary through different regions and tourist profiles, as they may be higher or lower.

If we consider some statistics, we can assume the average trip lasts 10 days and average group size is 4 people. The whole time is usually spent in the region. Per group the total income will be 1200 – 2800€ per trip with potentially additional 800 – 1600€. If we take the median value it comes to 3200€ per 4 people per trip.
Moderately popular area with about 1000 foreign visitors per year may thus generate around 800.000 euro per annum for local economy. A significant amount may be added for domestic visitors, who spend less but come more often and in greater numbers. But this depends a lot on the area and its ability to extend the visitors' stay, getting returns, recommendations, and having attractive facilities, alternative activities and services to offer. In a poorly run area with the same number of visitors, this number can be much lower and vice versa. As primary driver for climbers is the experience of rock climbing and unique natural setting, they may still come to the area despite not having anywhere to potentially spend their money. It is up to the region's engagement what type of visitors they will attract and what kinds of impacts it will enhance with their efforts. Efforts to alienate climbers will result mainly with more issues, while efforts to integrate them as social and economic part of the area will multiply the benefits. It cannot be done by one person or even one group. Only a coordinated cooperation will bring satisfying results for everyone.
The importance to involve local population has been stressed in many studies. This enhances and sustains commercial attractiveness of the areas for outside visitors and improved both quality of life for the inhabitants and the intrinsic value of the natural environment. The employment opportunities offered by outdoor sports and related tourism also provide a means of integrating the local population, thus giving an important social dimension to these activities.[207]

7.2.3 Some cases

7.2.3.1 USA cases

We can start from some cases in the USA, where much more research and studies were done in recent past. Generally, results indicated that recreational spending contributed substantially to gross output, income, employment, and value added in the studied rural areas. These results suggest that outdoor recreation may be a viable rural economic development strategy. [208]

[206] Hanemann B., Sustainable management of climbing areas in Europe, 2000, pg 21.
[207] Langenbach M., Tuppen J., The concept of localised outdoor sports tourist systems, 2017
[208] John Bergstrom, Ken Cordell, Gregory Ashley, Economic impacts of recreational spending on rural areas, 1990

In the case of Red River rock area researchers are reassessing the potential for place-based resources (including rivers, agriculture, and rock formations) to generate economic activity as eastern Kentucky's coal and manufacturing-based economy continues to shrink. The study undertaken made the case for rock climbing in the Red River Gorge in eastern Kentucky as a viable and sustainable source of economic activity in six of the poorest counties in the nation. Rock climbers who come to the Red River Gorge have been found to contribute several million dollars to local businesses annually, supporting an increase in jobs and wages in the area. The study found that climbers tend to be well educated professionals whose economic desires include visiting locally owned restaurants and attending regional festivals. [209]

Similarly, a study was done in West Virginia's New River Gorge region rock area. The study examined the economic impact of rock climbing with following major findings. Non-local residents visiting the New River Gorge region to rock climb spent an estimated $12.1 million in 2018 in Fayette, Nicholas, and Raleigh counties. Non-local resident climber expenditures supported an estimated 168 jobs and $6.3 million in wages in the study area. Over 70% of climbers in the sample had a bachelor degree or higher, with one in five possessing graduate degrees. Altogether, 45% of climbers in the sample made $50K or higher in annual personal income, with one in ten reporting six figure annual personal incomes.[210]

Efforts to understand rock climbing tourism were made also in Squamish rock area in Canada. There, the local government has recognized the special opportunities that outdoor-based tourism, such as rock climbing, represents to their local economy. This recognition was reflected in the Squamish Tourism Marketing Plan and Development Strategy 1997, and the Squamish District's partnership with Tourism BC to participate in a tourism development process. The District of Squamish has already taken steps to encourage growth in outdoor-based tourism. These actions included the development of the Sea to Sky Adventure Centre, the establishment of the Smoke Bluffs Park, the Climbers' Festival, and an additional hostel. Clearly, the District has positioned itself to support growth in rock climbing. While rock climbing may not currently provide enormous economic gains for the local community, the potential for further development exists. This research provides evidence as to the substantial value that climbing opportunities represent if nurtured appropriately. The distances travelled by visitors and frequency of trips suggest that the climbing areas in Squamish are very important to many individuals and society in general.[211]

7.2.3.2 Arco

For European initiatives, we can first look at some older rock areas, which were evaluated in the study by Brigitte Hanemann.[212]

Arco area is located on the northern end of lake Garda and along the Sarca valley. Climbing on limestone offers mostly single pitch rock gardens and some multipitch and adventure climbing routes with climbing season all year round. The areas gained prominence in the 80s when sport climbing was being developed. This development was embraced by local communities and municipality, who organized now-famous Arco Rock Master already in 1987 and promoted climbing tourism heavily, also due to the fact that the mayor at the time was an avid climber. The province of Trentino commissioned development of new routes and new rock areas, with some supervisions about protecting the environment. The approach was holistic, not only creating and rebolting routes but also improving trails, parkings, toilets and other infrastructure and creating sign posts and information panels. Areas located on public land without environmental restrictions were selected for the project and forest researcher was part of the team to inspect the potential impact. Apart from rare isolated cases, this huge region, that is continuing its development to this day, has practically no cases of conflicts with nature conversation and local population. But it has to be noted that from the very beginning, many measures were taken to ensure environmentally sustainable climbing in the region. Of course, the management could still improve and coordinate, with big differences in maintenance from one rock area to another. The whole area caters to outdoor tourism, which includes also other forms like hiking and biking. The number of visitors continues to rise and provide crucial employment and income to the region. Though there are no breakdown figures available, climbers represent a large proportion of that figure.

[209] James Maples, Ryan Sharp, Brian Clark, Katherine Gerlaugh, Braylon Gillespie: Climbing out of poverty, 2017

[210] James Maples, Michael Bradley, Sadie Giles, Rhiannon Leebrick, Brian Clark, Economic impact of rock climbing, 2019.

[211] Randolph P. Morris, The contribution of outdoor based recreation opportunities to local economies, 2007.

[212] Hanemann B., Sustainable management of climbing areas in Europe, 2000, pg 101-103, 108-111.

7.2.3.3 Verdon

Another country that recognized the value of climbing tourists, was France. We already mentioned the Ardeche region in previous chapter. Another example can be Verdon gorge, a nature park site with over 1000 single pitch and multipitch climbs, often in adventure climbing style. The explosion of climbing coincides with Arco region, in the 80s, though the climbing in the gorge is much older. The local group Lei Lagramusas maintains and rebolts rock areas due to a convention signed with local council. The group receives funds (also from EU development fund) and accepts liability for their work (which, as we know, can represent a problem). Additionally, a microzoning principle is used for new development and protection of birds. To ensure acceptance of the restrictions, climbers rely mostly on self-regulation, though tight local community can provide some success in that regard. There are virtually no conflicts with representatives of nature conservation or with local people, also because there is active cooperation with both. New bolting is only allowed to local group, who monitor the area and leave some areas of the countryside untouched. The development of climbing tourism was in turn significant for some villages in the region. For example, La Palud is 70% directly dependant on tourism, with the remaining 30% of jobs being indirectly related to it. Since the start of climbing tourism, population rose by 50% in 10 years. Climbers represent 80% of the business to locals.

7.2.3.4 Greece

Even though Greece was often visited by climbers before the boom after 2007 in areas such as Meteora, it was Kalymnos, which put it on a worldwide climbing map. Since then, climbing has become an important tourist niche in some areas and many studies were developed.[213] Before climbing, Kalymnos was one of the isolated regions in Greece that lacked in growth and tourism development with income coming from sponge fishing and shipping. Locals viewed their rock formations more as a curse, before they became the main attraction for climbers all over the world. Today, island has over 3000 climbing routes. The development of climbing also affected development of infrastructure. The rise of popularity coincided with internet usage and smart promotion of the area, which included a climbing festival. Thousands of visitors now visit the island each year, even through a direct airline connection. As climbing tourism has become one of the main sources of economic growth and survival of the island[214], local authorities naturally support this development, but it is often done without environmental considerations as they rely on visitors' ethics and self-regulation for it. Though the study has shown that to be very high and visitors are environmentally conscious, it may still present a problem in the future. Today, attempts are being made to copy the success of climbing tourism into diving as well. The success of Kalymnos quickly spread to other islands like Rhodos and to mainland Greece to places like Leonidio and Kyparissi, where development of new routes and sectors was widely supported by local municipalities and with EU-funds, often attracting foreign bolters to create whole new sectors. Thousands of routes were created just in the last 5 years. The interest to develop tourism in these regions is so high, that coordinated management, and sometimes even some spatial planning and environment protection is often neglected. There are no restrictions when equipping routes in Greece. In guidebooks or online[215] it is hard to find any restrictions regarding nature protection or any emphasis on it, apart from some general climbers' ethics. It seems the main goal is to develop as much as possible everywhere. So far, no huge conflicts were reported apart from some disputes between local climbing groups about bolting and guidebook production.[216]

7.2.3.5 Spain

Development in Spain, which came a bit later on the European scale, is today known for its safe climbing routes of all difficulty levels, high quality climbing infrastructure and its beneficial location. Spain has become premier winter sun rock destination, from Costa Blanca to Andalucia, Mallorca, Albarracin and Catalunya. In the centre of Catalunya is its main crag Siurana, where sport climbing began in Spain. First route was opened already in 1952, but it would take roughly 20 years before another recorded ascent, when equippers brought sport climbing model of bolting

[213] Farsari, I. Climbing tourists' environmental attitudes, 2011
[214] Georgakopoulou S., Delitheu V., The contribution of alternative forms of tourism, 2020
[215] http://climbkalymnos.com/climbing/
[216] https://climbgreece.com/about-our-new-leonidio-kyparissi-guidebook/

from then-famous Verdon. The growth in 80s and 90s was still moderate, with the boom starting in the new millennium. Today, there are around 2000 routes in Siurana alone and this region is probably the most popular in the world. The surge of climbing tourists has been increasing for decades and it continues today. Many locals question if local actors have the ability to absorb this influx of people.[217] The scope of bolting has widened to other areas in Catalunya, like Margalef, St. Linya, Chulilla, Terradets, Oliana, Montsant etc., which became famous fast, especially after prominent, hard climbs done by famous climbers like Adam Ondra, Chris Sharma, Alex Huber and others. Routes and rock areas became known worldwide and almost like a pilgrimage path for climbers to follow. Spain was one of the most obvious effects of the impact climbing magazines and internet posts can have on people travelling abroad.

Interestingly, Spain is also notorious for its topo-wars, where local guidebook producers often clash with foreigners, who copy their work and publish alternative versions, like Rockfax from England. The claim of the locals is, that those copies often do not contain important local guidelines and restrictions and they do not contribute to bolting and rebolting efforts.

There are some disputes regarding the climbing, less so with local population, who a lot of times depend on tourism. Nature protection is very strong in Spain, but in many places some agreements were reached for microzoning of the areas of climbing and bird-protection, which are generally successful. However, there is no centralized body to oversee and enforce this. A lot of work is left to local leaders/equippers and their initiatives and ethics. Some people stand out, like Nicolas Durand and his eco-project in Abella[218], but there are also areas with issues and those who have hard time controlling the crowds. At some places, certain management is critically needed. The problem is, this is done only by the few people, who operate extremely locally. They all miss any kind of involvement of the national association, who only seems to care about competition climbing. The impact on local population and small villages depends a lot on their own initiatives. Some react quickly, adapt and organize, while others may face problems with crowds and lack of infrastructure. All these small local groups usually feel they don't have enough weight to speak with local government or even anti-climbing groups or create wider reaching management plans. One of the problems is, the development happened too fast and has not evolved gradually like in Verdon or Arco.

The example of Spain is followed by many similar regions throughout Europe. While in the north we can see much more organisation and proper management (like in Norway or Poland), the south, which relies heavily on off-season tourism or sun-sea-rock concept, usually (but not always) has more problems, either with lack of management, poor quality of bolting from foreign equippers (Sicily, Croatia) or nature protection. Modern examples include Sicily, Sardinia, Croatia, Turkey, Slovenia, Macedonia, Albania etc. Most of these countries would benefit greatly with some know-how from already established climbing tourism destinations or areas where climbing is "old" enough to reveal all potential issues that can arise. More recent and local case studies (with emphasis on management) will be analysed in later chapter.

IV. Crag management

According to Brundtland Commission definition, sustainable development is defined as development that is in service of growth, without diminishing the ability of future generations of people to satisfy their own. [219]

Deriving from that, rock area management is a process of cooperation of stakeholders in the area, aimed at sustainable development and preservation of rock areas. Main tasks of management will be minimizing the negative impacts and maximizing positive ones. Both types of impacts were described in detail in Chapter III of the study, along with many ideas and solutions. Some more will be discussed here.

Any kind of management will follow many principles and fill many roles - but which and in what scope will greatly depend on the area (see impact and importance metrics in chapter III). Though the scope of impact is potentially large, the examples of this study will not apply to every rock area in the same extent. Some areas may have very high single impact, some will have various impacts of various scale, and some will have close to zero impact of any kind.

[217] Wilson J., Actor network theory analysis of sport climbing tourism, 2017

[218] http://abellaclimb.com/

[219] Georgakopoulou S., Integrated spatial investments as a development opportunity for local government, 2018.

The best approach is to start management as soon as possible, involving all stakeholders, make provisional plan, ensure good implementation, spread of information and further monitor the development (for possible corrections). In any case, it is always harder to solve issues retroactively.
Additionally, climbing presents unique challenge to managing due to its historic associations, the equipment used, the different forms and styles, the diversity of environments and other characteristics of rock areas.[220] It will also depend on willingness of stakeholders to cooperate, staff availability, funds etc.

1 Crag management scope

Crag management is a continuous process of an individual or a group who takes care of climbing issues of the crag. Depending on the crag this can be done occasionally or more regularly. Crag manager should cooperate with all the important stakeholders of the area. Some need more attention than others. The first limitation and consideration should be many potential (national or local) laws and regulations that already apply to the specific area.
Before we get into details, we have to address the management as such. All the information, solutions and processes can be overwhelming. It has to be said, that most management plans are not so complicated and to follow all the recommendations in this document could prove impossible. It's best to view them as ideas, that could help the managers to resolve the issues, but every individual case will always have its own elements, which are more realistic, practical and concrete. A lot of agreements will be highly personal and many things can happen during the process. A manager must be open to new developments, issues and ideas. Many agreements may be highly technical, expert documents that may be hard to interpret and need to be signed by someone with enough authority.
Opposite to that, a lot of agreements may be only verbal, informal, even though it is recommended to put everything on paper. Sometimes management of the area will simply mean willingness to sit down with locals a couple times per year, drink a glass of wine, maintain good relationships and talk through the issues; organize a crag cleaning initiative once per year; stay in touch with nature protection and potentially close some routes for a while; potentially produce some flyers to distribute; organize route maintenance and rebolting; and every few years pressure the association or municipality to provide funds for a new info panel or signs etc., and even all that may not apply for smaller areas.
Large areas may need more complex management, with higher level of agreements and contracts, but even there, things become much easier, once the initial issues have been resolved. Even new projects (like new sector or new area) become smoother, once all the necessary procedures are known, as managers will usually know which people to contact, what documentation they need to prepare, how to manage the infrastructure, and so on.

1.1 Scope of issues

The scope of potential issues is quite large and may apply to any part of the rock area. Mostly they will relate to impact and were already covered extensively. In short summary, issues that need the proper management are:
- **Area specifics and historic ethics**: there may be special rules and style of climbing that local climbing community wishes to preserve or there are some area specifics that dictate seasonality of the crag (like birds nesting etc.). Management should inform visitors about these issues and take care that they are respected.
- **Ownership and local community**: Depending on the area, there may a need to be in contact and cooperation with land owners to coordinate activities in an area and get all the permits in order. Usually, once the basic agreements are in order, there is less work with owners, but nonetheless the manager must be available to them if any problems arise. It is beneficial to be in touch with local community and nurture good relations with them. Area must have sufficient infrastructure to support the projected number of visitors.
- **Protections and limitations**: Most common issue is the need to protect nature (plants, animals) followed by cultural heritage and other protections. This must be done in cooperation with other stakeholders. Informing visitors and taking measures that prohibitions are respected are key roles (building fence, signs etc.).
- **Maintenance**: The high traffic areas may need higher amount of maintenance and thus an organized and active management for oversight and bolting/rebolting activities, as well as approach trails and other infrastructure maintenance.

[220] Access Fund, Climbing management guide, 2008, pg. 49

1.2 Basic roles of management

In short, the climbing management is the link between climbers and other stakeholders and also the responsible agency, which takes care that development of rock area is sustainable, up to standards and safe. If climbing management is not done by climbing-dedicated group, but instead by some local society or natural park authority, it is imperative that climbers are included in the process and present through its design, implementation and further monitoring. It is preferable that such management is done by climber groups if possible. These are some basic roles of rock area management:

- promoting climbing ethical code and "leave no trace" philosophy via panels, leaflets, online and in guidebooks
- taking care of infrastructure – either by creating or maintaining it
- cooperation with other stakeholders (nature protection, locals, hunters, other tourists) and reaching agreements in mutual interest
- negotiating and communicating restrictions (and trying to prevent restricted activities)
- preserving traditions of the area (either local customs or climbing traditions)
- maintaining the bolts and gear (with UIAA certified gear and safety guidelines in mind)
- potential creation of new routes and sectors in the area
- organizing events (rebolting, clean up days, climbing festivals)
- sorting out the legal issues if necessary
- connecting the area in larger spatial scope and in one common goal
- monitoring the process and revising the plan if necessary

1.3 Scope of area and actors

The spatial scope of the area depends on its compactness, homogeneousness, position in the land and interest of local groups. A single, compact rock area may need its dedicated management plan. On the other side, it may be sufficient to connect many smaller rock areas into a region, that has one unified plan. Every single rock area needs at least some kind of management, even though it can be extremely superficial and occasional.

Management can be in many tiers and each provides certain services in form of funds, maintenance and rebolting, guidelines, rules and prohibitions, local ethics preservation, connections with local community and its services etc. The larger the area, the more complex the management may be, both horizontally (many local groups) and vertically (agencies with higher authority). We will look at the structure of actors for the climbing community, although the same structure may apply also to all other stakeholders (like local tourist society – national tourist organisation; village council – municipality – government).

International actors are associations that connect national associations, like IFSC, UIAA and EUMA. Their role in management is more general, by providing know-how, manuals, standards, best practices, unified ethical code and provide support and link between different nations; their more direct influence is the promotion of their agenda either by lobbying at the institutions or by informing the climbing community and advertise common values.

National actors, like national associations / federations should have a general oversight of all rock areas in the country, but leave development and management to local groups if they satisfy the proper process and other criteria. They are the link between government institutions, ministries, nature protection agencies and local climbers. They offer more concrete support and often also funding, and may apply some national regulations and rules to the project.

Regional actors may be some intermediate group, society or individual, who coordinates more local efforts, and may not be necessary, but can make the work easier.

Local actors are local individuals and groups that are directly involved in developing rock areas in certain region. They are more hands-on, have contact with local population and represent the active part of management, who can also resolve issues that are specific for the area.

The more local that we go with actors, the more concrete and specific the management, rules and procedures will be. This is why the people running the management should be locals and higher actors only offer the support when needed. Management of the crag should always be modelled locally to conform to area specifics both from the perspective of climbing and other involved stakeholders. However, many areas may benefit from some general guidelines of how to approach the management process.

