The project is funded by the European Union

FORS MONTENEGRO
Foundation for the Development of Northern Montenegro

DIRECT

BROCHURE ON HOW TO ACT IN ALPINE TERRAIN

From a geographical standpoint, mountains are natural elevations of the earth's surface attaining an altitude greater than 500 m. Mountains are formed and shaped by tectonic processes that could be classified as endogenic or internal (seismic an volcanic activity) or exogenic or external (fluvial erosion – wearing away of soil by moving water, denudation – wearing down and stripping of the rocks due to temperature swings, atmospheric influences, and expansion of plant roots, erosion – mechanical disintegration of rocks, etc.).

The tallest mountain ranges in the world are: The Himalayas with the highest peak in the world Mount Everest or *Chomolungma* (8.850 m) and another 13 peaks of over 8.000 meters (*K-2, Lhotse, Cho Oyu, etc.*), The *Rocky Mountains*, The Andes with the highest peak *Aconcagua*, The Alps, The Caucasus, Mount Kilimanjaro, etc.

Europe is dominated by the Alps with the highest peaks *Mont Blan* (4.810 m), *Monte Rosa*, *Matterhorn*, *Jungfrau*, *Grossglockner*, etc. Some other prominent European mountain ranges are The Pyrenees, The Apennines,The Carpathian Mountains and The Dinaric Alps. The highest peak in Europe is Elbrus on Caucasus (5.642 m).

THE MOUNTAINS OF MONTENEGRO

Montenegro is a South European and a Mediterranean country, mountainous and coastal at the same time, unique for its beauty, and one of the richest countries in Europe in terms of natural resources. The mountains of Montenegro belong to the Dinaric Mountain Range. The prominent massifs are Orjen, Lovćen and Rumija in the south, and Maglić, Durmitor, Vojnik, Morača Mountains, Komovi, Prokletije in the continental region, with an average elevation of the mountain peaks of over 2,000 above sea level.

Our coastal mountains are not the highest, but are interesting for hiking precisely because they offer stunning panoramic views of Montenegrin coast and the Adriatic sea (the peaks of Lovćen, Orjen and Rumija).

Every year more and more tourists, especially those from abroad, visit our mountains. Nevertheless, due to absence of legal framework governing offering and organizing of mountain tours, and due to inadequate preparation, accidents in the mountains, some with fatal outcomes, still happen.

We hope that this brochure will be useful, that it will contribute to greater safety during stay in Montenegrin mountains, and that the tourists-hikers who visit our mountains will carry away with them a most pleasant impression of their wild and breathtaking beauty.

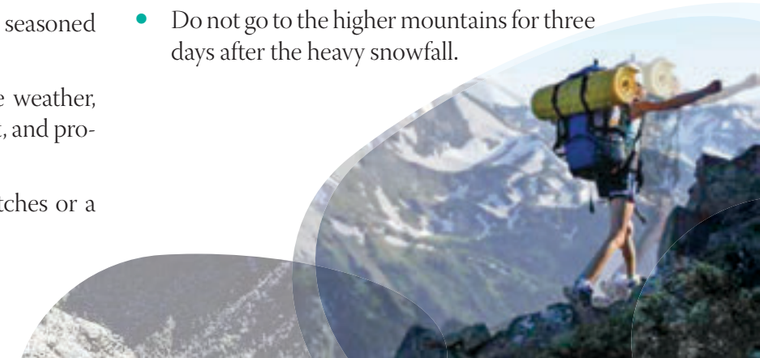
WHAT TO DO BEFORE GOING TO THE MOUNTAIN

Before embarking on a trip to the mountain, it's crucial to acquire certain knowledge, provide appropriate equipment and ensure information that will make the activity safer for any mountaineer or a nature lover. When choosing a mountain tour, we need to be aware of our own, and of psychophysical abilities of the other participants (pay particular attention to whether any of the group members suffer from chronic illnesses, alergies, heart issues) and adapt accordingly. Moreover, we need to be informed in detail about the weather reports and forecasts that are accessible through the website of the Institute for Hydrometeorology and Seismology of Montenegro (http://www.meteo.co.me/). Another thing to be done is to plan the route, the optimal number of breaks, as well as the return time. We also need to inform our family or friends about our trip to the mountain and the estimated time of return. Appropriate equipment that will protect us against wind, rain and cold, as well as its proper use, is an important aspect of a safe stay in the mountain, especially in winter conditions. The hiking shoes, preferably light and waterproof, are one of the most important pieces of the equipment. Clothing should be made of wicking fabrics that are breathable and comfortambe, and is adapted to suit the weather conditions, so the best way to ensure it is to dress in layers. It is recommended for every mountaineer to have a first aid kit and a cell phone with a fully charged battery that he must use rationally, in order to be able to make a call in case of an emergency.