Management can be done by individuals, local climbing community, local clubs or similar groups or local societies who are not directly involved with climbing (but are impacted by it). Ideally the local management gets the necessary support (funds, guidelines, legal advice) by national association which in turn gets support by a larger body such as EUMA.
It should be clear in any management plan, who is responsible for what issues and areas of work; and what spatial scope (clearly defined area, which crags) it encompasses.
So, in a way, rock area management is done in two frameworks:
- large, national scope that promotes certain values and behaviour
- small, local scope that deals with specific issues and problems

1.4 Relationship between national associations to local groups

Most of the areas in Europe have a presence of both national association/federation and local climbing groups. Both are usually active and organized. The problem can be their connectedness and relationship. First, we can look at strengths and weaknesses of both:
National association strengths:
- is more powerful and influential (even politically to some extent)
- has legal capacity to make agreements and can act as intermediary
- has a lot of staff and funds
- has a lot of know-how and experts (also legal and environmental)
- connects all the local actors
- has many members and a lot of outreach

National association weaknesses:
- large scope of activities may mean preoccupation with trails and huts (which are more traditional)
- interest in sport climbing is often directed only to competitions
- can be very bureaucratic, slow and legally bound in actions
- is often not prepared for dealing with rock areas and rock climbing
- micromanagement does not suit them
- they need to maintain good public image

Local groups strengths:
- have intimate knowledge of the region
- have (personal) relationships with locals
- are very interconnected
- have ability to take action in situ and monitor the area
- are fast and responsive
- have strong local outreach (forums, dedicated sites)
- are willing to invest time, money and effort

Local groups weaknesses:
- are prone to transgressions or loose interpretations of the rules
- are prone to wild, unsanctioned bolting
- can be disorganized or split in more groups who may be in conflict
- have lack of trust in higher authority who in turn don't like to speak with individuals
- have little power or jurisdiction to speak for climbers

It is obvious that national associations and local groups complement each other very well. But this can only happen through organized initiative and mutual cooperation and trust.
Locals must feel that association is working in their interest and they need to distribute roles to maximize each other's strengths. At best, it works in everyone's interest. At worst, local groups may bolt some problematic routes and the association will distance itself from it to preserve good public image; and similar simple, but generally damaging examples.

1.5 Some other considerations

1.5.1 The ‘adventure’ and ‘trad’ attribute

In definitions, and many times in the document, we discussed different types of climbing, like sport climbing, bouldering or adventure/trad. Even ice climbing and drytooling was mentioned. While all the big mountain walls certainly represent rock areas as well, they are on one hand very hard to manage, but on the other hand, all the impact and issues are also much smaller. We probably should talk about some exceptions in the future, but for now, management of rock areas and most of this study, will apply mainly to sport climbing gardens, bouldering spots, and also multipitches, trad and drytool that spatially resembles a climbing garden. It is obvious, that for some big wall of 500 meters, with three routes that are rarely climbed, very little management would be necessary, let alone impacting the environment with unnecessary infrastructure. Some of the rules, models and recommendations will apply there as well, but it is quite logical to figure out which.
We also have to emphasize that within our work group we had too little knowledge and local tradition on trad climbing principles, which are very common in some countries like UK. Ideally, a big part of the study would deal also with issues associated with trad and we hope this will be corrected in the future.

1.5.2 Jurisdiction

There may be some problems with jurisdiction about agreements. You can ask yourself, does the national association have the power, right and authority to represent the whole climbing community and speak in their name? To what extent are they responsible for climbers’ behaviour?
They could reach agreement to maintain some area, but there can still be equippers from outside who will bolt there. Who will keep track of the changes and should unauthorized bolts be removed?
A representative od the village community may propose some solutions and agreements but what if some individuals from the village disagree? How much consensus should be behind one person’s authority?
A lot of times, climbers reach agreements with bird watching groups about seasonal closures. But according to national laws, there groups cannot officially dictate nature protection conditions. Most of these agreements are partly informal (even though they benefit the area).
On the other hand, association, with more legal power, is often unwilling to sign some legally binding agreements that might be unpredictable and more practical, informal solutions are often the only choice.
Often, institutions and agencies are prepared to turn a blind eye if they see some solutions are mutually beneficial to all, even though they may technically not be up to code.
Generally, the more actors are involved, the better and more official agreements will be. The longer and more positive the history of their cooperation will be, the more willingness will be there to discuss more complex solutions. It is also a matter of trust.

1.5.3 Regularity

Even though rock area management is an ongoing process it doesn’t have to consume a lot of time (apart from initial phase). It is up to the area specifics to determine the amount of involvement once the basic issues have been revolved. This could mean monitoring, check-ups and working or informal meetings of stakeholders a couple times per year or every couple of years.
Different processes can run at different regularity and pace. The effort to rebolt may be done more regularly than maintenance of infrastructure etc.

1.5.4 Individuals

If some climbers have a feeling that management doesn’t understand them or its decisions have not been communicated properly, they may be inclined to cause problems. There are climbers with extreme philosophical positions or uncooperative attitudes. Some people simply like conflicts. Some people thrive on rebellion or even stupidity. No matter how good the management in the area is, there may always be individual cases of

transgressions or other damaging actions done by individuals. The presence of climber representatives in the area or clearly written and published agreements will distance the climbing community from such actions of individuals. It is important to stress what majority of climbers feel and that actions of the individuals are their own, and that most other climbers agree they should be punished.
Also, some local visitors may feel aversion to non-locals dictating them the rules, which were maybe not in place or even necessary 10 years ago. This is why it is important to involve local climbers to ensure immediate cooperation.

1.5.5 Competence

Key persons involved in management must be educated about all the basic issues like nature conservation, spatial management, national laws and such. The association and its representatives should invest in this knowledge and competence. Being passionate about climbing is often more disruptive than helpful to the process. Apart from general knowledge, anyone dealing with specific area should also be well informed about local situation, its people, issues, habits and history.

1.5.6 Volunteers

Many of the work can't be done without the assistance of volunteers. Usually local groups are happy to contribute to their local area and its development. It is important they are not left out, but instead included in the process and explained the limits of their work. They can be of great help as a constant presence in the area, for monitoring the agreements and for potential volunteer maintenance days for projects like rebuilding the approach trail or clean up day. They represent an important resource for any area manager.

1.5.7 Touristic development

Touristic development, discussed in detail in chapter III.7.2. is part of the larger scope of area development. Rock area management can be an integral part of touristic initiative, but not such initiative in itself. Any touristic development will depend a lot on the separate interest from state, municipality and mainly the private sector. It can be very beneficial to the area, especially from the economic and social point of view. However, the rock area management is primarily there for sustainable development and for dealing with problems. Thus, processes for touristic integration will not be included in the rest of this chapter.

1.5.8 "Hit and run" bolting

We cannot support "hit-and-run" bolting initiatives, where a group of bolters (either from another part of the same country or from another country) discover a rock area, quickly bolt the routes (often without contacting the local climbers, local authorities or local population), climb for a while, publish the area and then leave. With luck, some local group will take care of management of this new area in the future, but this should always be arranged in advance. Otherwise, the potential for problems is very high.
Local climbers are usually happy if some outsider equippers are willing to come and do the hard work of bolting and cleaning, often with their own bolts, but it should never be done without their advice and consent. Local climbers know the area and its problems, environmental regulative, climbing style and so on. They must be prepared to take over the new rock area once the visiting group leaves. There have been many cases where this was not followed and the visiting bolters created a lot of problems for the local climbing community: improper bolting creates tensions, areas may be closed, public image of climbing is damaged, improper gear is used etc.
Many of such cases happened in Croatian Istria in recent years. The area was very popular with Italian, Austrian, German and Slovenian equippers. Only some of them contacted local climbers and local population. Some negative cases from the last few yearsinclude:[221]
- bolting next to the sea with lesser quality bolts meant that in only a few years the routes are extremely dangerous due to corrosion (Brseč)

[221] Ravnik J., Istra & Kvarner, 2019

- bolting with resin/glue-in bolts resulted in a whole sector being questionable after many bolts started to spin as the glue went bad (Limski kanal - Šimije)
- bolting of a whole new sector in the area where local climbers agreed to stay away, resulting of extensive damage to a special protected plant, resulting in the closure of most of rock area (Istarske toplice)
- bolting of a new sector, which was otherwise protected because of eagle owl resulted in worsened relationships with nature protection (Balcony)
- bolting of a new sector with a lot of damage to the vegetation and improperly cleaned routes, that had to be removed later (Kompanj - Klobasi)
- bolting of a sector where local climbers were still negotiating with cultural heritage and nature protection, nearly creating many problems for the area and "stealing" routes from local climbers (Medveja)

All of the mentioned cases were done by foreign bolting parties who visited the area for a short time and then left the problems to local climbers. While some other foreign equippers approached things more responsibly and contributed to some nice, non-problematic routes, the others took advantage of lack of organisation of locals at the time of development. The area "leaders" confirmed they were never approached about it. Surely, the intentions if the bolters were good. They just wanted to make new routes. But more and more, in these times, this is simply not enough. Lately, a lot of effort is made by locals to get these issues in order and prevent similar things to happen in the future, though the national association there is not really interested in managing rock areas.

1.6 Basic principles

Ideally management follows some basic guidelines of ethics, safety and nature protection, which are common throughout EU and could be provided by EUMA, while at the same time it maintains independent and responsible approach and considers the local specifics. This is a step towards the responsible self-regulating climbing community. Some principles should be common and considered in any rock area management:

1.6.1 Limitation principle

Climbers have to realize that they can't/shouldn't bolt every piece of rock. Management must be prepared and willing to limit climbing to a certain reasonable and justified extent to assure sustainability of the area and maintain carrying capacity of the crag. This may include closing parts of the rock for climbing, banning further bolting of routes, seasonal closures, limiting the area below the wall and other movement, planning anchor positions on designated heights, etc. The limitations and solutions must correspond with the issues and have a large scale from no limitations to complete closures (and everything in between).

1.6.2 Locality principle

It is important to include local climbing community in management as well as other local stakeholders. They have a more intimate knowledge of the area, faster and more direct contact and can react quicker when issues need to be resolved. Management can be done in two tiers: Oversight body with legal assistance and guidelines and experience can come from national association, which in turn cooperates with local climbers or individuals. They should always strive to preserve local identity and character; both to the environment and also in climbing approach and bolting ethics.

1.6.3 Inclusion & cooperation principle

It is important to include all the affected and interested stakeholders (if they wish to cooperate) in the management process in order to avoid potential future conflicts. It is beneficial to cooperate with other land users (especially other sports) and plan for the future. The cooperation can also be based on reciprocity. Climbers can get involved in nature protection and promotion, be it in passive forms of self-regulation, or more actively by monitoring of birds, removing of invasive plants etc. Climbers can also join in the promotion of the area for tourism and local development.

1.6.4 Differentiation principle

There is a collection of solutions, regulations and models to manage climbing. Differentiation principle states that each area has its own specifics and rules (even possible local traditions), so no single model can be applied to all areas. The management of the area is the result of cooperation of all stakeholders with justified and reasonable requests, responsible approach to bolting and mutual respect and assistance. Though the management is similar, there will always be many local peculiarities that need to be taken into account. One very good example that encompasses lots of differentiation is zoning principle.

1.6.5 Voluntariness & self-regulation principle

Ideally the rules and regulations are premeditated, placed in advance and self-imposed. Management is not solving problems but avoiding problems in advance. This means first following ethical code and nature appreciation without the need for rules and laws to be enforced later. Management must be able to recognize the benefits of its mission and of cooperation with stakeholders even if it's not legally necessary. If climbers close the problematic routes by themselves there may be no need for enforced restrictions.

1.6.6 Communication principle

Rules, prohibitions and ethical code must be communicated clearly and visibly to all visitors. There are many channels to do this: info panels, signposts, leaflets, guidebooks, internet… It is a good idea to explain some prohibitions in more detail and educate and inform the visitors about local traditions, protected species etc. This should also serve as promotion of appreciation of local environment and nature. Education prevents destructive behaviour. Information spread will ensure respect of the agreements.

1.6.7 Maintenance principle

The area needs regular oversight and maintenance. This can be in form of maintaining routes (rebolting, changing anchors), maintaining infrastructure and possible further investment in the area in cooperation with locals and municipality. It can include building/stabilizing approach paths (and limiting their number), to limit erosion and impact; construction of parking spaces; joint promotional campaigns and even buy-out of the land.

1.6.8 Regionality principle

It is a good idea to try to connect the region and have a joint approach to the logically and spatially homogenous area, which is managed and promoted as one. This includes plans for outdoor tourism services (connecting all outdoor activities), promoting local businesses (accommodation, restaurants, attractions). This maximizes tourist effectiveness of the region and provides a better experience to the visitors, while the region is effectively developed. It also disperses climbing crowds throughout the region, thus minimizing their impact on just one place.

1.6.9 Funding principle

It is sometimes necessary for some level of management to be done voluntarily and free of charge. However, for some more complex, engaged and difficult management, some funds should be provided, immediately and in the future. These can come from many sources: EU funds, national federation, interest from local (tourist) community, local clubs, climbing courses, guidebook sales and donations from other climbers. Some simple mechanisms like percentage of parking fees can easily sustain some local management.

1.6.10 Continuity principle

Any management must have a vision for the future. They must follow this vision, track progress, monitor the agreements and changes and make necessary revisions whenever and wherever is necessary. A rock area is a living thing, an eco-system of interconnected elements, which must be supervised and checked for anomalies so it can remain sustainable and successful.

2 Management solutions

This work should be seen more as a compilation of guidelines, solutions, information and ideas out of which a future management can gather knowledge for their work. It may be a complete model or only one simple solution. Most management solutions are connected to the issues and are fairly simple. A lot of these solutions were already mentioned in the previous chapters. Here, we will summarize some of them and provide some more. However, management will never be limited to any set of solutions. It is good practice to be creative and to know the area, think out of the box any maybe find some better, although area-specific solutions.
For example, one area in Slovenia had a problem with parking spaces, especially on weekends and holidays. Nearby school had a nice parking space, reserved for school use only. Due to the school not working on weekends and holidays, visitors could in that instance use the additional parking there, solving the problem in a unique way.

2.1 Management of land

When managing the land, it is good to first define the scope of the land and its individual parts like rock areas, approach trails, parking spaces. Spatial boundaries should be defined, preferably on a detailed map. Public and private land should be identified and best solutions should be negotiated.
Any part of rock area or its infrastructure, especially if on private land, should be discussed and agreed upon. Even potentially beneficial investment in the area like stabilizing of paths, erecting a bench etc., should be done with consent of the owners and other involved stakeholders. Agreement to use the private land should be reached and signed in written form, absolving the owner of any liability and defining the scope of use and the means to reach the manager if problems arise.
In some areas, certain official permits and paperwork for the rock areas must be obtained in advance. Depending on the scope of the area, the management plan should assume the number of potential people visiting it and its seasonality. Adequate infrastructure should be provided to support these numbers. In the later phase, signs and panels should be erected to provide the information for the visitors.

2.1.1 Parking

Parking spaces were covered in detail in chapter II.2.5.4. If existing options are already in place and can accommodate the expected number of visitors, this is a minor issue. In the event this is not the case, a special, dedicated parking must be set up. It should be planned to accommodate the projected number of visitors during main season. It should be close to the rock area and preferably away from the village or in such location it is not necessary to drive through the village to reach it. It should be as undisturbing as possible.
A spatial study can be conducted for ideal spot, usually on public land. Spatial study will quickly reveal potential spaces. A good, optimal location is preferable to short approach to rock area. 10 minutes longer walk should not be an issue to any visitor if it means avoiding potential problems. It is good to find a space where also other groups that use the area meet (hikers, bikers). This way the project will be more appealing from the tourism point of view. This infrastructure is a basic necessity of the area so it's usually easy to get interest and funds from state, municipality or tourist societies to contribute to it. A lot of times, EU funds can be allocated. The costs are usually not high as it is easily set up with some road work, gravel or rough sand. Sometimes, well maintained parkings can be the easiest point to collect some fees and inform and control people.
This space is an ideal point for some information centre and can contain even small kiosks and buildings, or a large variety of panels with rules, regulations, environmental and cultural heritage information, and even some commercial information about accommodation and such. For larger areas it is good to put up a map with important

information and alternatives. Additionally, parking spaces can be marked and the area limited by fence or railing. Comfort structures such as benches and tables could be added. It it's possible to arrange for emptying and maintenance, trash cans are really welcome addition. It is also a good place for a toilet.
For smaller areas, widening and stabilizing the area beside the road could be enough, especially if there is little traffic on the road. This is often the initial stage of parking of many new areas. However, as existing parking gets too small, an alternative should be sought. It is important to look wide enough for optimal solution, even if it means moving or constructing a new approach trail. Such planning must look far enough into the future. Also, most parkings need some kind of maintenance.
After proper parking is set up, it should be communicated as much as possible, through guidebooks, internet portals, panels or flyers. The undesired parkings should be marked with "do not park" signs. Sometimes it has to be emphasized, that this is not the biggest or best parking for the area but the only legal or acceptable one.
Sometimes, parking can be a tool for managing visitor numbers. A certain primary parking space can accommodate only a certain number of visitors. Provided that wild parking is not possible or discouraged/illegal/fined the secondary alternative parking can set up (potentially only at peak times, which are usually short). It can be a kind of safeguard as it will imply additional, longer approach. Full primary parking also signals crowds at the crag. This might discourage some visitors from going to certain area and change their plans to some other area in vicinity, while they still have option to visit the area if they use secondary parking. This is not possible in every scenario but under right conditions it can be a useful tool of controlling crowds. Some additional tolerance might be needed and agreed with local population at times of peaks.

2.1.2 Trails

The first task of area management is to reduce/limit the number of trails to a functional minimum. It is best to use existing trails if possible and if those trails are lest impactful for the environment and can support additional use. Secondly, the trails should be as undisturbing to locals and environment as possible. This is imperative to short or easy approach that most climbers like to embrace.
A legitimate approach can also be done by abseil from the top, but this can be reserved for the areas that are visited by more experienced people.
Next, creation and maintenance of sustainable trails should be promoted by using solid ground and avoiding any protected species or special zones. Like in the case of Osp, Slovenia, where a large area of sensitive and protected plant community was fenced off, existing trail removed and rerouted around the area. Any unsanctioned shortcuts should be removed and closed shortcuts. Simple signposts can be used to direct the visitors to proper trails. If this is not enough, management can also use barriers, fences and railings that help people and limit them to a trail. Use of local materials is preferred. The same goes for potential site hardening and stabilisation of paths to prevent erosion. A well maintained and comfortable path will also direct and encourage visitors to use it rather than some difficult shortcut.
Sometimes a trail will need additional elements, like steps, ropes or even via ferrata. This should be done if there are no other solutions like finding a better route for the trail.
Not only main approach trail, but also linking trails between areas and sectors should be created and maintained. Other social paths should be discouraged. If the base of the wall permits, this area should be used to move along the wall instead of creating additional paths through the woods.
As with everywhere, the trails should be clearly communicated by the use panels with maps, signposts and so on, to direct the use of proper paths.
Big walls may require additional descent paths. Same rules apply there, although it is good to promote rappelling off of big walls rather than walking on trails.

2.1.3 Rock area

Rock area is the place of biggest impact in any case. A lot of solutions are already mentioned in the impact chapter. However, there are some good practices that can be observed:
- Management of new bolted routes may be necessary. Some local authority may be put in place to be contacted and consulted before the bolting is done. Route planning should be responsible.

- Strategic placement of bolts on the wall may include putting anchors below the wall edge to stop people from summiting and protect the trees on top; also avoiding the trees in the wall itself; also avoiding any large holes in the wall as they rarely add anything to the route but may be used by birds for nesting.
- It is good to practice self-regulation, for example closing the routes with nest by yourself. Use of red ribbon or a written sign (also in English) is common practice.
- Do not bolt every piece of wall, protect some areas of the wall or even some sectors (see also zoning).
- Avoid making routes if excessive cleaning of loose rock or vegetation is necessary.

The space under the wall (the base) can also be managed and limited. It includes limiting and designating (constructing) defecating areas to avoid excessive soil nitrification. You can put railing or fence around some areas. Some places may require building of plateaus to avoid erosion, for comfort or safety. Do it with local materials. Vegetation or trees at the base should not be destroyed unless absolutely necessary. They are part of the nature and experience. If it is allowed and appropriate you can add some benches and even additional panels (if parking is not suitable), but do not overdo it. If the informational goals are achieved, less is more.

2.1.4 Wider areas

Wild camping, even if allowed, should still be regulated. Promote the use of designated places if possible and the respect of local regulations and rules (about the space, cleanliness, animals (bear-box), fire…). Any rules should be clearly communicated through all means. This can be potentially monitored by rangers if it is an option.