ADVICE FOR MOUNTAINEERS

(Taken from website of the Mountain Recue Service of Montenegro)

- Choose a trip that suits your physical and technical abilities;
- Do not go to the mountain alone; never leave the group;
- Inform your family what direction you are going, the estimated time of return, and keep up with the plan;
- Sign the visitors' book in the mountain lodge;
- Always ask for and follow advice of seasoned mountaineers;
- Be prepared for sudden changes in the weather, bring the extra set of warm clothes, a hat, and protection from rain and wind;
- Always bring a flashlight, a candle, matches or a lighter;
- Always bring a first aid kit.
- Bring a map and, if possible, a compass for any longer trek.
- Stay on the marked hiking trails.
- Wear comfortable hiking boots with ribbed rubber sole.
- Be particularly careful in the wintertime and keep in mind that it gets dark early.
- Do not go to winter alpine tours in the area you are not familiar with.
- Do not go to the higher mountains in the wintertime if you are not accompanied by seasoned mountaineers in the hiking group.
- Do not go to the higher mountains for three days after the heavy snowfall.



DANGERS

There are two types of dangers that climbers face during various alpine activities. **Objective** dangers posed by the alpine environment itself, and **subjective** dangers which are human error factors.

Objective dangers are always present and it is vitally important to be able to recognize them and adjust accordingly. By doing so, we reduce the negative impact they have on us to a minimum. Objective hazards include: exposure to adverse weather conditions, unconsolidated and slippery soil, rockfall, temperature and UV effects, lightning strike, fog, storm, precipitation, wind, as well as from the animal attacks and bites and harmul effects of plants. In the winter period, additional danger comes from avalanches, cracks in ice and snow, as well as from snow cornices.

Subjective dangers are directly related to humans themselves and to their actions. A correct estimation and awareness of one's own abilities make the stay in the mountains much safer. These types of dangers include: lack of experience, misjudgement of the situation, lack of required skills and preparation, inadequate psychophysical condition, illness, being inconsiderate of the guide and other participants in the group.

HOW TO ACT IN CASE OF AN ACCIDENT

- Keep calm, and keep those around you calm;
- Assess the situation and, if possible, members of the group too. If anyone is injured, make sure you move them to a safe place;
- Protect the injured and yourself from any immediate danger (from falling down, rockfalls, suffocation, the cold; the moist, etc.)
- Provide first aid for the injured person within the extent of knowledge and abilities.
- In cases when the injury suffered is either severe or is preventing the injured from continiuing the activity, alert the **Mountain Rescue Service** through the Operational-communication center of the Directorate for Emergency Management of the Ministry of the Interior at 112.
- It is of vital importance to provide accurate information about the type of injury, overall condition of the injured person, how the injury was sustained, your exact location and weather conditions.
- Mark the accident site or the place where the injured person is located (especially in wintertime)
- If mobile phone is not available, call for help in the alpine or any other rugged terrain may be made through the use of sound and light signals (disterss signal). Both the signal and the reply should be repeated until a stable and a clear connection is established. Distress signals (sound or light signals) are sent six times in the minute, every other minute, while the reply is given by using the same signs three times per minute, every other minute. You may also signal for help by forming the letter "Y" - "yes I need help" with your body (standing straight with your arms spread out) or by firing off a red distress flare.

You may submit the information regarding an accident on a mountain or other inaccessible terrain where aid of the Mountain Rescue Service is required through

- the Operational-communication center of the Directorate for Emergency Management of the Ministry of the Interior by calling the number 112 or +382 67 112 112

Information on the accident should contain the following information:

- The caller (first name, last name, phone number), to enable later contact and to obtain additional information
- Location from which the call is made and how the caller learned of the accident (as an eyewitness or as an intermediary)

- Accident location (accurate description)
- The accident victim (name, surname, age);
- What happened (cause of the accident and type of injuries sustained);
- What has been done so far (what kind of first aid was provided, who else has been informed of the accident);
- Weather conditions at the accident site.
- Accessibility of the accident site.