2.1.5 Waste management

First of all, promotion of ethical code and “Leave no trace” philosophy and other clean crag initiatives should be done everywhere and all the time. The cleaner the rock area is, the more people will respect it and keep it that way. It is easier to promote cleanliness in an area that is kept tidy. It is good to mark the trashcans that can be used. Local groups can organize annual clean up days of the crag.
With more crowds, human waste can get from no issue to the biggest issue very quickly. For issues with human waste, see chapter II.2.5.5.3. In summary, try to provide possibility for defecating by putting chemical or dry toilet on the site or parking, or less ideally, dig a common hole (pit latrine) or encourage use of small catholes or use of bags for waste. Additionally, in sensitive areas, encourage use of designated and limited spaces on the sides for urinating.

3 Equippers

3.1 General considerations

Equippers/bolters are the main focus of development of new routes and areas. They are not so numerous, yet they create all climbing routes infrastructure. Sometimes a few people create whole areas. It is quite common for a big area to have one or several dedicated equippers. Usually the create and protect local bolting ethics like style of bolting or adventure climbing. They should be part of management and a reference for other potential bolters.
Outsider bolters can come from other parts of the country or from abroad. It should be a major part of ethics to contact the local bolting community before putting up your own routes in an area you’re not very familiar with. In this way, visiting bolters can be a blessing and a curse. One of the problems is, equippers are not organized EU-wide.
Although the bolting of the route can be a hard, demanding, responsible, exhausting and even dangerous work that includes a lot of research, walking, abseiling, jumaring, cleaning and discussions with others, it is on the other hand fairly simple to learn how to put in an expansion bolt. Anyone with a drill can learn this quickly, which does not mean they will also be experienced enough to put the bolt in the right position (from the point of safety and the flow of route), even provided it is OK to bolt the new line.
All national associations should organize official bolting courses and efforts should be made that through EUMA, this education is recognized between different countries. A “European bolting license” would signify that the

equipper is educated and even experienced enough to bolt safely and properly. In case such equipper comes to a new, foreign area, this would be a good sign they know what they are doing.
A bolting course, accompanied by bolting manual should cover and train people at least the in the following topics:
- Technical knowledge about different materials used for bolting and different types of bolts
- Practical knowledge on how to correctly install expansion and resin/glue-in bolt
- Extensive knowledge of nature protection, environment and rock area management and other issues
- Understanding the different forms and styles of climbing and also the different difficulties of routes
- Understanding and having the level to bolt routes for beginners (reducing potential dangers) as well as for better climbers (routes with bigger runout)
- Understanding danger elements in the route such as ledges, tufas, traverses etc.
- Understanding the necessity of the cleaning process for the route
- Understanding climbing and bolting ethics and acknowledging the different local ethics that might exist and not chipping holds, etc.
- Having ability to plan for the new sector, find logical lines, not bolt too close together, avoid sensitive areas, be able to work systematically
- Understand the basics of work safety, both to themselves as for the other users or visitors that might be in the area (closing off the work area, cleaning also the top of the wall, being careful with large unstable blocks)
- Having extensive knowledge of safe placement of bolts (avoiding the edges, cracks, bad rock, etc.) and good flow of the route (clipping from optimal positions, avoid rope drag…) and anchors
- Having additional knowledge about the process of creating and maintaining the whole rock area
- Having the necessary technical skills and stamina for additional rope manoeuvres, knots and other procedures necessary to work on the wall.

3.2 Maintenance

With each year, the necessity to maintain the routes is bigger. Most of rock areas are fairly young, rarely over 40 years. This means that slowly, the materials (especially if first bolters used less appropriate materials) will start to deteriorate.

The rebolting of routes, though, is much less popular with equippers. The excitement of finding a new line, of creating something new is absent with rebolting. This is more a public service, while bolting new routes is often satisfaction enough for some people.

Usually we rebolt a route that has become danger risk due to poor equipment. It is preferable to do it with best possible materials, so that this work will last as long as possible. One reason for this is, that there are not unlimited positions in the rock to place new bolts, as you can't just change existing bolt with a new one. So, it is preferable to use resin/glue-in bolts for rebolting in favour of expansion bolts, which are more suitable for new routes.

Simpler form of maintenance can be only replacing the anchor biners, if they are used and worn out. Sometimes, routes may require additional cleaning or fixing/removal of some large blocks.
Rebolting can also be done to improve safety of the route. In the past, many areas were bolted by mountaineers with far apart and unsafe positions of the bolts. Sometimes they just didn't have enough money for additional bolts. Many of these routes are beginner-level easy, but are due to being dangerous very rarely climbed. Such routes can be revived by rebolting them with more bolts in better positions, making them suitable for children and beginners. The character of the area must also be taken into the account here. If the character is more adventure-oriented, such rebolting would go against the local ethics. But is the general character is user-friendly sport climbing and the route is scary/dangerous just because it is from another time, it might be appropriate to rebolt it better. Some areas require rebolters to contact the original equipper before they change the positions. They should however never change the line of the route or modify any holds.

Any kind of rebolting plans should be well thought of to avoid causing discord or problems. Decisions should be a consensus of local and expert bolters. It is good if the area has some sort of caretaker, who keeps track of the work and can also be the rock area manager. It can be an individual, local group or club. Apart from the routes, the area

may require some additional occasional maintenance like cleaning vegetation or more stabilizing of the trails and the base of the wall, repair of the benches, panels etc.

Many countries today already have good initiatives that help funding such endeavours. A lot of these initiatives collect donations from climbers, manage and sell local guidebooks or apply for funds elsewhere. Such structure ensures continuity and professionalism and among other things:
- can apply some oversight about how the work was done
- can recompensate equippers for their effort and thus stimulate rebolting
- can be much more systematic in their work
- can monitor the conditions and make plans for rebolting
- can ensure continuity of the work
- can provide responsible and professional service
- can work in cooperation with locals and other stakeholders

Despite these benefits, we would like to stress that we should still avoid placing any liability to their work. See chapter I.4.2. for more on that.

As with equippers, the situation in Europe is mixed. These groups could be very local and self-sufficient or they may be supported and supervised by national associations. There is little to none connectedness and cooperation throughout Europe. We suggest EUMA develops the initiative to solve this issue, in some ways similar to USA based Access Fund (more on that in later chapters).

4 Spatial and time management

4.1 Closure of crags and routes

Some old climbing countries like Germany[222], France or the USA have experienced many closures and climbing bans. It usually happens for different reasons: when the situation gets so bad that some stakeholders successfully force closure; the area was bolted against regulations and legal provisions; the owner(s) of the land revolt; or it can be a consequence of some wider national or parks management policy. In any case, some closures and bans can be justified (due to any number of legitimate reasons). Most of the time, though, this is a hysterical overreaction and for some stakeholders (which may sadly include national associations) the easiest solution to the problem. Not all, but most crags could continue to exist with proper management and accepting some limitations.
Sometimes, the closure can be only temporary, as time is needed to evaluate the situation before decision is made. This kind of closure should not happen ad hoc, without some plan, goals and timeframes set.
It is much more common to close a route or a sector. Sometimes this closure is because of disuse or low value of the route (it may be in dangerous ground and impossible to clean), or the reasons can be environmental or due to cultural heritage. Very rarely a whole sector is closed. More on that in later sub-chapters (spatial, seasonal closures).
A part of the management process can also be removal of routes that violate management or microzoning agreements and were consequence of wild bolting in otherwise closed areas. If cooperation between stakeholders is good and based on trust, climbing groups should take care of unsanctioned bolting by the outside parties. This will effectively disincentivize such bolting as it only consumes time and money.

4.2 Spatial limitations

Some species of animals and plants require only a narrow spatial ban. Usually it is enough to close one or two routes in the vicinity of the nest or species location as they are otherwise generally not sensitive to human presence and noise (i.e. swifts, swallows, all plants).
Some species require a wider spatial ban, where a large part of the wall or a whole sector is closed for climbing. Such species are sensitive to the noise, while others (like eagle owl) are more disturbed by visual human presence.

[222] Hanemann B., Sustainable management of climbing areas in Europe, 2000, pg.42

This kind of ban can be horizontal (i.e. left part of the wall is closed) or vertical (where the wall is separated into two larger parts with a ledge, usually the upper wall can be closed).
Sometimes an adequate solution is only to move the location of the anchor, or move the line of the route in some part.
The same goes for cultural heritage, like rock art or building remains. Only the routes, affecting this part of the wall should not be considered or be removed and sometimes a protective fence and explanatory panel is put up.
Spatial bans are easy to arrange if some kind of management and oversight is present in the rock area, so a special body or group will have to sanction any new development. It can be a bigger problem if the area allows any equipper to come and bolt the routes without prior consultation.

4.3 Seasonal limitations

There is a variety of wildlife that may warrant a seasonal ban. However, the majority of the cases will happen over the breeding period of the birds. In the latitudes above 30 degrees to the norths and below 30 degrees to the south this mostly happens in spring and summer, between April and July, with possible extension into March and August.[223] Winter time may be sensitive mostly in Alpine regions as some mammals may spend winters in tor rock areas and caves.
Different birds have different breeding habits. The common pattern is building the nest and mating, laying eggs, incubation and brood rearing from the time they hatch to the time they are able to leave their nests. The sensitivity of different species through any of these periods varies a lot, though the nesting period is usually considered the most sensitive. Most birds can easily coexist with climbers with only minimal restrictions.
The seasonal limitations can be in form of bans or some other less extreme regulations. Other solutions, like constructing artificial nests in areas not suitable for climbing, but acceptable for birds, may also be tried. It has been reported that most raptors and owls respond very good to artificial nest boxes, which also serve to reduce predation of nests.[224] [225]
The length of a seasonal ban depends on a careful evaluation from experts and should be further monitored and re-evaluated.
It is important that also climbing community is able to recognize this issue and self-regulate, meaning they should close the route where they find a nest, without intervention of nature protection (whom they also inform). Best practice is to leave an explanation in situ and disable the first bolt as well as publish the information on relevant sites.
In Slovenia, a system to close the first two or three bolts was implemented successfully, using a simple and cheap system of one short bolt, nut and washers that completely disable the functionality of the bolt without the need to remove it. They are tightened by pliers and are not possible to remove by hand. Some countries have similar solution by using removable bolts in the first couple of positions.

4.4 Microzoning

Microzoning principles apply to any potential rock area. There are many benefits to microzoning. More numerous crags (if they are properly managed) disperse climbing impact of a single one, although they need more infrastructure. The management can be more effective and climbing crowds have many choices for visit as they will tend to avoid crowds if they have options to do so.
With microzoning, each single homogenous rock area / potential crag is inspected and designated a status. These can vary:
- Quiet zone / area closed for climbing is dedicated solely to nature protection. There should be no human presence and the trails and bolts should be removed.
- Temporarily closed zone is a zone that is still under evaluation and is closed out of precaution
- Seasonally closed zone is a zone that is closed only a part of the year.

[223] Sharp P., Seasonality and autonomous reproductive activity in birds, 1984
[224] Lambrechts M. et al, Nest box design for the study od diurnal raptors and owls, 2012
[225] Sonerud G., Reduced predation by nest box relocation, 1993.

- Conservation priority zone is a zone where climbing is permitted, but limited in space so no new routes can be added.
- Climbing priority zone is a zone with no restrictions (other than general ones).

Management should be present in all areas by maintaining the legal crags and removing routes in banned areas if necessary. See case study for Frankenjura, a huge area, that uses zoning principle. There are also many positive examples elsewhere, like Rodellar in Spain. It is a world-renown climbing area with a large number of routes, hiking and canyoning, but also protected rock art and one of the most important bird reserves in Europe. The area is managed by the Sierra de Guara association and it designates rock areas where climbing is permitted, banned or seasonal. Sport tourism, cultural tourism, nature tourism and ornithological tourism are all connected in one common goal. [226] [227] [228]

There are other examples that don't work so well. At times, a large area may be macro-zoned, split in two parts, where climbing is permitted and one where it is banned. The problem is obvious: there are rock areas in the first zone, that require more protection and even closure, while there are areas in second zone that should not present an environmental problem even if climbed. For one thing, a lot of bird species are territorial, so they tend to spread over both zones as they don't recognize the border line. Such zoning will also concentrate problems and impact in one zone, making it much harder to monitor and manage and leave the other zone open to various transgressions (like illegal wild bolting, poachers stealing eggs, etc.) With microzoning, whole area is maintained and monitored by both nature protection and climbers, who use all tools at their disposal to enforce the agreement. Dividing the area in a "quid pro quo" fashion in not a good long-term solution.

In any case, microzoning requires a lot of cooperation, consideration, planning and involvement of experts.

4.5 Visitor limitation

Visitor limitation is and should be used very rarely in case of climbers, but may be necessary in regions with limited number of crags and potentially large crowds. Some examples include the already mentioned Hueco tanks in the USA or Eifel in Germany, where limited number of crags are often occupied for hours by large climbing groups from Netherlands. Fixing a ceiling on the numbers by means of ticket sales and a ban of groups of over 4 people was implemented to contain this. [229]

Visitor limitation was already discussed in chapter III.6.2.1. As stated there, it should be the last resort of the area and should be calculated very carefully by studies and experts. By definition, the carrying capacity is defined by the maximum number of visitors on a specified tourist destination, which still doesn't negatively impact its natural and social environment and doesn't reduce the quality of tourists' experience.[230] Methodologically this is a very complex process, which is more easily applicable to tourist sites, and especially the "linear" attractions on which visitors move like trails (i.e. Half Dome trail) or linear sports (like canyoning or rafting). The USA agencies developed many methods to calculate this, like "Limits of Acceptable change" or "Visitor Experience and Resource Protection". [231]

However, as quantifying the carrying capacity is very difficult, many methods have been opposed and criticized by both sides. Certain values may be hard to define, while the applications of other correction factors may be too arbitrary. As the presence of the climbers is more concentrated on one area and is usually static for duration of the activity the impact could be larger, however their profile and attitude may result in generally lower impact. Their presence is also highly seasonal and also weather dependent.

As a last resort, this tool may resolve an otherwise problematic issue, regardless of its methodology flaws. But many other solutions could be tried before resorting to such drastic measures. In EU, another problem could be applying some local/national preferences, which is in conflict with EU anti-discrimination laws.

[226] https://guara.org/en/
[227] https://turismo.hoyadehuesca.es/en/parque-natural-de-guara
[228] https://www.ukclimbing.com/articles/destinations/rodellar_-_the_land_of_lactic-2521
[229] Hanemann B., Sustainable management of climbing areas in Europe, 2000, pg 36.
[230] Mangion M.L., Carrying capacity Assesment for tourism,2000.
[231] Access Fund, Climbing management guide, 2008, pg. 51

4.6 Use of fees and fines

As we argued many times in this study, the access to rock climbing activity should not be tied to any kind of fees, as it should be understood under the “right to roam” legislatures. However, an obvious exception to this could be various national park fees and other indirect sources of income, like parking or facilities fees. If such fees are applied reasonably and used for sustainable development and maintenance of the area it should be acceptable for the climbing community and can even represent an important driver for the development.
Similar to this, any serious transgressions should be fined or penalized. This may include wild camping, littering, building fires or other forbidden destructive activities. To employ this tool, local community or park authority needs cooperation, approval and legal basis from higher institutions like municipality (which can issue parking fines) or ministries. This is not a popular solution, but in the areas where certain problems persist it can effectively stimulate visitors to follow the rules.

5 The model of cooperation between stakeholders

5.1 Connecting the area

Connectedness and cooperation of the stakeholders and the area is key to functional, sustainable development and to any rock area management. Is has been an ever-present theme throughout this study. See chapters II.3. on stakeholders or III.7.2. on climbing tourism.
In summary, the stakeholders may come from many different backgrounds and in many different forms, from individuals to groups, societies, agencies or institutions; they can be purely local, regional, national or even supra-national; they can have a specific issue or wide-reaching agenda. But, the more people are involved, the better the management will be along with the initiative to preserve it and its activity.
It is also good to think about the area in wide enough scope that it is still homogenous and logical enough, but on the other hand not purely limited to direct vicinity of the rock area (see: wider area definition). Connecting few nearby crags under one area management, with shared supporting infrastructure has many benefits, from crowd dispersing to improved experience and tourism profits.
A simple real-world example can be the involvement of accommodation facilities like campsites. A crag may be services by a nearby campsite or hostel, but with improved cooperation and promotion, wider area may include several more camps and other accommodation options. This improves the options of the visitors and engages several more businesses to be interested in preserving the activity which brings them money. While this may reduce the profits of the original campsite a little it is still in the most favourable position, while such area can now accommodate much larger crowds with less problems. For example, see chapter III.7.2.2. on the Ardeche region or IV.4.4. for Rodellar example.
A well-connected area can grow into a more serious project, of which rock area management is only a climbing-dedicated partner. Even though it should include specific issues and other institutions like nature protection, this project will be mostly tourism driven, but aimed at experience, individuality, activity and sustainability. It should connect also other sports in the area, connect local produce with restaurants and stall selling, and include other businesses. There are already too many examples of such projects and areas. Such area usually develops some connected identity, part of which is rock climbing. Locals are proud to having a world-renowned climbing destination.
Of course, this cannot be achieved without a lot of work and interest from many stakeholders, and it also may not be viable in many smaller or highly regulated areas. But even without such “grand vision”, rock management should keep the main points of connecting the area in mind. As with more intense tourist development, even on a smaller scale, the more stakeholders are involved and convinced, the stronger the project will be.

5.2 Some practices and guidelines

Cooperation should be based on reciprocity, dialogue and mutual trust; expert help with various topics and solutions, education and information and help with management and oversight.
Important factors in cooperation include:

- Evaluation of actual range and scope and impact of climbing
- Considering all the possibilities of protection and limitation and choosing the optimal ones
- Considering micro-zoning and other proven tools for management
- Being clear on priorities, in order: environment protection, local population, climbing activity
- Avoid drastic measures and controlling the “extreme” opinions, actions and individuals in each group
- Sharing information and experiences between stakeholders and mutual help
- Solutions should be dynamic, monitored after implementation and possibly corrected

Additionally, rock area manager should:
- Have patience and understanding that sometimes the process takes time, however
- Be able to react quickly if solutions are available (like moving the trail or parking)
- Respect the laws and have good, scientific arguments
- Have empathy, understanding and good relationships
- Contact wide range of stakeholders from individuals to institutions
- Provide presentations of good examples, practices and precedence from other area
- Make clear distinction between well behaved climbing community and rare irresponsible individuals
- Be able to solve problems individually and avoid conflicts if possible.

5.3 Problems and difficulties

The models and solutions outlined in this study should provide a nice basis for a sustainable cooperation for management which serves all stakeholders. However, things are not always as simple as it looks on paper. The main problems that stand in the way of good management are quite simple, hard to avoid at times and also very human:
- unacceptable behaviour of visitors: individuals and groups that break the rules
- stubbornness, distrust, aversion or antagonism of local people or other involved individuals
- philosophical, hard-to-argue anti-climbing argument like: “climbing is bad and disturbing”, “ I don’t want tourism, just peace and quiet”, “the best environmental protection is zero impact”
- determined, loud, active and engaged minority or individuals persuading undecided people in their cause against climbing
- unfounded opposition within environmental or government agencies
- lack of interest from higher institutions (municipality, agencies, association), who could otherwise add intent, funding, staff, knowhow and longevity to the project
- ultra defensive position of nature guardians, who lack the understanding of climbing and equate all visitors to an area

Worst case scenario is these are the people who own the land or issue permits. Apart from those, there can be many other surprises. In Slovenia, a crag is in danger because of an emotionally and psychologically unstable man, who was already treated in psychiatric hospital and processed by police many times, and wants to repopulate the area with venomous snakes, throws rocks at climbers and removes and damages the bolts and gear in the route, despite not being the land owner. How can the study prepare you for such an incident?

Some problems are indeed hard to solve. For the rest, patience, rational approach, potentially trying to isolate the extreme viewpoints, engage the institutions via projects, fighting science with science and other considerations already outlined elsewhere in the study might bring success.
Sometimes, more drastic measures have been applied. American Access Fund sued the federal government twice over public land managing (lately over Bears Ears area)[232], or local managers demanded revisions of regulations or rejected applications over the lack of arguments. Such actions should however, like many other tools, be the last resort.