SOME OF THE MOST COMMON ALPINE ACCIDENTS

Slip and fall

Slip and fall accidents are the most common type of accidents in mountaineering. They usually occur on a wet surface (wet grass or leaves), steep slopes, unconsolidated soil (small pebbles), ice-covered trails, ravines near the roads, exposed tree roots covered with leaves, etc. Major causes of these accidents are inattentiveness and lack of concentration, wrong route choice, misjudgemet of the situation, lack of appropriate equipment and many other reasons.

In order to reduce this risk to a minimum, you shold adhere to the following rules:

- If you feel any signs of fatigue and exhaustion, take a break and rest;
- If you notice potential danger, seek shelter immediately; coserve your enery and don't act imprudently;

- Familiarize yourself with both the routes you intend to take and configuration of the terrain and be aware the potential dangers.
- Learn about the equipment required for an alpine tour;
- Never overestimate yourself, your form, or your psychophysical preparedness;
- When you are on dangerous mountain trails, do not take photographs of the surroundings or talk to the members of your group. Stay fully focused, watch your step and make sure that you don't slip.

In the event of slip and fall accident, immediately throw yourself flat to the ground, your face towards the ground, and try to lift yourself up into a push-up position (legs slightly spread, fists clenched, pushing the tips of your toes into the ground).

Advice: Try to practice this on a plain at the bottom of a short slope (on the wet grass or snow) in a way described above. As you practice it, you will gain the ability to better respond to a sudden slip and fall.

Rockfall

A tumbling or a falling rock poses a mortal danger in the alpine terrain, and such accidents, much like others, often happen without a warning. Rock detachment usually occurs without any obvious cause, due to temperature swings.

Wearing a helmet is the best protection from the falling rocks or any other falling objects. An approved alpine helmet is an excellent protection against potential head injuries. If you move along steep, vertical cliffs, it is best to flatten yourself against the rock and cover your head with your hands for additional protection in case of a rockfall. It is particularly important to chose a safe and protected place for your rest breaks. It is best to stay away from the dangerous places and slopes, especially if there are people or animals on them.

ADVICE: Avoid rockfall-prone terrain. Get around it!

If rocks start to tumble or fall around you, cover your head and look for shelter!

Lightning

Mountaineering carries a risk of a lightning-strike.

Lightning and thunder are a common occurence in the alpine terrain during the summer months. Be mindful of the cloud formation and take shelter at the first sign of a thunderstorm approaching or at the first sound of thunder.

Measures to be taken:

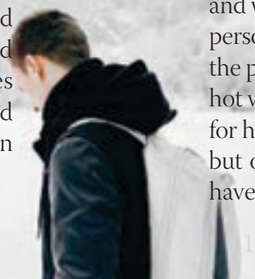
- if you are in the forest, seek shelter under the branches of a low stand of trees– never stand under a tall, isolated tree;
- Avoid the border between the forest and the open space, go to the forest instead;
- Avoid open fields, lone trees, rock bases, hilltops and mountain peaks, shores, ditches or other damp places;
- Do not cross water, do not swim;
- Do not hold an umbrella or any other conductive metal objects (fishing rods, etc.) in your hands;
- Do not stand straight. Crouch or at least bend down without touching the ground with your hands. If you are in a group, keep a distance of at least 5 meters from each other.

Potential warning signs of a lightning strike are: Predznaci udaru groma mogu biti: sultry air, sudden drop of atmospheric pressure, formation and gathering of black clouds, wind slowing down, distant thunder (it is already dangerous at this point), electrical charge in the air (hair stands on end, crackling sound).

How to protect yourself from the lightning: the only way to protect yourself is to find a safe, preferably permanent shelter, in a timely manner. If such shelter is not available, it is best to go to a dense forest, crouch or lie on the ground.

Cold/hypothermia

In mountaineering circles, hypothermia is often called the "silent death". Hypothermia is a state of reduced body temperature that occurs when a body loses more heat than it can generate. Exposure to cold temperature, exhaustion, and alcohol intoxication increase susceptibility to hypothermia.



Signs of hypothermia:

The initial signs of hypothermia are cold sensation and shivering (even though this warning sign may be absent). At later stages the feeling of cold disappears and is replaced by fatigue, lassitude and drowsiness. All physical and cognitive functions slow down. In some cases, hallucinations may occur. As the temperature decreases, the loss of consciousness may ensue. Breathing and heart rate decrease. Left untreated, hypothermia leads to death due to heart and respiratory system failure.