[232] https://www.accessfund.org/open-gate-blog/bears-ears-frequently-asked-questions

5.4 Establishing further cooperation

The cooperation with other stakeholders doesn't need to end in just rock area management. Other forms of cooperation could be beneficial and even part of the agreement. Climbers can contribute to nature protection also outside of climbing activities. They can help with finding, monitoring and cataloguing animal and plant species, with surveys or with removing invasive plant species in the walls. They can help protect the nests from human disturbances (eggs poachers etc.), or can help building artificial nesting sites. They can help with other work on the wall and heights with their special knowledge. They can actively fight against illegal bolting by removing any unsanctioned gear in the banned areas. They can join in promoting and raising environmental awareness. Nature protection groups could in turn create workshops and lectures to educate climbers about the environment.

The cooperation is important also in education and information sharing for all stakeholders. Some restrictions would be better accepted by the community if the sufficient explanation accompanied them. This can be provided by experts. Another good practice is the mutual production of info panels, leaflets, literature, flyers, classes, etc. The communication channels should always be clear and open both ways. The conflicts should be resolved rationally and with dialogue. Everyone should work on better public opinion about both climbers and nature protection. All stakeholders can cooperate further with other projects (also on EU level) to get funds and support. It can be tourism related or by organising events and festivals, being involved in guidebooks and so on.

5.5 Management plan

Best way to approach the management is with a climbing management plan. For this a draft document with some basic data should be prepared (the scope depending on the project complexity):
- introduction, purpose and need, goals and objectives, relevant maps
- authorities, policies, guidelines for management, ownership
- description of present condition of natural, historic and cultural resources,
- description of relevant management infrastructure (trails, parking, waste disposal…),
- description of climbing activity (history, importance, user profile, opportunities, use patterns, seasonality, new potential),
- description of issues and concerns and desired future resource conditions,
- description of climbing management, past and present,
- management recommendations for policy, guidelines and action,
- summary of review process; future review procedures,
- glossary, bibliography, contacts, appendices.[233]

The plan should:
- satisfy statutory requirements and internal agency guidance where applicable
- provide information about status and contextual importance of resource values, climbing activity and use patterns, and effects of climbing
- build cooperative relationships between climbers, resource managers and other stakeholders
- provide management direction that is the minimum necessary to protect resources and is implemented on a graduated scale from indirect (education) to direct (restrictions) measures
- articulate climbing as a recreational experience and describe the variety of climbing opportunities as values
- identify management alternatives that address climbing impacts in a manner that is consistent with management approach to other recreation groups or in similar areas elsewhere

To prepare the plan, first you need to study its purpose, need and goals. Then you identify people, groups and agencies who will help prepare it and who need to approve it. After that, you define the scale and scope and time frame to do it (with sufficient time for consultation). Then you gather information. You scope for issues that need to be addressed (by talking to stakeholders and climbing groups). You plan for outreach (how will the plan be presented and implemented). Where will i.e. pamphlets be distributed, where to place info panels, which internet

[233] Access Fund, Climbing management guide, 2008, pg. 55

sites to include etc. After you prepare the draft, it is discussed and corrected if necessary (possible through public review).
After the plan is acceptable, it should be implemented and then monitored and revised if needed. Possible outcome includes creation of official agreement between climbing groups and local and other stakeholders (memorandum of understanding), which defines common interests and the way they work together. [234] This can represent the basis for continuous area management.

V. Education and information

As we saw in previous chapter, management consists of direct (restrictions) or indirect measures, the latter being primarily education and information spread. This is a crucial part of management and, provided it is effective, the preferred method that may often alleviate issues to the point that other, more direct measures are not even necessary.

1 Communication campaigns

Some of the more subtle issues with rock area management is the question whether the restrictions and regulations will be accepted and followed. Often the reasons for management failing is the lack of information and education, no sufficient explanation, misinterpretation of the rules or untargeted information. On the other hand, the better the restrictions or management solutions are publicized and explained, the higher the chance they will be accepted by most.
Communication is crucial for successful implementation of any measures. For example, Red River Gorge started management / limitation plan called LAC (Limits of Acceptable Change) for the area. However, study done has shown climbers were not aware of LAC and were not included in process, even though most were willing to take part or approve of the process. At the time of conclusion of the process, 77% of climbers were unaware it was even taking place.[235] Not including the opinion of community poses great risk that the measures will not address them adequately or will not be accepted later.
To examine this topic, we can look at the "6 Ws" of communication campaigns: who, when, where, what, why and how.
We can dispose of 3 W's quickly.
Who? Everyone. The more people and institutions participate in the campaigns, the more successful it will be.
When? All the time. The topics communicated are universal and important. It is crucial that they are continuously communicated to the public.
Why? This study should give plenty of answers why this is necessary.

1.1 Communication types (the how)

When constructing a message, persuasive communication factors must also be considered. These include the source factor (communicator's attractiveness and credibility), receiver factor (characteristics of the receiver), channel factor (how message is communicated), and message factors (the way a message is communicated).[236]
There are several types of messages:
- injunctive messages tell people how they should behave (People shouldn't litter.)
- descriptive messages describe how people do behave (People litter.)
- prescriptive messages encourage positive behaviour (Please stay on trail.)
- proscriptive message discourages negative behaviour (Please don't go off a trail.)

These types of messages can be used in combination. Not surprisingly, some are more effective than others. Winters[237] used the following messages to deter visitors from walking off-trail in Sequoia Kings Canyon National Park in California:

[234] Access Fund, Climbing management guide, 2008, pg. 57
[235] Reighart S., Rock climber perspectives of management issues in Red River Gorge,2007.
[236] Ansari A.M., Understanding the motivations of rock climbers,2008
[237] Winters et al., An analysis of normative messages in signs at recreation settings, 1998

- (Injunctive – Proscriptive): Please don't go off the established paths and trails, in order to protect the Sequoias and natural vegetation in this park.
- (Descriptive – Proscriptive): Many past visitors have gone off the established paths and trails, changing the natural state of the Sequoias and vegetation in this park.
- (Injunctive – Prescriptive): Please stay on the established paths and trails, in order to protect the Sequoias and natural vegetation in this park.
- (Descriptive – Prescriptive): The vast majority of past visitors have stayed on the established paths and trails, helping to preserve the natural state of the Sequoias and vegetation in this park.

The first, injunctive-proscriptive message, was most effective at deterring visitors from walking off-trail, which is confirmed by many other studies. Additionally, studies suggest that moral/interpretive messages can be as effective as fear/sanction messages at promoting desired behaviours.

Apart from that, some other considerations about messaging are:
- the basic message should be simple and clear
- the use of pictograms can be useful in some cases
- further explanation or information should be provided where necessary
- the language should be aimed at general public and interesting
- apart from local language, at least English (if not more) translations should be provided
- graphics and photos should be used where applicable
- involvement of well-known local climbers or climbing celebrities could give promotion a big boost
- involvement of climbing brands can be beneficial, as they can also support the cause with funds
- use logos of participants to show all agencies and groups who support the message
- different materials require different approach: some more serious and scientific, some more funny, entertaining
- use different media (print, video…) and outlets to promote the message

1.2 Communication outlets (the where)

There are many outlets from which the message could be spread. It depends a lot on the type of message. If the message is more general (like promotion of environment, ethical code, good behaviour) the outlets could be international or EU-wide in scope. The more the message applies locally, the more the outlets will change to national, regional or even local. Some important topics (like ethics) should be present at every stage and designed at the higher levels of organisation, so the message is unified. Some local messages ("Do not park at the fountain." Or "Do not climb between Apr-Jun.") should be only communicated at the specific area.

One of the most important outlets of the modern era is the internet. Most climbers use it to get detailed information about the areas, current news and conditions etc. These web portals can be very wide reaching (i.e. 8a.nu) or very local, tied to a specific area. While the general, large portals should be used for promotion by EUMA and similar organisations, the local portals are the message board of specific areas.

Climbing media is another such outlet that is followed by many people in the community, be it online or in print/magazine form. They are one of the most important influencers of the climbing community, often kick starting the increased visitations of a certain area just by publishing stories, photos or important ascents from it. Individual influencers (like famous climbers and Instagram high profile users) have increasingly important outreach.

Both general education as well as area-specific information can be distributed by more conventional printed means along with use of internet. Education materials such as brochures, pamphlets, flyers, posters etc. can be distributed at various outlets.

Other general outlets include:
- presence at the events, festivals
- presence at the climbing gyms and centres
- presence in the outdoor retail shops and stores
- presence at climbing clubs and groups
- national outreach via mailing lists and newsletters

Other local outlets include:
- information kiosks, info points or visitor centres at the location

- presence at local events
- use of signs, info panels and message boards at the location (parking)
- presentations for the local communities and local climber groups
- presence at local hostels, camps and other points of interest

On top of that, one of the most important outlets are area-specific climbing guidebooks. This introduces another problem, outside or foreign produced guidebook, as they often lack up-to-date information or specific local information and restrictions. In addition to such printed versions of guidebooks, the modern versions may include online guidebooks and guidebook phone apps, which share similar concerns. Additionally, most of these guidebooks do not contribute part of the sales towards area maintenance and do not involve local climbers, who manage, create and take care of the areas. We should make some efforts to distinguish the guidebooks that follow the proper guidelines and benefit the area (whether local or not). Modern guidebooks should by default include chapters on ethical code, environmental protection, local specifics and restrictions.
When speaking of general education, we have to also include various courses and education of climbing instructors, coaches and guides (and vice versa local nature guardians and rangers). They are the frontline of promotion and spread of climbing culture, whatever it represents to them. Being educated about issues, they are an important tool for an ethical climbing community.

1.3 Communication topics (the what)

The first form of 'the what' is the specific content for the area. It includes everything that applies to a specific rock area like rules, regulations, maps, special plants and wildlife, geomorphology, local attractions, customs, etc. This information is communicated locally, but often alongside more general topics, which are the other form of 'the what'.

Despite many differences in styles, climbers consider themselves a tribe. Climbing is a lifestyle and a source of pride. They view themselves as part of a community. A climber from Slovenia and a climber from Spain meet in China but they will instantly recognize themselves as part of the same family, sharing many values. Camaraderie and friendship, travel and exploration, challenge and adventure, freedom and affinity to natural setting and wilderness are all parts of climbing identity. This homogeneity is good. It sets climbers apart from regular tourists. It's true that some see climbing more as a sport (body and achievement oriented), while others can build philosophy around it or view it holistically to represent many facets of their lives (nature, travel, activity, relaxation, company). They all still identify as being climbers. And while so many topics and areas of climbing are inextricably subjective (styles, rules, beta, grades), some should be universally embraced by all. The cornerstones of every climber's identity should be philosophies around self-regulation, leave-no-trace and climber ethics, promoting good behaviour and education about sustainability, environment etc.

1.3.1 Self-regulation and positive examples

Climbers have to think about all rock areas as their own. It should be in their interest they remain open, functional, well-managed and maintained. A big part of this is the awareness that some restrictions are necessary for sustainable development. These restrictions can be imposed upon climbers by outside agents, but even more importantly and with enough education, they can be imposed by climbers themselves, proving they are serious, responsible users of the land. This includes many already mentioned voluntary measures (like closing routes with nests or moving approach trails) as well as recognizing the need for good behaviour.
Climbers should be guardians of this ethical code inward and outward. First it is important they follow these rules themselves and are positive role models for others. It is not enough to agree with the rules but then think they are open to interpretation or they don't apply to locals or themselves or to only small transgressions, while being angry at others who break them. It starts at each individual first.
But this attitude must also be directed at others. Every climber should take care that the rules are respected. If someone else throws away some litter you either pick it up after them and if possible, alert and remind them that this is not acceptable. The same goes for more subjective rules, where transgressors could claim ignorance or

misunderstanding. A wrongly parked car will be a burden for the whole community, so reminding the person of this mistake is a duty of everyone.
Nobody should worry that they will seem annoying by doing it. If they correct the wrongdoers and violators in a calm, polite, benevolent manner, kindly reminding them that a certain rule exists they should be viewed as positive caretakers of the area. Always assume the violator maybe doesn't know they are breaking some rule, either due to ignorance, lack of information or differences in climbing culture. If the warning is polite and well explained it should most of the time be enough. Avoid confrontation and walk away if you stumble upon an extreme personality.

It is also important to include famous, influential climbers, local leaders, guides, coaches and similar people in this role model functions. It should be in their interest to promote positive values.

1.3.2 Leave no trace

Leave no trace initiative should be integral part of climbing philosophy. It is an organisation that provides proven, research-based solutions for the protection of the natural world, by providing innovative education, skills and research to help people care for the outdoors. Instead of restoration programs or access restriction it focuses on educating people – the most effective and least resource intensive solution to land protection.[238] Although it was formed in the USA in the 90s, its message and platform has spread throughout the world. Its basic principles are simple:
- plan ahead and prepare
- travel and camp on durable surfaces
- dispose of waste properly
- leave what you find
- minimize campfire impacts
- respect wildlife
- be considerate of other visitors

Even though the organization and its mission are employed very widely, across the whole outdoor recreation and use spectrum, every single point still applies to climbers and rock areas. At the minimum, this should be the ethical standard of every climber, promoted and educated at every place and stage of climber's life – especially indoor gyms, who often lack in this education. Their simple and effective explanations should be translated to all languages and promoted.

2 Climbers' ethical code

Simply put, ethics is a philosophical branch that deals with the concepts of right and wrong. It gives value to things. Here we are dealing with climbers' ethics, which is a collection of recommendations that formed through time and experience and showing they work in best benefit to climbing community in the long run. We wish that every climber takes these recommendations as his own personal ethical standards. To fully understand them, you have to at times be able to see the bigger picture and have some empathy and understanding for other stakeholders or elements of the area.
Many associations and other groups already have a well-defined ethical codes or rules of behaviour. It would be beneficial if those rules could be unified and spread as one, singular message throughout Europe.
The ethical code should become the climbers' 10 commandments. Generally, they could be summarized thus[239] [240]:

1. **Respect all limitations and regulations**.
It is your responsibility to be informed about the rules of the area and pay the fees where necessary. Promote good image of climbers.

[238] https://lnt.org/why/
[239] http://felsinfo.alpenverein.de/index.php?mapId=82&option=com_content&view=article&id=731&Itemid=412#scale=9244648&centerX=1103904&centerY=6480554&layers=1465218397,152917,0
[240] Ravnik J., Climber's ethical code, 2015

2. **Follow instructions for access and parking.**
Park only on the designated places. If it is not possible, find suitable alternative. If this is unclear, ask a local for advice. Never block traffic or park on fields or meadows. Use only official and marked trails. Do not use shortcuts, social trails or walk in the woods off the trails.
3. **Respect the local environmental restrictions.**
If wild camping is forbidden, sleep only in official accommodation facilities. If it is allowed, follow minimal impact philosophy. Do not build fire unless on specially designated places.
4. **Leave no trace.**
Take all the trash with you (including cigarette butts and leftover fruit/peels). Always carry a small bag and also collect other trash at the crag. Lead by example. Clean off excess chalk and tickmarks.
5. **Limit the impact of human waste.**
Take care where and how you defecate. Try not to do it in nature or at minimum dig a small cathole away from trails and water or use pack-out plastic bag. Don't urinate under overhangs or in caves.
6. **Contribute to nature protection.**
Try to carpool. Self-regulate and close problematic routes. Never damage or destroy plants or animals, including lichens and mosses. Do not damage rock or other objects. Do not summit the routes if they have an anchor below the top.
7. **Keep your noise and disturbance to minimum.**
Do not play music at the crag, even if you are alone. Take responsibility for your kids and pets.
8. **Respect the local population.**
Respect local habits and private property and work on good relationships. Be polite and support local economy (inns, hostels and shops).
9. **Respect other climbers and visitors.**
Plan ahead and stay organized, occupy as small space under the wall as possible. Be polite. In case of accident call for help and help any way you can. Take care of your safety and don't endanger others with your behaviour.
10. **Support local management initiatives.**
Use official guidebooks or be adequately informed. If you copy guidebooks, include the chapter on restrictions and access issues. If there is a panel with rules at the crag, take time to read it. Respect different styles of climbing and local ethics. Support local bolting groups and report old and dangerous gear.

Additional point, that should be included at least if the rules are presented in situ at climbing areas:
You are participating in the inherently dangerous activity and are using the area at your own rick. You are responsible for your safety, which includes appropriate knowledge and experience.
This point is necessary to absolve the owners and equippers of any liability as much as possible.

We didn't elaborate on some topics that we feel are part of different ethical concerns, but are sometimes added to this code:
- Respect of other climbers. This was extensively covered in chapter III.6.3.
- Respect of the dangers / personal safety topics (like having proper knowledge and equipment, wearing helmet, doing double check etc.)
- Differences in the approach and styles, mentioned in point 10 could be greatly expanded. The debate about bolting or not could have its own chapter. We feel this is part of local ethics and should be respected as such.
- Sports ethics with issues that include kneepads, clipsticks, pre-clipped quickdraws, definitions of onsight, first ascent issues, grabbing the anchor and so on. While they are interesting and important topics, they belong to some other project.

VI. Analysis of situation in Europe

1 EU and international institutions and relevant legislature

The role and influence of EU institutions will be analysed in separate part of the project by Charles University in Prague. There is already some commentary on it in chapter I.4.

EU functions on international agreements signed and accepted by its member states. The main actions of EU are carried out by its institutions, mainly European Council, European Commission, The Council of European Union and the European Parliament. The main competences of EU are of three types: exclusive, shared and supporting. Only the environment issues fall into shared competences. Other topics, like tourism, sport and public health, which relate to rock areas, are mostly supporting competences, meaning the role of EU is only to support, coordinate or supplement the actions of the Member states, without thereby superseding their competence in these areas.
Thereby it is not realistic to expect that much lobbying would be necessary for rock areas. In rare cases, such legislature or agendas will be discussed, EUMA should be viewed as relevant experts and ideal situation is, they are contacted by decision makers instead of vice versa. They could also lobby for non-binding recommendations about certain issues.
However, connecting the national associations, promoting rock climbing throughout EU (especially with sustainable development) and pooling together knowledge and expertise will in turn give much greater power to Member states without involving the EU.
An important EU consideration is part of the "soft" measures, namely the EU funding. Many facets could be explored here, either via cohesion or development of rural areas, focus on sport, tourism and eco-tourism while tying all these with emphasis on environmental protection. Developing further joint projects and collaboration partnerships with cooperation of many Member states (be it theoretical, scientific or practical) and giving support when applications for funds are written, could be an important role for EUMA.
EU currently has some directives that are dedicated to environment:
- Habitats directive ensures the conservation of a wide range of rare, threatened or endemic animal and plant species and also habitat types. It is not a fixed document and is amended from time to time to reflect new members or other changes. There is a lot of guidance on species protection on EU Commission website[241] along with extensive lists and information[242].
- Birds Directive is similar to habitats directive and deals with protection of birds. Again, EU Commission website is a great source of information on this topic.
- other directives, like directives on the assessment of the effects of certain plans and programmes or public and private projects on the environment or Regulation about invasive species.
The main legislative impact comes through various treaties, agendas and initiatives. They are also considered soft policy tools and are treated differently through each Member state (for example, many areas throughout Europe lie within Natura 2000 regions, but at some states these areas are highly protected and regulated). Currently, EU has a couple of such initiatives:
- EU biodiversity strategy for 2030, European Green Deal and Green infrastructure strategy are all European initiatives aimed at restoring and protecting biodiversity. Measures are not expected to greatly affect climbing, and will rather help with the sustainable management tools, but EUMA should be vary which strategies are suggested to avoid the PEBLDS strategy of 1995 which stated "promote schemes for 'no climbing' … and legally enforce climbing bans of cliffs important for biological or landscape diversity" and resulted in UIAA protest
- Natura 2000 is an ecological network, tied to the Habitats directive. The areas included should be protected from any damaging development, but, as we know, sustainable practice of climbing should not be considered as such. Separate guidelines were prepared by the European Commission for management of Natura 2000 sites[243]. Those can work as separate but connected management plans for an area. The degree of regulation for Natura 2000 areas is up to Member states or even regional agencies.
As we can learn from the past, a lot of similar initiatives are left to sovereign states to implement, which usually proves troublesome. They can be viewed more as recommendations and suggested strategies, but national agencies and bodies will always carry much more weight. If there is lobbying to be done, it should be done nationally or locally. Such past strategies and treaties include: Agenda 21, the already mentioned Pan-European Biological and Landscape Diversity Strategy (PEBLDS), or conservation initiatives for the Alps (Alpine Convention, CIPRA, Club Arc Alpin).
In any case, it is important that rock climbing is represented by some organisation with wider mandate at these strategy planning meeting, but, more importantly, that it is viewed as sustainable, environment-conscious activity, and that it also operates and acts as such.