PROCEDURE if the person with hypothermia is concious:

If there is a protected room, a home, or a shelter in the vicinity, bring the person inside, replace the damp and wet clothes with dry and warm clothes; warm the person up with different clothing items; if possible, give the person warm, sweetened, soft drinks. You can use hot water bottles and similar heat sources (if available) for heating, but do not apply them directly to the skin, but over layers of clothing or blankets. If you do not have a warm room at your disposal, try to wrap a blanket, clothing, newspaper, astro foil or a sleeping bag around all sides of the victim's body. Call for help. If human body fails to warm up by movement, it loses heat. Human body also has the ability to automatically stop (direct away) blood flow towards peripheriy (arms, legs, face) in order to to conserve it for the vital organs.

ADVICE: When you go mountaineering, always wear a protective jacket and trousers (Goro-Tex or similar) in your backpack; bring also hat and gloves, astro-foil or a sleeping bag in the wintertime.

Exaustion/fatigue

Exhaustion/fatigue is a lack of physical, intellectual and emotional energy. Exhaustion can cause death if all energy reserves become drained. Such examples are very rare, because the human body has several in-built safety mechanisms for protecting itself against extreme exhaustion. Alcohol consumption aggravates bodily exhaustion. When combined with hypothermia, exhaustion may leave a person in a critical condition.

ADVICE: Remeber to eat frequently and drink plenty of fluids; occasionally take planned rest breaks. Stay warmly dressed to avoid unecessary dissipation of energy: when it's cold, your body uses up more enegry to stay warm. Pick your route and make informed decisions according to your physical and mental preparedness. Mountain offers you various options. Set your goal and pace in such way that you find the activity pleasurable and that you actually enjoy it.

Avalanches

Avalanches rank among the greatest winter hazards in the mountains. If you are at least slightly informed about avalanches, you increase your survival chances in the event of an accident.

Avalanches are mainly triggered in high, inaccessible areas due to conditions that normally exist in such environments, but each slope steeper than 15 degrees represents a potential danger of avalanches.

If you see an avalanche coming, or if you have started one, the only thing you can do is to move aside. If you can not avoid the avalanche, ie. being trapped inside one, try to grab a tree (if you are in a surrounding that allows it). If you cannot avoid getting caught in the avalanche or grab a tree, then you have to try to stay afloat by swimming as hard as you can.

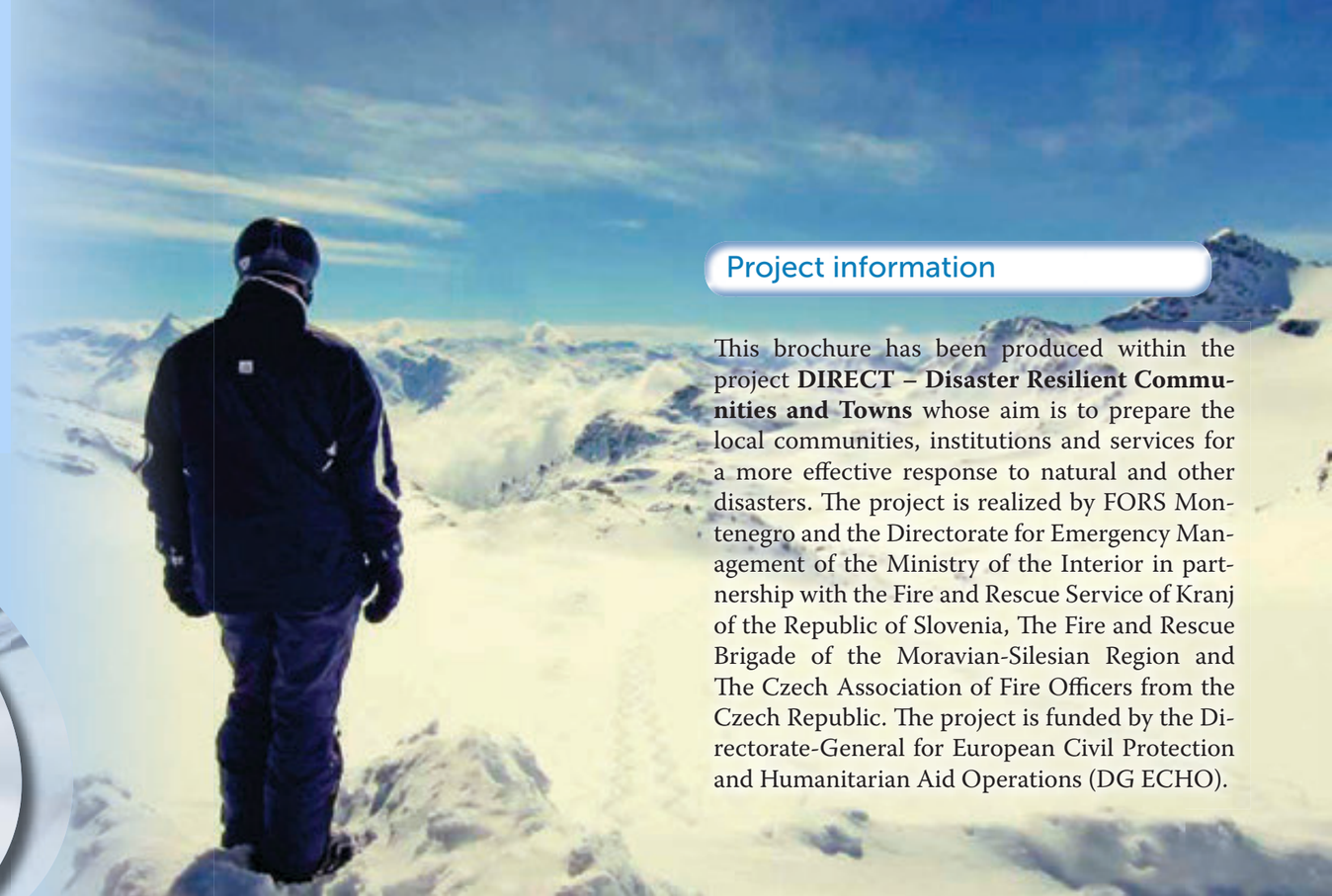
When the avalanche finally settles, the debris and the scattered snow take only few seconds to freeze and harden like concrete, so any action you intend to take shold be taken before the avalanche stops. It It's virtually impossible to get out from being trapped by an avalanche on your own.