[241] https://ec.europa.eu/environment/nature/conservation/index_en.htm
[242] https://ec.europa.eu/environment/nature/conservation/wildbirds/threatened/index_en.htm
[243] https://ec.europa.eu/environment/nature/natura2000/wilderness/pdf/WildernessGuidelines.pdf

2 Other organizations and actors

First, there are international associations that connect mountaineering and climbing bodies:
- IFSC: International Federation of Sport Climbing formed in 2007 from UIAA to represent competition climbing. Despite the organisation not having any ties to outdoor rock areas, it is important in its outreach and influence.
- UIAA: Union Internationale des Associations d'Alpinisme is an association of mountaineering organisations from across the globe. It is one of the most important bodies that represents outdoor sports in standards, safety, sustainability and also lobbying. It is a source of a lot of knowhow and experience, although its scope is quite big and rock/sport climbing is sometimes a little neglected. It has also an Access and Conservation Commission, which produces a lot of useful materials and a long history of cooperation with other actors like IUCN.
- EUMA: European Union of Mountaineering Associations is the relatively new umbrella association of European clubs, founded in 2017. Its mission is similar to UIAA but EU-specific. Both organisations work together towards similar objectives to defend legitimate interests of climbers and mountaineers.
- Access Fund (USA): is a non-profit climbing advocacy group that strives to keep climbing areas open and to promote ethic of responsible climbing and conservation of the climbing environment. It became independent from AAC in 1991 and has huge experience and knowhow about rock areas, though it is at times suited to the USA. It is one of the key international partners.
- CAA: Club Arc Alpin is an example of association within association, which represents Alpine countries' mountain organisations. It mostly serves its members to provide some reciprocity in infrastructure use. Similar to CAA is CIPRA, which has a wider range of members and more focused goal of protection of the Alps. All such associations can provide valuable cooperation and knowledge to any project.

Then, there are other important groups, which represent different knowledge and other stakeholders:
- ERA: European Ramblers Association is organisation that connects walkers and hikers. It has, among other things, a lot of experience with "rights to roam", creating and maintaining tails and sustainability.
- IUCN: International Union for Conservation of Nature is an example of international organisation working in the field of nature conservation and sustainable use of natural resources. IUCN's mission is to "influence, encourage and assist societies throughout the world to conserve nature and to ensure that any use of natural resources is equitable and ecologically sustainable". It is imperative that EUMA has close ties with such organisations and that climbing is seen as sustainable practice.
- LNT: Leave No trace is an organisation that promotes conservation in the outdoors mainly through education. Originally a set of principles by National parks Service and others in the USA, it is now independent organisation with a lot of excellent promotional material.
- WWF, BirdLife International and similar organisations are associations of wildlife and plant experts and enthusiasts, with goals to study, protect and monitor the flora and fauna within their respective fields. Apart from these, more local societies may be more important, as they may have more specific and intimate knowledge about rock areas and their natural environment.

3 National associations

The most important actors, with whom cooperation must be established, will be national federations/associations. Some of those are more active than others in rock area management. They may have a lot of knowledge and experience, but may see themselves as self-sufficient and not see a lot of value in connecting and cooperating (beyond polite necessities). On the other hand, some associations may be small, lack experience or even interest.
These are main European climbing nations and their associations (membership in EUMA is marked with *):
UK and France are countries with biggest tradition, a lot of activity, education and experiences in rock area management. Following those are important climbing nations in central Europe: Germany, Austria, Switzerland and Italy. Their experience and association involvement may be mixed, but represent many climbers and a long history of rock areas.
- **Austria ***: OeAV – Oesterreichischer Alpen Verein; KVOe – Kletter Verband Oesterreich
- **France ***: FFME - Fédération française de la montagne et de l'escalade; FFCAM - Fédération Française des clubs alpins et de montagne
- **Germany ***: DAV – Deutscher Alpen Verein

- **Italy ***: CAI – Club Alpino Italiano; FASI - Federazione Arrampicata Sportiva Italiana
- **Switzerland**: SAC – Schweizer Alpen-Club; VAACS - Vereinigung Akademischer Alpenclubs der Schweiz
- **UK ***: BMC – British Mountaineering Council

Big modern countries, which emphasize tourism and represent a modern boom of sport climbing are Spain and Greece, but the knowhow of rock area management is more or less local. We can add a bit smaller Croatia to that group.

- **Croatia ***: HPS - Hrvatski planinarski savez; HSPS – Hrvatski Sportsko Penjački Savez
- **Greece ***: HFMCU (EOOA) - Hellenic Federation of Mountaineering and Climbing
- **Spain ***: FEDME – Federación Española de Deportes de Montaña y Escalada

Next batch are a bit smaller countries, who however have a long and strong climbing tradition and sometimes a lot of experience of rock area management (or tourism, in case of Netherlands):

- **Belgium ***: CMBEL – Climbing and Mountaineering Belgium
- **Bulgaria**: BCMF - Bulgarian Climbing and Mountaineering Federation
- **Czech Republic ***: CHS - Cesky horolezecky svaz
- **Norway ***: NKF - Norges Klatreforbund
- **Poland ***: PZA – Polski Związek Alpinizmu
- **Slovakia ***: JAMES - Slovak Mountaineering Union
- **Slovenia ***: PZS – Planinska zveza Slovenije
- **Sweden**: SKF - Svenska Klätterförbundet

Following those are other countries, which have fewer climbers or crags or less experience with management.

- **Albania ***: FSHALTM - Federata Shqiptare për Alpinizëm dhe Ngjitje
- **Bosnia and Hercegovina ***: PSBIH – Planinarski savez Bosne I Hercegovine
- **Cyprus ***: KOMOAAP - Cyprus Mountaineering and Climbing Federation
- **Denmark**: DKF - Dansk Klatreforbund; DB - Dansk Bjergklub
- **Finland**: FCA – Finnish Climbing Association
- **Hungary**: MHSSZ - Magyar Hegy- és Sportmászó Szövetség
- **Ireland**: MCI – Mountaineering Ireland
- **Kosovo**: KMAF - Kosovo Mountaineering and Alpinist Federation
- **Latvia**: LAA - Latvijas Alpinistu Savieniba
- **Liechtenstein ***: LAV - Liechtensteiner Alpenverein
- **Lithuania**: LFSC - Lithuania Federation of Sport Climbing; LMA - Lithuanian Mountaineering Association
- **Luxemburg**: FLERA - Fédération Luxembourgeoise d'Escalade, de Randonnée et d'Alpinisme
- **Malta ***: MSFA - Malta Sport for All
- **Monaco**: CAM – Club Alpin Monégasque
- **Montenegro ***: PSCG – Planinarski Savez Crne Gore
- **Netherlands ***: NKBV - Koninklijke Nederlandse Klim- en Bergsportvereniging
- **North Macedonia ***: MSCF - Macedonian Sport Climbing Federation; FPSM – Federacija za planinarstvo na Severna Makedonija
- **Portugal**: FCMP - Federação de Campismo e Montanhismo de Portugal; FPME - Federação Portuguesa de Montanhismo e Escalada
- **Romania ***: FRAE – Federația Română de Alpinism și Escaladă; CAR - Clubul Alpin Român
- **Russia**: CFR - Climbing Federation of Russia; RMF - Russian Mountaineering Federation
- **Serbia ***: USCFS - United Sport Climbing Federation of Serbia; PSS – Planinarski savez Srbije
- **Ukraine**: UMF - Ukrainian Mountaineering and Climbing Federation

Of course, it would benefit to include cooperation with other non-European associations worldwide as well.

Lastly, there are other many other, local groups, who usually manage certain area and have a lot of hands-on knowledge and experiences. They would be key co-operators in certain targeted projects. Such groups and organisations may include local climbing groups like IG Klettern (Germany), bleau.info (France), Greenspits (France), Escalada Sostensible (Spain), IG Klettern Basler Jura (Switzerland), Nasze Skaly (Poland), Projekt OSP (Slovenia) and many more, smaller communal groups.

It might be wise to also cooperate with some web portals like 8a.nu or Planet Mountain on some projects and try to involve climbing companies to support these causes.

4 Short overview of climbing areas in Europe[244]

Albania is freshly developing country and may become a new hotspot for hard limestone climbing. They do have some multipitch and adventure climbing, especially in Theth, but the main focus will be sport climbing in Brar, Permet, Bovilla and Gjipe. They even organize climbing festival. There is still a lot of potential. So far, their aims are very sustainability oriented, even with lack of big association oversight.
Andorra is filled with sport climbing and adventure climbing, but it usually ties in with Spain and France. There are many smaller crags like Sola d'Enclar and similar, mostly visited in summer.
Austria is one of the most important climbing destinations in Europe. It has everything. Alpine climbing, adventure routes, sport routes and bouldering. Adventure focused areas start on the west with Vorarlberg and the famous Ratikon, followed by Imst/Innsbruck (Tyrol) region with all possible climbing styles following the valleys of Oetztal and Zillertal on each side. The latter, along with Silvretta is famous for boulders, while more sport climbing and multi-pitch-oriented climbing is found in Ewige Jagdgründe, Dschungelbuch, Nassereith, Achleiten, Martinswand, Wilder Kaiser and Schleierwasserfall. Some of the areas sre historic and famous among climbers. Next big region is around Vienna and on the east, with Hohe Wand, Peilstein, Hoellental, Ennstal and Adlitzgraben). On the south Villach region is interesting with Kanzianiberg, Warmbad, and boulder-oriented Maltatal. Majority of the climbing is done in summer and autumn, nicely tying in with summer sports tourism. Though the sport climbing is highly developed, and environmental restrictions are minimal a lot of times, Austria is not without problems, mainly due to conflicts with locals, ownership or hunters (Maltatal, Warmbad, Zillertal). It is good that OeAV supports rock areas and the state invests a lot in artificial infrastructure as well. The situation depends a lot also on the region, with Tyrol being the most involved due to tourism. A good example is the Climber's Paradise managing group or the Zillertal management project.
Belgium is an old climbing country, with well-developed potential. Because of this, it is not likely to expand much. A lot of crags are overcrowded and polished. Style is mostly sport climbing, concentrated on the south. It has its problems, with tourism and overcrowding. Freyr and Beez are the main sites, but there are a lot of medium crags like Rochers du Paradou, Rochers de Marche-les-Dames, Bomal, Mozet, Pont-a-lesse, Rochers de Neviau and Yvoir and also some bouldering. The association has a lot of experience with management in all aspects from development, environment and bolting. They even rent or buy the rock areas. They also have a very successful story of cooperation and many good solutions.
Bosnia and Hercegovina is a relatively new but fast-growing destination, with its own climbing festival, engaged community and huge potential. The routes are modern, mostly sport and multipitch. Areas like Blagaj and Pecka are well developed, along with many smaller areas like Dariva, Kameni most, Tijesno, Bukovik, Drežnica and so on. Currently they are very supportive of new bolting and visitors and could become a new popular destination.
Bulgaria offers a mix of all climbing styles, scattered throughout the country. Sport climbing and adventure/trad are predominant, with bouldering also growing in popularity. The areas are quite well developed, but there is still a lot of potential. Three most popular areas are just north of Sofija. The biggest sport climbing crag is winter site Lakatnik. Even bigger and more famous, complemented by mainly trad/adventure routes, is Vratsa area. Other important places are Karlukovo, Bozhenitsa, Veliko Tarnovo and Ruse. Bouldering is found around Rila monastery (with also a lot of multipitch climbs), Beli Iskar and Bozhenitsa. Belogradtschik, near Serbian border is famous for trad climbing. Probably the location at the edge of Europe and lots of trad character is keeping more tourists from coming.
Croatia is a mix of everything: there are older crags everywhere, especially in Dalmatia, with the most famous area Paklenica (which also hosts a festival), but they are still getting new additions everywhere. Omiš, Marjan, Markezina greda, Klobuk, Čikola, Vrulja, Smrka are combination of big or exciting new places. Island climbing with tourism is getting very popular (Krk, Cres, Lošinj, Hvar, Brač). A bit newer crags are found in Istria with the popular Kompanj, Buzetski Kanjon and Medveja along with older Rovinj and Dvigrad. Mainland is less developed (Kalnik, Pokojec). Most of the places are for sport climbing, while there are some nice areas for multipitches and trad, especially Paklenica, Dabarski Kukovi, Božin Kuk and such. There is very little bouldering in some small spots like Lovrinac, but DWS is getting popular (like Čiovo island). There is still some potential. Croatia is usually not environmentally restrictive, but very tourism oriented. Some crags were even bolted with tourism money. The association is not really involved with rock areas. Maybe a new association for sport climbing will improve things.

[244] 8a.nu, thecrag.com, mountainproject.com, climb-europe.com, guidebooks

Czech Republic is a very specific country, with some sport climbing and bouldering, but mostly with a specific trad/adventure style on sandstone. In this style it is an old climbing country and thus very well developed, but less popular with tourists. There is not too much more potential and climbing is also quite regulated. The association is actively involved with rock areas, mostly through volunteers. On the north, close to the Elbe region, there are huge sandstone trad areas (with some sport climbing) like Česky raj, Labske udoly, Krušne Hory, Lužicke hory and Dubske skaly, etc. To the east, this continues with Adršpach and Broumovsko. More sport climbing is found in Česky and Moravsky kras – the big limestone regions, with a few other areas like Rovište and Jeseniky. Big bouldering areas include Bor, Snežnik, Pertohrad, Ostas and a lot of smaller places.
Denmark has almost no climbing, apart from specific island Bornholm, with mix of trad and sport climbing and bouldering. It is a big and popular area.
Estonia has practically no areas as well, apart for some bouldering spots.
Finland is best developed in bouldering, spots around Uusimaa/Helsinki (including Lappnor) and some other large areas like Aland, Vaasa, Pinsio along with lots of small places. There is some sport and adventure climbing in smaller areas like Rollarit, Haukkakallio and Olhava (mainly trad).
France is probably the most complete climbing country in Europe. It is an old climbing nation, with important, huge and historic areas and tens of thousands of routes in many different areas. There is alpine climbing in the Alps, adventure/trad climbing everywhere, sandstone, granite and limestone boulders and great limestone sport climbing crags. The most developed is the southern part, which goes well with tourism. France pioneered many approaches to climbing (many of which were at first controversial), but also heavy involvement of association and area management from smaller groups like Greenspits to large areas embracing climbing tourism. Of course, with such size, there are also plenty of problems and restrictions, but on the other hand, French potential is still big to this day. Fontainebleau is one of the most famous bouldering sites, but Targassonne, Annot, La Capelle and Ailefroide are also popular. A mix of popular crags and regions, mostly for sport climbing, but also trad is found in: Gorges du Tarn, Verdon, St. Leger, St. Antonin, Gorges Du Loup, Ardeche, Orgon, Calanques, Briancon area (with Rue des Masques and Ailefroide), Buoux, Orpierre, La Turbie, Seynes, Ceuse and so on… The choices are endless, but lastly we can mention the Alps around Chamonix for alpine climbing and the island of Corsica with sport climbing and bouldering crags and even more potential.
Germany is next to France another old, important and huge climbing nation. There is a little bit more of adventure/trad climbing there, mostly due to the special big area of Elbsandstein/ Sachsische Schweiz. But there is also one of the biggest and most famous sport climbing (and bouldering) regions of Frankenjura, which connects to the Altmuhltal to the south. Other areas, known for sport climbing and boulders are Pfalz, Kochel, Allgau, while more sport-oriented areas are Donautal, Schwabische Alb, Ith, Konstein, Schwarzwald, Blautal and so on. Ettringen is also known for trad. There are also important bouldering areas like Odenwald, Cheminztal, Rurhtal or Bahratal. There is much less climbing in the north though. Germany experiences a lot of pressure and area closures because of strict environmental regulations. At first approach was almost fundamentalist and the association was not too involved, so a special group IG Klettern was formed to protect Frankenjura. The cooperation with the association is now better and Germany provides some of the best examples of rock area management (especially microzoning and nature protection). New development is not expected to be so fast.
Greece is a relatively new climbing destination which exploded recently. Before, climbing was best known in Meteora, where it was mostly adventure in style. But it was sport climbing, limestone and especially Kalymnos that brought Greece into new era. They build whole new tourist niche around it and are probably best supported route developers by tourism/municipality/even EU money in the world, with regular climbing festivals and so on. This brought many new areas and routes in the short time. Kalymnos is one of the biggest, best known and popular areas in the world, while islands like Karpathos and Crete are also gaining popularity, and areas like Kyparissi and Leonidio are the new European hotspots with thousands of routes. There is constantly new development, like in Mouzaki, Pyli, Nafplio, Varasova, Lagada, Zobolo and there is still a lot of potential. There are much less boulders: Tinos and Penteli stand out. The regulations are lax and development is priority. Association is more focused on mountains. So far, private initiative (supported by municipalities) is big enough. It remains to be seen if it will hold up in the long run.
Hungary is a big country, but it is flat, with only few rock areas around lake Balaton and on the north close to Slovakian border. Usually it is a mix of sport and trad. Crags are smaller, like Kis-Gerecse, Bajoti Oreg-ko, Roka Hegy, Tardosbanya. There is some bouldering around Balaton lake. Theoretically, climbers need to purchase permission at the local club for climbing, but it is rarely checked.