In case that you see a victim caught in the avalanche, watch carefully how the avalanche moves and look at the victim, so that you can later locate him/her in the avalanche as precisely as possible. That will reduce the time required for the search. Do not go to look for help under any circumstances. There is very little time, maybe only a few minutes of breathing time under snow,so you should make most of every minute while trying to help the casualty. If possible, alert the competent rescue service. Quickly, but carefully look for the clues such as arms that stick out of the snow, snowboards, gloves, etc. In case of multiple casualties, try to dig them out enough to allow breathing, do not waste time of getting them out of the snow completely. Immediately go to another victim, and so on. Dig out those closest to the surface first.

ADVICE:

- If you see cracks in the snow, that is an obvious sign of a potential avalanche.
- The greater the distance between the cracks, the greater the avalanche risk.
- Do not go to steep slopes.
- Be watchful for the change of weather, because that increases the possibility of an avalanche being triggered.
- Do not go to potentially dangerous areas alone. If you divide into groups, stay close enough to the other groups so that you can see and hear each other.
- Do not go to the areas of deep snow that is less than 3 days old, and generally avoid deep snow pockets.

This danger requires special training and use of mountain travel equipment. In case you lack any of the two, engage the services of a guide. If you are not familiar with the avalanche rescue techniques and if you have the least doubt, do not put your life, and the lives of your friends who are taking part in the search at risk and alert the specialist rescue teams at once.



Project information

This brochure has been produced within the project **DIRECT – Disaster Resilient Communities and Towns** whose aim is to prepare the local communities, institutions and services for a more effective response to natural and other disasters. The project is realized by FORS Montenegro and the Directorate for Emergency Management of the Ministry of the Interior in partnership with the Fire and Rescue Service of Kranj of the Republic of Slovenia, The Fire and Rescue Brigade of the Moravian-Silesian Region and The Czech Association of Fire Officers from the Czech Republic. The project is funded by the Directorate-General for European Civil Protection and Humanitarian Aid Operations (DG ECHO).

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The creation of this brochure was supported by the European Union. The contents of the brochure are the sole responsibility of the Directorate for Emergency Management of the Ministry of the Interior of Montenegro and FORS Montenegro - the Foundation for the Development of Northern Montenegro and can in no way be taken to reflect the views of the European Union.

Partners on the project:

Directorate for Emergency Management of the Ministry of Interior of Montenegro

Gasilsko reševalna služba Kranj Slovenija

Fire Rescue Brigade of Moravian - Silesian Region

Czech Association of Fire Officers