Iceland only has some smaller areas with some sport, boulders and trad like Hnappavelir and Vestrahorn. They are on the eastern part of the island. Only one small crag is close to Reykjavik.
Ireland is similar to UK, or even more hardcore trad country, but it is not too developed or visited. Climbing is done on different types of rock, in old quarries and on sea cliffs. Climbing is concentrated to smaller areas: sport-oriented Dalkey, Ailladie, Fair Head and Glendalough, which is also known for quality bouldering. The biggest region is county Donegal on the north.
Italy is a huge, important, old climbing nation with good selection for all styles of climbing. Boulder areas are not too big, but quite famous like Varazze, Foppiano, Bolzano, Val Daone or Val di Mello. The latter has a lot of multipitches and trad climbing too. This can also be found in Valle Dell Orco, while Dolomiti is a well-known adventure region. Cadarese is famous for its single pitch cracks. Of course, sport climbing is the main style, with huge popular areas and crags like Arco, Finale-Ligure, Oltre Finale, Albenga, Lumignano, Ceredo, Camaiore and the Trieste area on the north. On the south Ferentillo and Sperlonga stand out. Then there are very popular and touristy islands: Sardinia (with Cala Gonone, Isili, Domusnovas, Ulassai – with many crags offering nice multipitches) and Sicily (especially with the modern San Vito Lo Capo). Italy is a big mix of everything and a bit chaotic. The organized north, with different approach to tourism, climbing festivals like Arco Rock master and Melloblocco, and mass tourism on the south. It has very old areas, very fresh areas and still lots of potential. There are problems, closures and some solutions, but not a lot of involvement of the association.
Kosovo is a new European country with a small sport climbing area in the east, near Peć.
Latvia has virtually no sport climbing areas, apart from some bouldering near Liepaja.
Liechtenstein is a small country with some bouldering, some climbing and some trad but it's just a couple of routes.
Lithuania is very similar to Estonia, with some bouldering in Mosedis.
Luxembourg is a small country, which has one big sandstone area of Berdorf with mostly sport climbing. Despite being small they had some access problems and a boulder area of Dillingen was closed. Also, Berdorf can get extremely crowded at times. Climbing is permitted only to members of UEFA or IFSC associations.
North Macedonia has been quickly developing in recent times. This includes a bit of everything. The most famous area is Prilep with bouldering. For sport, some trad and multipitches the best choice is Demir Kapija. Mavrovo is also developing, along with Matka Canyon. There is lots of potential, little regulation, active involvement of the association, strong focus on development and future tourism. It is a destination for the future.
Malta is a small island country, but has lots of sport climbing and also trad from English tradition – the crags have been split between both. Areas like Wied Babu, Victoria Lines, Ghar Lapsi, Mgarr ix-Xini, Gozo island along the coast are popular. There are also lots of small crags, but everything feels more like one area. Surprisingly it is not too crowded. Bolting to foreigners is not allowed to protect the agreements. Two local groups/clubs manage and rebolt the areas, also with tourism funds, but environmental regulations are still lacking.
Moldova has very little climbing, apart from some sport climbing and bouldering close to Romanian border: Cobani and Varatic.
Montenegro is similar to other neighbours (Albania, Bosnia, Macedonia) as the development is new, but practically all the country has endless potential. Smokovac near Podgorica is an indicator of that. Climbing is mostly sport and trad (Durmitor region and Kučke planine) with beach bouldering at Perazića Do near Petrovac. Future areas with potential include Cijevna canyon, Skaljari or Gusinje. It's a country for the future.
Netherlands has lots of climbers, but no climbing areas, apart from some artificial ones. They are quite common climbing tourists though, especially in neighbouring countries. Their association even supports the neighbouring crags financially.
Norway is a modern country with many new and older areas. The styles are equally split between sport climbing, bouldering (mainly on the south) and adventure/alpine/trad climbing, for which Norway is quite famous. There is Romsdal with the 1000-meter Troll wall and the Lofoten islands. Sport climbing has the famous Flatanger, but also lots of medium and small crags like Hell, Hauktjern, Kvam, Stryn. Bouldering is well developed too from huge spots like Ostmarka, Stange, Stavanger or Lofoten to many smaller areas. It has shorter season, is a bit more expensive and the adventure/hard granite style reputation, which keeps a lot of leisure tourist away.
Poland is an old, traditional mountaineering nation, with some fresh sport and trad areas. Almost all are concentrated on the south along the Czech and Slovakian border. Krakow coud be considered the centre of Polish climbing with many huge areas nearby. It could be said that this is the northern equivalent of Catalunya. Just the areas like Podlesice, Dolina Bedkowska, Dolina Szklarki, Sokoliki, Dolina Kobylanska, Rzedkowice, Czarnorzeki, Rudawy or Podzamcze have around a thousand routes each. There are plenty of other areas as well, but also quality

bouldering in Zimny dol, Rudawy Janowickie, Ciezkowice and many more medium-small areas. Most of the areas are in protected land and after many conflicts also with land owners climbers organized around Nasze Skaly group, which has support of national association. They have gathered a lot of experience in the field of rock area management.

Portugal has some sport climbing and bouldering, but it is not as important as Spain and far less popular and crowded. The big bouldering area is near Sintra, while sport climbing areas are all medium and small like Fenda, Guia, Poios or Sagres. Due to beneficial location and warm winters it has potential for tourism or to be the next "hidden pearl".

Romania is similar to Bulgaria, with lots of medium and small areas and a mix of sport and trad climbing. There is still lots of potential. Baile Herculane is the best-known spot, and there are also places like Valea Cernei, Bucegi, Cheile Turzii, Prapastiile Zarnestiului, Moroeni, Rimetea and many smaller areas. Bouldering is mostly low-key in areas like Sihla and Bratilesti. Similar to Bulgaria it has not yet been popularized and climbing tourism is rare. The association is participating in area management and bolting, but it is a recent project.

Russia, compared to its size is not really developed, but it is slowly waking up. There is some sport climbing and some bouldering at Triangular lake and Stalker at St. Petersburg region near Finland border; and some climbing crags on the south at the Caucasus/Georgia – places like Kislovodsk, Guamka, Raek, Induk and Berezovka. They also have some other crags, but are harder to reach (Stolby, Altay). Since the annexin of Crimea, they have some other quality areas (see Ukraine).

San Marino has two small sport climbing crags Penna Rossa and Sasso Tanaccia.

Serbia is mostly about sport climbing. Despite big potential it is developing slowly. Best crags are close to Niš or to the north: Jelašnička klisura is old and big (for sport climbing and bouldering), while Sićevačka klisura is newer. There are crags like Beljanica and Vrmdža, Valjevo/Grdoba to the west, and many smaller crags. Best boulder area is Babin zub. The association is somewhat involved with rock areas, but there is also a lot of private initiative.

Slovakia is the Czech neighbour, but it doesn't have the strange trad climbing tradition. Morst areas are sport climbing and bouldering. There are many, they are well developed and not very crowded. For sport Sulov is the biggest, also popular are Pajstun , Manin, Demanovska dolina, Porubka, Kalamarka, Javorniky, Drevenik and many small and medium places. There is bouldering in many smaller places with Končita or Dobra Voda most popular. Zadiel, and especially Tatra mountains are for multipitches and adventure climbing. The association is involved in management with the help of volunteers. Environmental protection is quite high.

Slovenia is a nice mix of Austria, Italy and Croatia. A great tourist destination, focused on green tourism, lots of sport climbing and bouldering, mostly in well-developed small areas, not too much more potential. The most famous crag is Osp and Mišja peč, along with Črni Kal. The next big regions are Vipava, Kotečnik and Gorenjska (with crags Bohinjska Bela, Bohinj, Dovžanova soteska …). For bouldering the biggest and best is Pohorje/Oplotnica granite region. The rest are medium to small limestone places like Trnovo, Trenta, Glence, Vitovlje … There is also a lot of alpine adventure climbing. For a long time, national association was only involved in support for bolting and with the worst problems. A couple of crags got also closed, which could probably be managed. Lately, it has created a body to work on rebolting, access issues and education, Projekt OSP, which is slowly improving things.

Spain is the most popular modern climbing country. It is visited all year round, but more so during nice winter months for sun-sea-rock tourism. In some of the most famous rock areas, climbing has completely revitalized dying villages. The best places still get crowded, although there are literally tens of thousands of routes, mostly all quality sport or multipitch climbing, with modern bolting and good infrastructure. There is also a lot of trad/adventure climbing, in the north in Picos de Europa, Riglos or Montserrat, and also along the coast at Penon D'Ifach or even in Andalucia and Gibraltar. But best known are sport climbing regions. The key region is Catalunya with crags like Siurana, Arboli, Margalef, Camarasa, St. Llorenc, Montsant and Terradets. Other regions are big as well: Costa Blanca and Valencia (Chulilla, Montanejos, Sella, Gandia, Alicante …), Inland and Madrid region (La Pedriza, Cuenca, Patones), Andalucia (El Chorro, Villanueva), Pyrenees (Riglos, Rodellar) and Basque (Etxauri, Teverga, Valdegobia)… Bouldering is best in Albarracin, and also La Pedriza, and Zarzalejo near Madrid or Savassona, El Cogul and Can Boquet near Barcelona. Then there are the islands: Mallorca (also with world famous DWS), Ibiza and Tenerife. Recently a big popular area El Escorial was closed for nature protection. Spain is very touristic, comfortable to visit, fast growing and still has almost endless potential. On the other hand, national association is almost non-involved in rock area management, despite many issues with birds and nature protection. It was active when dealing with Montserrat situation, but lately it cannot catch up with development, which is mostly done by dedicated local bolters. They do offer some small support though. Lately, a non-profit Escalada Sostensible is taking great care

about access issues and education of climbers, also with a movie “Prohibido Escalar” and many other projects. They have great, modern, positive approach.
Sweden is a mix of everything, but mostly boulder and trad. It is not well known throughout Europe and not too crowded with tourists. Bohuslan is a big area, which also has many cracks and trad. Other areas are Kullaberg, Utby, Agelsjon and lots of other smaller areas, mostly on south near Goteborg and Stockholm. The same goes for boulder areas like Kjugekull and Vastervik, Hono, Kolartorp and lots of other large and medium places.
Switzerland is a pure climbing country in the middle of the Alps. It has all styles of climbing, but is best known for bouldering, especially in Ticino. Places like Magic Wood, Bavona, Cresciano, Chironico, Brione, Murgtal are huge and famous and very popular and well developed. Of course, there is also plenty of adventure climbing and sport climbing. The latter is concentrated in the Basler Jura region. Area around Interlaken offers everything: crags like Engelberg, Lehn, Gastlosen; bouldering on Sustenpass or alpine ascents on Matterhorn or Eiger. Also big is the Zurich area (Galerie, Farnerzahne, Plagne)… or practically any part of Switzerland. You are never far away from any kind of climbing style. As with Germany, the association was at first not involved with areas management, but when climbing was threatened by nature conservation, climbers organized and began to self-regulate and practice micro-zoning. Now climbers cooperate with conservation organisations to manage rock areas, more so in the eastern part of the country. There initiative group “IG Klettern Basler” Jura manages crags.
Ukraine is slowly developing, through some sport climbing and bouldering, though it “lost” its main Crimean rock areas to Russia: the biggest area was Bachisaraj, along with Nikita and Red Stone and bouldering place Batiliman. The biggest area in the west of the country is Skeli Dovbusha (both for sport and bouldering).
United Kingdom is old, huge, developed, well-managed, but also very specific. Of course, it has a lot of bouldering (Stanage, Burbage, Peak District, Almscliff and many more). Of course, it has a lot of sport climbing, though it’s rarely spectacular (Portland on Dorset sea cliffs; Kilnsey, Malham, Per Trywyn, Raven Tor, Chee Dale, Swanage, Cheddar). But mostly it’s about adventure and trad climbing, which is a bit of British speciality. There are many crags, all over England, Wales and Scotland. There are short trad routes and multipitches, and climbing sea stacks or sea cliffs. United Kingdom probably has the most trad routes in the world, USA notwithstanding. This special style and maybe also the weather are the reasons there are not so many climbing tourists. The crags are visited often, are even overcrowded, but it’s by mostly domestic visitors. The association, BMC, is the model of an involved association, having a long history of managing crags, negotiating access and producing education materials like the Green Guides. It has a detailed structure of members cooperating with landowners and nature protection. They impose seasonal closures, mainly for the birds’ breeding seasons. The path of some self-regulation and cooperation was very successful, with most climbers following the rules, though a lot of effort is put into the project, mainly in education.
Non-European countries, but close enough:
Cyprus is not too developed. It has some sport climbing in small crags like Dhiarizos or Droushia.
Turkey is quickly developing climbing destination. It has potential and tourist-orientation. Geyikbayiri is the largest area, but there are also Olympos, Citibi, Datca, Kazikli Ali, Kaynaklar… The areas are mostly nice sport climbing near Antalya or Izmir. There are some boulders at Bafa lake near Bodrum, and more adventure climbing at Ala Daglar to the east.

5 Case studies

5.1 Osp

Case study written by Jurij Ravnik.
Area description: Osp (with Mišja peč) is the most important rock area in Slovenia and one of the most important areas in Europe, especially for hard climbing. It is one of the closest winter limestone destinations for German and Czech visitors. The area, which could be widely viewed as Karst edge, which connects to the north in Italy to Trieste crags and on the south to Croatian Istria crags, consists of a couple of separate areas. Osp area, above village of the same name is the biggest and oldest. It can be split into single-pitch crags of Banje and Babna, a hardcore summer cave Luknja and the Big wall area with multipitch routes. Next to Osp is Mišja peč crag, a unified rock with high concentration of hard routes. Together these crags have about 500 routes. A couple of kilometres further lies the village Črni Kal, with a crag for beginners and additional 300 routes. Above Črni Kal is also a small, less known bouldering area Črnotiče with about 70 problems. All the routes are well-bolted, mostly with anchors below the

edge, that also have carabiner to lower off. Some equipment is getting very old and outdated. It is possible to climb here all year round, depending on the sector, but the main season is from September-May with peaks in Easter, May and autumn holidays. The area is constantly vivited by local Slovenians, neighbouring Italians and Croats, as well as Germans, Austrians, Czechs and Poles, but also many other nations.

Climbing related issues: Osp is an area of great biodiversity. There are many protected plants, like steppe grass and *Moehringia tomassinii* and also a lot of bird species. Most of them (swifts, pigeons, swallows, wallcreepers, ravens) do not mind climbers. But there are also peregrine falcons and eagle owls, which are both protected and sensitive. The issues are also with local population. They don't like people walking through the village, being too loud and leaving trash. Despite many more accommodation options available lately, there is still problem with wild camping or people sleeping in camper vans on parking. The area can get overcrowded at visitation peaks and a lot of gear is still worm or old.

Climbing history: Climbing activity is very old here. Slovenian and Italian mountaineers like Emilio Comici or Napoleone Cozzi were climbing in these cliffs (mainly Črni Kal) since 1930s. But the areas gained prominence around 80s, starting with the Big wall, with was climbed with the help of aid in 1977. Since then, many more technical, aid routes were established, also on nearby shorter walls, which climbers began to free climb as well. In the mid-80s slovenian legends, Srečo Rehberger and Tadej Slabe free climbed the Big Wall and started to free many hard routes, also in the neighbouring Mišja peč, which was starting to get developed. In 1993 Slabe climbed Za staro kolo 8c+, which was at the time one of the hardest routes in the world. In 1988 also a state championship was organized in natural rock in Osp. With the new generation, climbing in all areas exploded and routes multiplied fast, including many 9a's, with the hardest being Vicious Circle 9a+/b by Adam Ondra, who was a regular visitor. Apart from a small camping, opened in the 90s, the local population did not follow the trend of the visitors, who slept a lot under the wall or on meadows. When the traffic grew, many problems emerged, with climbers stealing fruit and produce and parking cars all over the village. Nature protection was also upset, accusing climbers of scaring the eagle owl from Osp and Mišja. Tensions were always very high.

At the time, at the end of 90s, another area was bolted on the Karst edge. The crag Podpeč was similar in size and style to Osp and Mišja peč, but had even bigger problems with parking spaces. In addition, climbers were often arrogant to local population. The situation was tense, until climbers moved to the right part of the wall, where eagle owl was located and it flew away. This incited the society for protection of birds (DOPPS), who connected with locals and started campaign to ban climbing there. In 1998 this resulted in many attacks by villagers, who threatened climbers with an axe and threw large stones from the top of the wall. Police got involved and later also the national association and Ministry for environment. They formed a council to solve the situation and it resulted in agreement to ban climbing in Podpeč and all the crags south of Črni Kal. It was implemented in 1999 and extended annually until 2007. After that time, Italian climbers illegally bolted some crags in nearby Loka but were chased away by locals. In 2014 an official bolter equipped new sector in Črni Kal, which was exempt from the ban. However, DOPPS and locals reacted immediately and forced the ban on the area. There were also some other occasions of wild bolting, but were quickly stopped. In the beginning of 2010s annoyance of local population with overcrowdedness increased. Then, after some Eastern European climbers were washing the dishes in the local cemetery, locals revolted and closed the main parkings for Mišja Peč and Osp, which worsened the situation.

Management process: I got involved in the area at the point of great tensions between nature protection, climbers and locals which seemed to be going in circles. I attended some emergency meetings, where we determined that closer cooperation would be necessary. As I was producing the local guidebook, I invited local population and nature protection agency to cooperate with their topics. Since then, we regularly stay in touch and contact each other if there are some issues to be resolved. Two important projects moved things even further: LIKE and OSP. LIKE was European project, which connected Slovenian and Croatian areas of the Karst Edge and also dealt with recreation. We designed new panels with ethical code, environmental information, as well as signposts. We agreed to re-open and improve the old parking for Mišja peč, with addition of toilet and info kiosk. We rerouted some trails and removed some shortcuts and I put fence around some protected area of steppe grass. As we al cooperated before the project, the results were good; Croatian side had less positive experience. The second project was OSP, which is Slovenian association's initiative to bolt and rebolt new areas. We organized several working actions to replace old bolts, and we continue the work twice a year. Meanwhile, villagers organized into society Bržanija, of which I am board member. We also cooperate with municipality, who wants to start European tourist project for the area. I continue to cooperate with nature protection and DOPPS (bird protection society) and I occasionally remove hard-to-reach invasive plants. I physically closed right part of the Big Wall, where ban was in place, but was rarely

respected, as the eagle owl returned to that part of the wall. We closed some routes for peregrine falcon in Mišja peč and we close the routes with raven's nests. We organize clean up days and keep the climbing community informed.
The future: The relationships today are much better and we have more plans for development of the area in the future, including possible new crags and helping the locals with "mountain biker problem", which emerged recently. The challenges emerge all the time, but with cooperation we solve them faster and more efficiently. There are still some individuals, who break the rules, but locals now don't tend to blame the whole community. Recently, they introduced parking fee, which was an issue to some climbers, which we are trying to resolve. One of the biggest problems of the area is, that there is no local climbing club or equipper who would be engaged in management. I am from another part of the country, so it is sometimes hard to keep track of everything. Also, I do a lot of activities voluntarily, so there is a problem with continuity if I would no longer be engaged. We are working on finding a dedicated person to do this for some small compensation and to apply this model across Slovenia. We have similar situations at other rock areas and other individuals, associated with Projekt OSP, are voluntarily taking care of things and talking with locals. But as the project is fairly new I believe we are on the right track.

5.2 Innsbruck (Climber's Paradise)

Case study written by Andreas Aschaber.
Project name: Climbers Paradise
Homepage: climbers-paradise.com
Aim: Promotion of climbing sports in Tyrol
Format: Online open source tool
Function and Service: Provision of topography, Maps, Pictures, Approaches and access guide, Visitor guidance function

Basic concept: Climbers-paradise is an association based in Imst (Tyrol) with seven enthusiastic board members. Their aim is to promote and support the climbing sport in the region of Tyrol by providing free area maps with access paths to the climbing sites. They also provide free route topography with grading, type and quality of protection and indication of necessary infrastructure like parking space or toilet facilities. They maintain the climbing infrastructure like bolts, anchors, boards, approach trails and signs. This is done by an cooperation with the district council of Tyrol, the tourism association, Tirol advertising, the ministry and the European commission. They display separately rock climbing areas suitable for families.
Service: Their main service is the provision of printable topography in high quality. The displayed rock climbing areas are certified and distinctive ones are certified as family rock climbing areas. A search engine allows to choose your specific rock-climbing area suitable for your needs and skills.
For each rock climbing area the following information is presented in an attractive manner in German and English: basic Information, topography, number of routes, route overview, altitude, exposure, approach, approach time, climbing routes length, inclination of the climbs, best season, rock type, attractiveness of the crag (1 to 5 stars), protection quality (1 to 5 stars), suitable for beginners (1 to 5 stars), user rating, public transport possibilities, parking, GPS position and gallery.
Quality and safety: They guarantee quality and safety standards and the up-to-date hazard reports will be delivered to the users. Safety is a very important function of climber's paradise. They offer seminars which the aim to secure a minimum safety standard in rock climbing sites.
Climbing specifics: They offer information of 15 climbing regions in Tyrol which are: Achensee, Ferienregion Imst, Ferienregion Tirol West, Innsburck, Kufsteinerland, Nauders-Tiroler Oberland-Kaunertal, Olympiaregio Seefeld, Ötztal, Paznaun-Ischgl, Pitztal, St. Atnon am Arlberg, Steinberge, Tannheimer Tal, Tiroler Zugspitz Arena, Wilder Kaiser.
There are more than 5100 climbing routes listed which are completely free of access. One can filter according to the various climbing disciplines: Sports climbing, Multipitch, Via Ferratas, Bouldering, ice climbing, climbing parks, Climbing and boulder gyms;
They are promoting climbing holidays and via a designated filter you can find an accommodation next to your favourite climbing spot.

Summary: Climbers Paradise offers a cross-territory crag management tool which attracts climbers by its free of use policy. Through its embeddedness with contemporary tourism concepts and partnerships with the tourism industry on the one hand and on the other hand with authorities of the public sector they have access to funds. These funds allow the maintenance, of the rock climbing areas and hence keeps up a certain safety standard. The offered product is for the user very handy and finds broad acceptance in summer and winter for the various climbing activities in the region. Another advantage is, it allows a uniform handling of the crags.

5.3 Frankenjura (Franconia)

Case study written by Uli Berkmann.

Strategy for visitor guidance

The climbing concepts for the Franconian climbing area includes different strategies for visitor guidance. Main reason for guidance is the special protection of threaten vegetation and rock hatchery birds (eagl owl, perigrine falcon). This needs primarily a functioning supervision of the areas with volunteers, signage on site, canalization and guidance by trails construction and much more. Last but not least, the active climbers must be informed about the agreed rules of behaviour and sensitized to the need for nature-friendly climbing.

The core of the climbing concepts is the division of the crags into three different zones:

- **Zone 1: Wildlife Rest zone**. In certain rock areas, if there are occurrences of typical and fully formed habitat complexes, a year-round ban on climbing habitat complexes may be necessary to refrain from entering the area all year round any disturbing interventions. Depending on distribution, number, formation, and vitality of the species or community, certain rocks or selectively rock areas (individual routes) has to be closed, in order to ensure the preservation of rare animal or plant species that have been affected by climbing.
- **Zone 2: Priority zone for nature conservation**. In Zone 2 climbing is still allowed, but new routes may not be installed. More extensive measures can also be taken here such as the dismantling of individual routes, the reduction of bolts and a strict rule for deflection under the top of the rock to protect the vegetation.
- **Zone 3: Climbing priority zone.** Climbing on existing routes but also first ascents are possible. The requirements of nature conservation can, where necessary, require use of deflection bolts under the top of the rock and other individual measures can be taken into account. Where justifiable from a conservation point of view, crags and peaks (rock-tops) should remain accessible here.

Tools for guidance

Temporary closures: During the Breeding and rearing season of protected rock-dwelling species (e.g. eagle owl and peregrine falcon), climbing on known breeding rocks and spatially appropriate climbing restrictions are to be agreed upon. Due to a possible shift in breeding start from January 1st or February 1st is customary. The end of the closed season takes place in accordance with practice of many years, and it corresponds to termination of breeding, but no later than July 31.

Cross and arrow: Climbable and non-climbable rock areas are marked where necessary directly on the rock with the symbols "cross" and "arrow". The marking with the cross symbol makes clear that the area in question is closed. Zones that are open for climbing are marked with the arrow symbol. The arrowhead points the direction of the open climbing area.

Bird protection: During the nesting site selection and the breeding season of protected birds such as the eagle owl and peregrine falcon, known breeding rocks are temporarily closed. Which cliffs will be closed will be decided at a yearly round table with the nature conservation authority and the Bird Protection Association in Bavaria (LBV), based on the population data of the LBV. Bird Protection is determined by mutual agreement. In 2014, around 60 rocks were temporarily closed due to bird breeding. If no breeding or if they are abandoned prematurely, the crag is also reopened for climbing.

Management of climbing areas: The management strategies for nature-compatible climbing in the Franconia can only be effective, because an area-wide network of volunteers guarantees their implementation. Committed members of IG Klettern or the DAV take over so-called rock supervision for individual rocks or rock groups. They take care of the implementation of the climbing concept (e.g., signposting) and the signage) and the information and education of climbers.

In addition, both associations have an overall person in charge for the whole of the Franconia, so that comprehensive care is guaranteed.
Nature-friendly infrastructure: Where necessary, recreationists are channelled through the creation of an adequate infrastructure. This is done, for example by creating nature-friendly paths that prevent damage to flora and erosion. At heavily frequented areas visitors will be informed by signs about the agreed rules of conduct.
Biotope care: The maintenance and care of rock areas often goes far beyond the usual prevention of damage. Rock supervisor and active climbers initiate or participate in biotope maintenance as well. For example, they support the Nature Park “Franconian Switzerland - Veldensteiner Forst” at management of heat-loving vegetation in dry locations by remove trees with shadow effect.

Deflection Bolts: In order to protect sensitive rock top vegetation, deflection bolts have been attached to almost all rocks in Franconian Switzerland. These are usually located in the vertical wall area below the rock tops. After climbing a route, the climber rappels down from these point without enter the rock top. This protects the sensitive flora and fauna of the rock tops.
Training and information of the active volunteers: The good level of information of the active persons is a basic requirement for the functioning of all measures aimed at the protection and improvement of the ecological situation in the rocky areas. Therefore, it is the task of the DAV and the IG Klettern, public relations work to increase the open-mindedness of most climbers to develop a differentiated environmental awareness. Basic knowledge of the flora and fauna as well as the knowledge of ecological relationships and agreed rules of conduct. For this purpose, all available possibilities are used, from information on the climbing spot to the instruction of the professional trainers, are used. The climbing instructors are important multipliers and pass on their knowledge to the climbers in their courses. In Franconia numerous training courses for climbing instructors take place every year, which include a basic training in ecology and nature-friendly climbing. The training (e.g. on peregrine falcon, geology, climbing concepts etc.) are available from the Training Department at the DAV National Headquarters or available at www.alpenverein.de.
Information on the zoning of the crags as well as the annual closures due to bird breeding is provided to climbers on the websites of the IG Klettern www.ig-klettern.com and the DAV www.dav-felsinfo.de provided. Also, on the popular, privately operated website www.klettern.frankenjura.com this information is contained. The DAV-Felsinfo (www.dav-felsinfo.de) contains also a lot of background information on the natural area and climbing concepts.
Leaflets have already been produced for most of the climbing concepts. Besides background information on the climbing concepts also contain maps on which the rocks are shown with the respective zoning.
In order for climbers to be informed about the regulations in the target area when planning a stay, the climbing guidebooks must refer to these regulations and the special features of the local flora and fauna. Climbing guides, that do particular justice to nature-compatible climbing receive the "Naturverträglich Klettern" seal of approval from the DAV, IG Klettern and the Friends of Nature. In Franconia, the two guide books from Panico-Verlag, Volumes 1 and 2, have received the seal of approval. There are beside information about the natural area, as well as the zoning. Further guidance measures of the climbing concepts are included.

5.4 North Macedonia

Case study written by Vladimir Trpovski.
Until 2000, in the Republic of Macedonia, now North Macedonia, rock climbing was a sport, or extreme sport for the "bravest/craziest" ones. But since 2000, it has gradually gained its place as an extreme tourism, so that from 2010 onwards, it has become a widely accepted form of tourism by the institutions in the country, such as the Government with projects, its Ministries, NGOs and agencies. So, we started to implement projects for opening more and more new climbing routes, and with that we developed climbing areas.
Otherwise, the federation since 1995, formed a Commission for climbing sites which adopted a Rule-book for opening new routes, arranging the area under the routes, code of ethics for sports climbers and to this day we can emphasize that we adhere to everything prescribed.
Climbing as tourism is booming although as a destination, we are not Kalymnos, Arco or Thailand, but we are already recognizable on the European climbing map. A huge contribution to that was the Petzl rock trip Caravan in 2014 which promoted Prilep as a serious boulder destination, then the opening of 9a route by Ethan Pringle and Dani Andrada, then the shooting of the film by Adam Ondra for the climbing site Mavrovo which already has 9a and 9a

+ routes climbed by him and, the last promotion, although in Corona time, was the French Youth Rock team, who made and climbed a multi pitch route in Mavrovo with a grade of 8b +. That route is already among the most difficult multi pitch routes in Europe.
The municipalities where the climbing sites are located are already deeply involved in helping, organizing and supporting the climbing community. This means arranging paths for access to the climbing directions, setting up info boards, cleaning garbage, organizing a team building to introduce all employees of the municipality to sport climbing, supporting climbing festivals and publishing promotional materials that includes climbing tourism.
Also, sport climbing clubs also have a large impact, as they are constantly organizing sports climbing courses, thus increasing the domestic tourist capacity, which are in contact with foreign tourists. That connection contributes to the exchange of different experiences, breaking out the Balkan stereotype, complementing European culture, greater and professional kindness.
All in all, I, as a doyen and one of the founders of sports climbing in Macedonia, am satisfied with the development of climbing tourism, considering that the accommodation facilities are still not large. So we need support from the private sector, to open for renting their private rooms, maybe to open some more climbing camps and hostels. Because in almost all municipalities where there are climbing sites, there are expensive hotels and wineries, there are very cheap rooms to stay, but there is no middle class offer for accommodation. I hope that in the future those conditions will be created so that the number of foreign tourists could increase.

6 Questionnaire

6.1 The design of the questionnaire

The questionnaire was designed to give us a good insight of both climbing situation in specific country as well as the state of rock areas management. Some of the questions were meant to overlap with some previous questionnaires so we can evaluate the differences today.
The questionnaire consists of a couple of parts:
- Each participant states the level of their involvement in the topics covered.
- Then, we enquire about popular climbing spots, who bolts then and how it is financed and supervised. The participant evaluates the level of issues and how they are dealt with. We also ask about liability and some best and worst examples of area management.
- Next part focuses on tourist potential and development, and also about mobility of the country's population.
- We try to evaluate how much the association is involved in rock areas management, who they cooperate with and if they provide ethical code to climbers.
- Then we ask about different sources for information about climbing.
- Next we try to get an average climber's profile and some climbing trends.
- Lastly, we ask for some hard facts and numbers.

6.2 The flaws of questionnaire

As with everything, the quality of the questionnaire analysis will depend a lot on the answers. First, we would need as many answers as possible to get a good picture. Secondly, the problem could also be with the answers themselves, as we cross-checked some with the information, we are aware of, and also studied some previous questionnaires done in the past.
The validity of the answers could be questioned due to various reasons and biases:
- The participant could lack any self-criticism and could be defending the association instead of presenting the real picture.
- The participant could be presenting distorted situation, either by not knowing enough facts, not having enough experience or otherwise "filling the gaps".
- The participant could not really be involved in rock areas management, either by being involved in other field of association or being too bureaucratic.
- If there are more groups in the country, who have different opinions and approaches, we may get only one perspective.

- The participant may have lack of interest and completes only parts of the questionnaire.
We can definitely recommend that the questionnaire is an ongoing project and that it is complemented not only by additional associations, but also but local management groups, who may have more intimate knowledge. This would also work well together with a growing database of case studies.

6.3 Results and analysis

First of all, we need to acknowledge the relatively small sample of participants. While some parts of the analysis may still hold a lot of relevance, others may be lacking in information and will only represent the average of the answers.

6.3.1 Introduction

19 associations answered the questionnaire. We got a good cross section of large, medium and small associations as well as some old climbing nations and some emerging new ones, a lot of different approaches and situations. A couple of questionnaires were filled with only sparse information, but some others were very informative. We miss some key representatives, but hopefully they will participate in the future.
While some answers were given by presidents and secretaries of association 2/3 of the participants are in some position of **rock area management or access commission**. All of the participants except 2 climb regularly. 10 participants are **regular equippers**, with 8 doing it sometimes and only 1 not being involved in it. 11 participants are **active in managing rock areas**, 5 do it sometimes and 3 never do it. This is good indicator they will have some good knowledge on the subject.

6.3.2 Rock climbing area management

Participants provided some information on the most popular crags and if they are overcrowded. Most of participants (apart from Croatia) named the most popular sport climbing regions and except for Albania all of them have big or **at least some overcrowdedness issues**.
On the question, how much the association was involved with managing the rock areas, the responses were more varied. About one third of responses (7) indicated a **good system of active national association**, and another 5 indicated a functional system with support and cooperation, but based on volunteers. 2 associations are somewhat involved but leave much to be desired and 5 associations are **not involved in the rock areas**. We were not surprised by the numbers, but it is still worrisome statistic for the future.
Many countries have **local, private or other social groups doing the management**. We asked associations if they know any of them. Most participants did know of other groups, who were a lot of times clubs, but some countries (Spain, Austria, Germany, Belgium, Malta, Poland, France) have very serious initiatives. Though they know of each other, the **cooperation is often minimal or none**.
Next question was, where does the **money for bolting** come from. The answers were very different and usually the answer is a mix of sources. The most common two were **“combination of association and private funding”** with 7 and **“mostly private funding and other sources”** with 5 answers. On 3 occasions association provides all support, on 2 answers it’s other (municipality, tourism) sources. 2 participants didn’t know the answer.
Next question was about **legal responsibility of equippers** and oversight. Vast majority of countries (12) **do not have legal responsibility** of bolters for their work (although many provide courses and/or licenses). “It is association’s responsibility,” “It is bolter’s responsibility,” and “Bolters have legal responsibility in case of contract” were each answered 2 times. One participant does not know. Except 3 countries, all others have at least some oversight of the work done. This is in line with the view of this study as well and we feel it should be more emphasized, that the responsibility for safety lies with rock climbers and not bolters.

6.3.3 Climbing bans, restrictions & solutions

Next question was about **climbing bans and closures of rock areas**. 1/3 of participants emphasized a lot of closures. 2 countries have no closures yet and 1 didn’t answer. The reasons were mixed. The major reason in around half

countries is **private ownership problems**, followed closely by **nature protection** or areas being in **national park**. Most of the countries have **spatial or seasonal restrictions for birds**, except for 2 who had complete bans. Another significant reason was **bad behaviour of climbers**. Other less common reasons were: conflict with other groups, accidents and visual disturbance. We feel there are very few reasons for complete closure, and the only ones that are hard to influence are the owners. Some other reasons are often very arbitrary and could be just as functional as a seasonal ban instead of complete ban.

Next question was about **seasonal bans or other limitations**, that do not result in closure of the area. 4 countries do not have such restrictions and 3 close the crags voluntarily in case of nesting. Most common restrictions were seasonal, for birds (and 1 for hunting), but spatial restrictions are also quite common (often using micozoning). 3 countries have "no new bolting" restriction.

Next question was to elaborate **who is imposing these restrictions**. In most cases it was **nature protection groups**, followed closely by **government, municipality, self-regulation and private owners**. Practically all participants listed 3 out of those stakeholders. 3 didn't answer, 2 specified National parks. Interestingly, that in no country, the national association is the one imposing restrictions (though they are probably involved in self-regulation at least passively).

Next, we asked about the **efficiency of the limitations**. Only one answer was they were not efficient and 4 didn't really know. 2 answers were that they are mostly effective, but with some transgressions of climbers. Majority od participants (11) feel the limitations are quite efficient as **climbers respect them**. A couple of participants feel this makes most stakeholders happy, but also 5 answers pointed out that restrictions, while being effective, are **much too political, too restrictive** and too rigid.

We enquired about the **microzoning practice**. The answers were split between "no microzoning" (7), "some or rare cases" (7) and "many or most areas have microzoning" (5). We feel that a combination of microzoning and/or seasonal closures can be a very effective tool of management that could keep a lot of problematic areas open, but this practice must be studied, analysed and shared to gain recognition in some countries.

We also wanted to find out which issues were the most problematic on a scale many-some-minor-no problems. The only area, where many problems stand out, is **nature protection**, with 7 participants signifying that, but on the other hand 8 participants had minor problems, and others just some. So, this is either a big issue or not too worrying. This was expected result. **Local population** problems are more mixed, with all answers equally represented, albeit with "many problems" less often. **Ownership** is split even more equally between all answers, which is logical, as it ties with local population. Another similar issue, **access**, is rarely a major problem, but some problems with it are very common (10 answers). 4 countries have no problems with access. **Overcrowdedness** is not a problem in 2 countries, big problem in 4 countries and some-minor in the rest. 15 countries have some degree of problems with **litter**, which is another very worrying statistic, though only in 1 country it is a big problem. Another ethical issue, **wild camping** is not really a big problem in most cases, apart from 1 country. It used to be a big climbing problem, but new trend corresponds with the new profile of climbers.

7 participants mentioned also other problematic issues, which were: **toilet issues** (2x), GDPR (and troubles with finding owners), rebolting and guidebooks, disputes with hunters. If we added toilet issues to the choices, it would probably have larger numbers.

Next, we checked about the **liability in case of climbing accidents**. Vast majority of countries hold **climbers solely responsible** for their safety and in the worst cases police and civil court are the common procedure. One country provides federation insurance and in one country "it's complicated". However, guides and climbing schools are responsible for their clients, as well as in one country at official events, the association is liable.

We asked for **good and bad examples** of rock management it the countries.

Most of good examples were **solving a very complicated area** that was on the verge of closure, with environmental and local population problems. Management solved most of the problems through agreements and compromise. Such examples were Zillertal (Austria), Osp (Slovenia), Rocher de Renissart (Belgium), Ojcowski NP (Poland), Frankenjura (Germany). Good examples that were **properly managed** from the start include Demir Kapija and Bislimska klisura (North Macedonia), Balzers (Liechtenstein), Labske Piskovce (Czech Republic) and Paklenica (Croatia). Other good examples were **rebolting and maintenance initiatives** in: Montgrony, Madrid and Valencia (Spain), Herculane and Brasov (Romania), Malta.

Bad examples were use of low-**quality materials and rogue bolting** in Gjipe (Albania), Malta, Austria, Romania; **irresolvable differences with other stakeholders** Ciezkowice NR (Poland); **lack of environmental initiatives** in Kalymnos, Leonidio, Manikia (Greece). More generally speaking, major problems were bad **behaviour of climbers**

and lack of proper management. Rogue and "hit-and-run" bolting seems to be a growing problem, as those bolters often do not respect the rules and agreements that keep many areas from closing.

6.3.4 Touristic aspects of rock climbing

Next set of questions evaluated the tourism aspects in the countries. 13 countries feel they are both **tourist originator** and **destination**; 2 feel they are just originator and 2 feel they are just destination. 2 countries think they are neither.
We enquired about the **main season for climbing tourists**, the main regions and **main tourist countries** that visit. A bit surprisingly, the main season was **autumn**, followed closely by **summer** and then **spring**. Winter was main season only in 2 countries. The most popular places usually correspond with the best climbing areas or with more touristy parts of the countries (the coast). It also depends a bit on the climbers' level (beginners vs. better climbers). Most commonly, any country is visited by its **neighbouring countries**. Apart from that, **Germans** seem by far the most numerous climbing tourists, followed by **French**, **Italians**, **Austrians** and **Czechs**. Obviously, the Dutch are also mostly climbing tourists. Slovenians and Bulgarians are often in the Balkan countries.
A logical question was if any **crags were developed specifically with tourism money**. About half (10) countries do not have that practice. The others are split. There are a few or limited tourist projects in 5 countries, who are mostly older and bigger destinations with strong tourism but slower recognition of climbing tourist niche (Spain, Austria, Italy, Germany, also Albania). 4 countries have significant areas bolted with tourist funds (Poland, Greece, Malta, Macedonia). We can point out that Croatia also has a lot of such examples, despite answering "no" to the question.
Next question was related to **experiences with climbing tourists**. 2 countries feel they have trouble controlling the crowds and 2 feel it's nothing special. 5 don't have opinion. 5 countries have **really good experience** with no problems. 4 countries highlighted that a lot of climber tourists seem to be thrifty or low-cost travellers who prefer to sleep outside or in camper vans and are not regarded as valuable tourists.
We asked, which countries their climbers visit the most for tourism. 4 countries stand out: **France** is the most visited, followed by **Italy**, **Greece** and **Spain**. They are by far the most popular. After that, the next group is **Croatia** and **Germany**, followed by **Slovenia** and **Austria**. Also significant are **Switzerland** and **Turkey**. The answers were pretty much expected, although there are some surprises (Spain being 'only' fourth, Slovenia being quite high). Probably we would get a clearer picture if we got more questionnaires, though all the stated countries would probably remain high on the list, just not in the same order.
In light of that, we wanted to know if **tourist organisations promote** climbing as part of their strategy and provide any funding. In most of the countries (12) **this is not the case** and at times it feels frustrating. 5 countries see some limited promotion, but any kind of funding is very rare. Only 2 countries are happy with both. This is a major potential that can be addressed.
How does the lack of interest from tourist organisations correspond with how do participants **feel about tourist potential**? 2 responses were there is no potential (the obvious Netherlands and Liechtenstein). Only 3 don't see the potential as very high. 6 responses indicated **very high potential**, followed closely by high potential in the rest.

6.3.5 Association work and activities

We asked the participants if they have an **official climbers' ethical code** published and promoted. 3 countries do not have the ethical code and in 2 countries it is being develop at the moment. Further 4 more countries only have some kind of rules and guidelines and 3 have the guidelines more for bolting. In 7 countries the ethical code in good, comprehensive in all areas and well publicized. This is not a good number and should definitely be improved.
Next question was, how do **climbers obey these ethics**. 9 participants feel they mostly do, while 7 feel it could be better. 1 participant was not satisfied and 2 didn't know. This shows not only the need for a clear, comprehensive ethical code but also the need to promote it and educate climbers continuously.
We asked if countries have any **special ethical rules**, that only apply to certain areas. 8 countries had no special ethical rules apart from the basic ones. 11 countries had some special areas with additional rules or restrictions, out of those 4 were applied to trad or sandstone climbing styles and ethics.
We also wanted to know if the associations prepare **bolting manuals** or if they give out official **bolting licenses**. 12 countries had some kind of bolting manual and 6 also provided bolting licenses. 5 countries did neither. As with

ethical code it is good that many countries invest in this knowledge, but we feel it would be good to share it and compile "European" guidelines and recommendations for bolting.
Regarding the **bolts in routes** and their deterioration, next question was, who is responsible for it. Most (11) answered that it is **no one's responsibility** even if they fail. In 6 countries associations or local clubs carry the responsibility (if they officially take care of the area), but mostly it depends on who made the route. In 3 countries the responsibility lies with the bolter, but this is mostly theoretical and hard to enforce in practice.
The **potential for developing new areas** was expectedly very mixed. Some countries have already developed their best rock, while some still have enormous potential. 5 responses were there is almost no more potential and 5 responses stated very high potential. 5 responses indicated some potential and 4 were somewhere in between. This shows many different stages of development and also the need for different approaches. It is very interesting, how evenly spread the answers were.
Apart from national associations, there are also **other groups** in the countries, whose activity is **climbing-related** or even involve bolting and management. 2 participants didn't know any and 5 stated there were none. 5 countries have "independent" clubs, only 2 countries have many other active groups, the rest state other groups or private initiative or guides. There is good cooperation only in 3 countries and some cooperation in 4. 12 associations **don't cooperate with other groups**. This is something that should be more encouraged.
Rock areas are shared also with **other stakeholders**, who might connect into groups. It is important to include them in the work. 5 participants didn't know of any such groups. The others emphasized two groups: **"environment/nature protection (a lot of time focused on birds"** and **"local authorities or societies"**, both mentioned 8 times. Other groups are rarer, like outdoor sports and organisations, tourism groups and NGOs. 10 countries **actively participate** with these other groups, but detailed analysis of answers shows there is still more room for improvement as the cooperation is not often comprehensive and all-inclusive and at times seems like the "necessary minimum".
Next, we wanted to know the **scope of work** the association does. There were multiple possible answers. In 8 cases the associations were active in all stated areas, but half of those were not official authority for climbing in the country, which is also the overall statistic for this attribute. Apart from that, the answers were quite mixed, so the categories evened out a bit. However, every single participant selected **"Education and information on rock climbing"** as the area of work. Very high in priorities were also **"Promotion of rock climbing"** and **"Development and investment of rock climbing areas"**. This is in a way the "easy" work. The next two options, **"Managing rock climbing areas"** and **"Solving problems"** had 6 and 5 absentees respectively. Still, regarding previous answers, this self-evaluation was quite high and perhaps overly optimistic.
We asked the participants if there is any **formal procedure to create a new rock area**. 3 were not sure, 3 had very loose procedure (only owner or committee permit). 6 countries have a complex procedure in place, requiring owners' permits, nature protection permit and sometimes government permit. In contrast, 6 countries have no procedure in place, you just go and bolt (except sometimes in national parks).

6.3.6 Sources of information

Next, we asked where climbers can get the recent **up to date information** on the areas and if domestic **websites** exist for that purpose. Most countries have **dedicated websites** (except for 1), but it varies from big all-encompassing portals for the whole country with also access information, to many different sites with different regions or approach, or sometimes more basic information. It is understandable that some big countries may have problem maintaining such a large database/portal.
Next question was connected to **guidebooks**. While 5 countries do not have any guidebooks (yet), 5 countries have 100+ guidebooks for many rock areas and regions. 7 countries have between 1-5 and the other 2 have about 10. As guidebooks as both private initiative as well as local groups' source of income for area maintenance, we should carefully prepare a possible project to support environmentally conscious, locally-oriented guidebooks.
We asked about **other possible sources of information** in the countries. 3 participants couldn't think of any. Half of participants named **national climbing magazines** as good source of information. 11 participants listed many **web portals** with news and information as well as Facebook groups and similar. In fact, websites are slowly overtaking magazines as the source of climbers' information and promotion of new areas.

6.3.7 Rock climber's profile

To approximate **rock climbers' profile**, we asked, how many people are practicing specific disciplines.
Sport climbing was the most popular, with 15 countries selecting it as very popular. But this was on par with **indoor/climbing gyms** with 16 such responses. Next is **bouldering**, being very popular in 9 countries, somewhat popular in 8 and not so much in 2. **Alpine/trad climbing** is very popular only in 1 country, with decent following in 8 others, and a few less in further 9. **Ice climbing** was similar to alpine/trad, being very popular in only 2 countries and far less popular in most others, while not even being practiced in 2. **Drytooling** is, not surprisingly, almost identical to ice climbing. It is somewhat surprising, that **via feratta** is very popular in 7 countries, quite popular in 8 more and at least present in the rest. While we knew indoor climbing was popular, it was still somewhat surprising result. So, inclusion of gyms in many projects, especially education, will be crucial. Next, it is obvious that bouldering is on the rise, while alpine/adventure climbing is slowly declining. Ice climbing and drytooling are very niche disciplines and about via feratta, we feel it is more a statistic for the trails.
We also wanted to know if these numbers are static or if they are a consequence of **emerging trends**. Again, it was confirmed, that **sport climbing** has been on increase, in 6 cases even rapidly. Most new climbers probably choose this discipline. The trend for **indoor climbing** was even more drastic, with rapid increase noticed in 12 countries, so it is quickly catching up to sport climbing in terms of popularity. The same statistics are shown for **bouldering**, albeit with smaller numbers. But the increase is probably tied to the indoor climbing to some extent. While **alpine climbing** is mostly decreasing in 5 countries, it has been stable in 10, so it can be said it has its practitioners, but not many newcomers. **Ice climbing and drytooling** are a curious mix: stable in 7 countries and increasing or decreasing in 5 respectively (even rapidly increasing in 1). But due to still smaller numbers of participants, this is not (yet) very consequential.
Next, we asked participants if they noticed any **other interesting trends**. There were a lot of interesting observations, like the rise of gym-only climbers and the lack of climbing ethics (also connected to that), decline of trad and increase of safety; higher general public awareness, younger people starting to climb, different approach to bolting and increase in domestic public tourism (some also due to corona). All this in many ways agrees with the picture we already painted with this study.
The next question was in agreement as well, namely that the **overall number of climbers** has **substantially increased** lately. 16 participants chose that option, while 3 feel it increased moderately.
We also wanted to have a feel for **national indoor infrastructure** (where a lot of climbers meet). One country doesn't have any gyms and 2 don't know. After that, 3 countries have 1-2 gyms and 9 have between 10-100. 4 countries have substantial number of gyms, about 200 and more. If we could get the gyms into some kind of program, to help educate people, this could mean a huge boost for better behaviour of climbers.
Detailed analysis of this infrastructure shows that in 3 countries gyms are mostly owned by clubs, in 2 countries it's about half/half, but majority of countries have **mostly commercial gyms** (with few exceptions). There is some cooperation, but it is mostly aimed at competitions and rarely goes beyond that.

6.3.8 Country climbing facts

To estimate the size the associations are representing we asked for **number of climbers within association** and also the **number of climbers overall in the country**. In 5 countries there are less than 500 climbers, in 3 there are between 500-5000, in 3 there are between 5000-20.000, in 3 there between 20.000 and 300.000 and in 4 there are more than 300.000 climbers. The membership of these climbers in the association varies by a lot, from only 5% (Poland, France) to around 70% in case of smaller countries (and Germany). Most other countries have **about 30-40% membership**. 4 countries actually have official numbers, while the others are more guesses.
In relation to that we also enquired about **number of rock areas**. 9 countries have less than 100 rock areas, 5 countries have between 100-1000 and 5 countries have more than 1000 rock areas. It is different with bouldering, with 6 countries not having any or not knowing the answer (or it's part of sport climbing area), 11 countries having less than 100 bouldering areas and only 2 countries having over 100. An outlier is Malta, which has almost one rock area per every three climbers. Also, high rock areas/climber ratio is in Romania, Croatia and Greece.
We enquired about **other climbing related sports**, apart from sport climbing and bouldering. Most participants selected **Alpine climbing** and a vast majority also **drytooling** and **ice climbing**, which are not present in just 4 countries. Other suggestions were via feratta 3 times, trad and aid.

Last but not least, many participants **expressed interest for some further cooperation**.

6.3.9 Conclusions

Most of conclusions are already written within the results part of the analysis. Here is a quick summary:
- A lot of study's conclusions and estimates are confirmed by the questionnaire
- Results also show different development stages of climbing and different involvement of associations
- The main issues of impact (environment, local population, tourism) are obvious in all countries but are dealt with differently
- More cooperation is needed between EUMA, UIAA, national associations
- More cooperation is needed on relation of national associations - local, private groups (both climbing and non-climbing)
- There is great need for more controlled EU funds
- Studies and experience need to be collected and unified
- Ethical code should be standardized as well as bolting standards, with emphasis on environment and possibly in a form of "sustainability pledge"
- There is still work to be done in tourist recognition and cooperation with tourist organisations
- Ethical code should be promoted also in indoor gyms to improve climbers' behaviour
- Sport climbing and indoor gyms seem to be most popular. Bouldering is on the rise, while alpine/trad is in slow decline
- Guidebooks are still very important source of information
- There are many different websites, web portals and magazines, which is both good and bad.
- All in all, a lot of people are actively involved with both bolting and solving problems; there is a lot of know-how scattered throughout Europe

7 SWOT analysis

The SWOT analysis if the project is a simplified framework of some topics we tried to be aware of and which could serve well for the future work. Many more could be added, however.

Strengths:
- Many countries have existing standards and models that can serve as a base for unifying in EU
- There is a large network & community of climbers within gyms, clubs and associations and web-platforms (i.e. thecrag, 8a.nu …)
- Climbing is an established activity and a recognized tourist niche in many countries
- Rock climbing as part of alpinism is recognized as UNESCO cultural heritage
- Climbing mobility and connectedness in EU is improving (via Ryanair, Airbnb)
- Climbers generally respond good to management and to nature protection
- Well managed rock climbing can have low environmental impact
- Many local groups and volunteers already take good care of areas

Weaknesses:
- Not all countries are involved in the project, many are self-sufficient
- There is limited knowledge and scientific research for analysis and unifying standards in EU
- Different problem-solving approach, limitations and legal issues throughout EU
- Funding for implementation is lacking, there is lack of control and jurisdiction
- Climbers are scattered individuals, visitors are a mix of domestic and foreign climbers
- Associations don't usually manage crags; individuals can cause a lot of damage
- Different legislature in Member states (regional, national, international, EU, Non-EU);

Opportunities:
- Improve climbers' behaviour and ethical standards
- Improve public image of climbing with PR campaigns
- Become the voice of climbers, have a strong international influence/representative
- Potential for sustainable development through climbing tourism
- Improve management of some problematic areas

- Pool the knowledge and experience to one database, unify the standards and models

Threats:

- Limited history of cooperation with institutions (nature protection etc.) and no unified model of work.
- Bad public image of climbers (of being invasive and having big impact)
- There may be resistance to accept unified models and/or governing body from associations
- Free access (private property/ownership) and liability issues
- Nature protection bias in studies and decisions; other interests (hunters…)
- Mass climbing tourism and overcrowdedness lead to increased impact

VII. Further strategies:

1 Initial considerations

This project was prepared for EUMA to serve as a basis for future work. However, without more work, initiatives and projects we can only expect status quo, slow progress or uneven progress throughout Member States.
This study is not new. Its findings are not new. Although many variables have changes – the number of climbers has increased, Europe is even more connected, climbing tourism is on the rise, small local initiatives are more active, there are more studies done – many things remain the same and the main danger is that not a lot will be done to improve climbing management. It's continuous work. And it's hard work: convincing some associations to join and contribute to the project and to respect its position and authority; providing enough funds or activities, motivating local actors as well as big companies to cooperate are just some of the challenges.
We hope that in any case some useful information will be provided to people who will be involved in governance of rock areas in the future. Some countries would benefit greatly from knowhow of management from others. There is great strength and increased relevance in cooperation.

2 Proposed work areas for EUMA

The administrative focus should be among others, on these areas:

- Build EUMA as a central body: build relevance and trust, connect all climbing stakeholders (national associations, local groups, other entities like UIAA, IFSC), connect through web portals;
- Improve public image of climbing;
- Involve the national associations more into rock area management and/OR actively work with other local groups/initiatives;
- Lobby for climbing issues: support members in their fight to right to roam/ free access to countryside and inclusion of recreation in this right;
- Create a compilation of legal practices and their benefits in EU; lobby for other issues as representative in Brussels (an expert opinion)
- Study, review and compile materials and experiences from active groups like IG Klettern, Greenspits, Escalada Sostensible, IG Klettern Basler Jura, Nasze Skaly, Projekt OSP, BMC Green Guides, Access Fund, Leave No Trace, and others;
- Supervise crag management structure from EUMA to national associations to local groups
- Regularly develop new projects, encourage cooperation, support and develop EU/Erasmus projects
- Connect national associations to one another
- Have their own fund for development and continuity of work

3 Ongoing projects and initiatives

There is a number of specific projects, that can be developed from this study/project and continue in the future:

- Keep expanding the collection of information from questionnaires and case studies;
- Set standards and models, create databank of ideas and solutions;
- Educate and promote self-regulation and environmental knowledge with education programmes, templates for translation, promo campaigns;

- Support and encourage environmental education in courses for trainers and coaches;
- Create standards for climbing guides and larger groups;
- Maintain database/list of online databases as a source for recent and relevant information about rock areas in Europe (maybe via partnership with some existing portal);
- Collect, review and encourage research of nature protection, tourism etc., make comparative studies, collect precedent cases of management in case of protected species

4 Special projects

There is a number of special projects that could be beneficial for European climbing:
- Create a “Approved by EUMA” trademark for guidebooks that comply with certain criteria: that they support local bolting and management, contain relevant local information and restrictions, ethical code and leave no trace guidelines and/or similar content;
- Create criteria for “European bolting license” with standards for courses, manual, literature, tests, and studies. This way national associations could run courses that would be recognized throughout Europe;
- Organize a bi-annual conference on bolting and area management with interested national associations, bolting / management groups and individuals;
- Promote and develop a unified climbers’ ethical code; create video promo with famous climbers and promote it online.
- Create an “EU Bolting and Access Initiative” that would provide a tool for companies and individuals to donate money for bolting/rebolting and maintaining a specific area or any other critical area (chosen among applications by an expert panel). EBAI would serve as impartial, overseeing body that redistributes donations, acquired by a variety of means, to national associations or local management groups; is a portal for a kind of EU-wide crowdfunding campaigns for specific areas; attracts big companies to support European bolting; and sets and monitors the standards of done work.

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- Anna Lukešova (CUNI)
- Andreas Aschaber (OeAV)
- Uli Berkmann (DAV)
- Vladimir Trpovski (FPSM)
- Sandra Bertholet (ERA)
- Pavel Wiesser (CHS)

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ERASMUS+ project

"EUMA - improvement of good governance of climbing and mountaineering in Europe"

No. 612970-EPP-1-2019-1-CZ-SPO-SCP

✓ **Training program plan on EU level**

Co-funded by the Erasmus+ Programme of the European Union

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Training program plan on EU level

Multiplier sport event / Project members Workshop:

Location: …

Date: …

Day1	Morning 8:00-12:00: arrival of participants Lunch break 12:00 – 13:00 Afternoon 13:00 – 18:00 Welcome to participants Presentation of workshop schedule Short walk in the area with presentation of challenges and solutions in managing Osp area Presentation of Erasmus+ project to non-members by Jurij Ravnik / Andreas Aschaber Dinner break 18:00 – 19:00 Evening 19:00 – 21:00 Discussion on presented work, definitions, analysis, ethical code and strategy Short presentation of next day activities
Day2	Morning 8:00-12:00: Visit the workshop area and start of bolting workshop Teaching of participants the use of glue-in bolts in rebolting or Exchanging techniques, standards and practices Participants can rebolt a chosen route or observe the process Lunch break 12:00 – 13:00 Afternoon 13:00 – 18:00 Continuation of workshop Dinner break 18:00 – 19:00 Evening 19:00 – 21:00 Presentation of Projekt OSP and Slovenian rebolting/maintenance of existing crags Short lecture by Štefan Wraber on donations-based initiative Discussion on the topics of rebolting and rock areas management
Day3	Morning 8:00-12:00: Workgroup wrap-up of the ideas to implement in the final documents Discussion and Q&A about rock area management by invitees Discussing the model of management and training of local managers within countries Lunch break 12:00 – 13:00 Afternoon 13:00 – 18:00 Potentially finalizing the workshop Leisure time / climbing

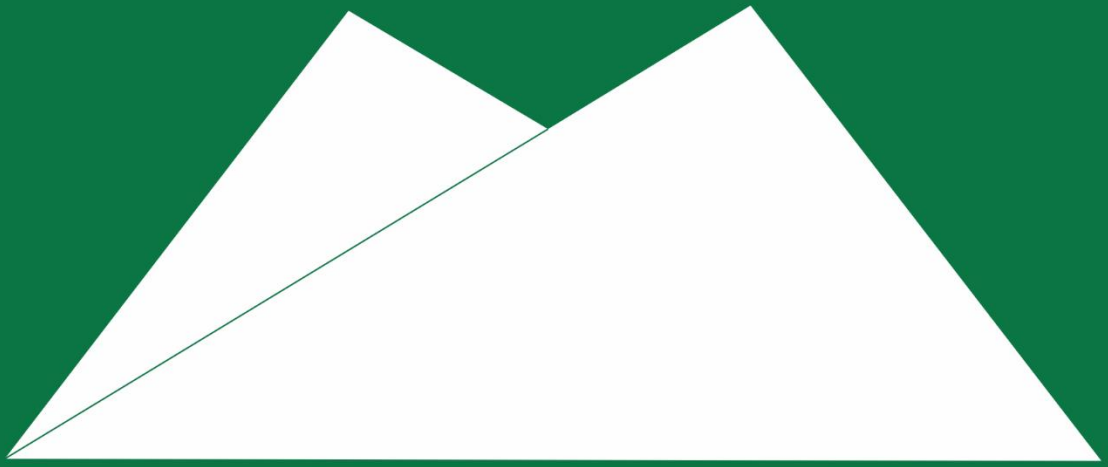
Other topics:
Recommended group size: up to 12 participants
Invitees from the project members: Slovenia, Austria, Czech Republic, North Macedonia, Germany Invitees from non-members: Croatia, Bosnia, Serbia, Albania, Greece

This is the recommendation of project group leader due to our common approach to climbing, past traditions, already established connections, lower costs and most of all, a potential to develop relationships further than the scope of workshop.

Other potential invitees: France, Poland, Italy, Spain …

It is important to decide ASAP on the group size and the invitees to be able to invite the specific members and book appropriate accommodation and conference room.
Secondary plans are subject to actual participants and will involve the organization of food and bolting equipment and potentially additional transport within Slovenia.
The costs covered by organizer (PZS) may include: additional staff and lecturers with bolting equipment.

Other costs include: travel, accommodation, food and additional transport.
These costs are in part covered by EUMA. It is important to determine the amount of costs covered before inviting the participants.



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- ✓ Alpine Association of Slovenia
- ✓ Austrian Alpine Club
- ✓ Charles University
- ✓ Czech Mountaineering Federation
- ✓ European Ramblers' Association
- ✓ German Alpine Club
- ✓ Hellenic Federation of Mountaineering and Climbing
- ✓ Mountaineering Federation of North Macedonia

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