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## Project: European Week of Winter Sport

### Project Number: 101133676

## D2.1 Best sustainable practices for winter sport events in Europe - LUNEX



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## Why sport should mind sustainability ?

Based on contemporary literature we can identify some guiding principles on sport and sustainability

- **Responsibility and Trust:** Sport has the reach to promote environmentally sound behaviour, and those involved in sport must take responsibility for their actions' environmental and social consequences.
- **Precautionary Principle:** Sport must respect ecological limits by using natural resources cautiously and taking preventive action to protect ecosystems.
- **Clear Facts and Transparency:** Decisions in sport should be guided by transparency, with participation from the public and stakeholders.
- **Information and Communication:** There's a need for better communication about sustainability in sport to raise awareness and encourage environmentally friendly practices.
- **Education for Sustainable Development:** Sport has potential as an educational tool for sustainable development, fostering awareness and changing behavior.
- **Cooperation and Participation:** Sustainable development in sport requires collaboration among various stakeholders, including government, sports organizations, and the public.
- **Digitalization and Sustainability:** Digital tools can help achieve sustainability goals in sport but must be used judiciously to avoid negative environmental impacts.

## Areas of Action

In order to find good practices and solutions let's look in which area we can have them :

### Area of Action: Sport in Nature, Landscapes, and Urban Spaces

- **Current Situation:** There is a growing need to balance the benefits of sport in nature with the need to protect natural habitats and landscapes. Sport and nature conservation must coexist through careful management.
- **Promoting Exercise and Sport in Urban Areas:** Urban planning should create more multifunctional spaces that integrate green and blue infrastructure to encourage physical activity and promote health.
- **Activity Management in Nature and Landscapes:** Conflicts between sport and nature conservation can be managed through careful planning, including the development of trails, slopes and the use of voluntary agreements.
- **Digitalization:** While digital tools can help manage sports activities in nature, they can also lead to increased pressure on sensitive environments if not carefully controlled.

### Area of Action: Sports Facilities

- **Current Situation:** Sports facilities must address climate action by becoming more energy-efficient and sustainable. The focus should be on renovating existing facilities rather than building new ones in a way to be sustainable in long time perspective

- **Key Points:** Modernizing sports facilities, including upgrades to cooling, frosting, lighting, heating systems, can significantly reduce their environmental impact. The goal should be to achieve climate neutrality by 2050
- **Recommendations:** Public funding should prioritize sustainability in sports facilities. The use of green construction methods and sustainable materials should be mandated, and the industry should ensure sustainable practices throughout the lifecycle of sports equipment and facilities.

### Area of Action: Major Sporting Events

- **Current Situation:** Major sporting events have significant environmental, social, and economic impacts. They should be planned and executed with sustainability as a central goal and an idea of planning any task.
- **Key Points:** The use of existing venues should be prioritized, and where new facilities are necessary, they should be designed for future adaptability or temporary use.
- **Recommendations:** Event organizers should develop and implement sustainability strategies, with a focus on climate neutrality, resource management, and community involvement. Transparency is essential to prevent greenwashing.

### Area of Action: Transport and Mobility

- **Current Situation:** Sport-related mobility, including travel to events and daily training, contributes significantly to environmental impacts. Sustainable transport solutions are needed.
- **Key Points:** Encouraging active mobility, such as walking and cycling, and improving public transport options are critical. Reducing car dependency is a major goal.
- **Recommendations:** Governments and sports organizations should implement mobility management strategies, prioritize the use of renewable energy in transport, and encourage sustainable travel practices among athletes and spectators.

### Area of Action: The Sporting Goods Industry and Retail Trade

- **Current Situation:** The sporting goods industry, with its global supply chains, has significant environmental and social impacts. Companies are increasingly expected to adopt sustainable practices.
- **Key Points:** The entire lifecycle of sporting goods—from production to disposal—must be managed sustainably. This includes addressing labour conditions, resource use, and environmental impact.
- **Recommendations:** The industry should increase investment in sustainable products and business models, ensure transparency in supply chains, and avoid practices like planned obsolescence. Public procurement should favor sustainable products.

### Expectations towards stakeholders of winter sports

- **Collaborative Efforts:** Partnerships among government, sports organizations, environmental groups, businesses, and the public to drive sustainable practices in sport.
- **Education and Science:** Educational institutions and research should play a greater role in promoting sustainability in sport, providing critical insights and developing new strategies.
- **Role of Sports Organizations:** Sports associations and clubs should commit to sustainability by setting measurable goals and promoting sustainable practices among their members.



- **Involvement of Nature Conservation and Environmental Associations:** These groups should collaborate with sports organizations to ensure that sports practices are compatible with environmental protection.
- **Sporting Goods Industry's Role:** Companies in the sporting goods sector should lead the way in sustainable production and encourage environmentally conscious consumer behaviour.

## Collection of best sustainable practices in winter sports events

Organisation / Event / Project & Source / link	Key points, short description of sustainable practices
Finland, Lahti Ski Games, Nordic combined, Ski Jumping, Cross - Country Ski	<p>Organizers can offset the carbon emissions generated by the event by investing in renewable energy projects or carbon sequestration initiatives. For example, the Lahti Ski Games in Finland became the first carbon-neutral winter sport event by offsetting its emissions through investments in renewable energy projects and sustainable forestry.</p> <p>Key Actions from Lahti2017.:</p> <ul style="list-style-type: none"> <li>• The Games promotes environmentally friendly transport with free bus travel included with every ticket and teams transported by eco-friendly bus.</li> <li>• EV charging points during event</li> <li>• solar panels on the roof of the main stadium</li> <li>• Cooperation with local university to measure sustainable impact of winter sport event</li> <li>• communicating sustainability</li> <li>• Engagement with external stakeholders to promote sustainability for and in Winter Sports</li> </ul>
Finland, LAHTI Ice Hockey Team: The Pelicans	<p>Lahti's local ice hockey team, the Pelicans. In the 2018-2019 season their carbon footprint was calculated to be 6 500 tCO<sub>2</sub>e, 63% of which was spectators' mobility.</p> <p>By ending the usage of coal, avoiding flying and using renewable fuels in buses they were able to reduce their emissions by over 50% and developed a compensation programme to offset the rest. To sum up:</p> <ul style="list-style-type: none"> <li>-&gt; avoiding flying</li> <li>-&gt; using renewable fuels in transportation</li> <li>-&gt; compensation programme to offset</li> </ul>
Freeride World Tour - ski and snowboard <a href="https://www.freerideworldtour.com/sustainability/#Carbon-Neutrality">https://www.freerideworldtour.com/sustainability/#Carbon-Neutrality</a>	<p>Since the 2020 season, the FWT has been implementing a continuous improvement process by committing to a yearly Sustainability program serving 3 long-term goals.</p> <ol style="list-style-type: none"> <li>1. Minimising our carbon impact and focusing on mobility. What was done so far in 2023:             <ul style="list-style-type: none"> <li>• Calculate FWT's carbon footprint</li> <li>• Reduce FWT's emissions in every department.</li> <li>• Cover 100% of FWT riders' train tickets for the Fieberbunn &amp; Verbier stops.</li> </ul> </li> </ol>



	<ul style="list-style-type: none"> <li>• 10% off on the skipass price for anyone who would go to Xtreme Verbier by train.</li> <li>• Survey at Xtreme Verbier to understand which transportation means the public is using to come to the event.</li> <li>• A section was created within each carsharing event where people could add their trip, thus reducing car emissions.</li> </ul> <p>2. PROMOTING A SAFER PRACTICE OF THE SPORT</p> <p>Safety is number priority at the FWT. We are consistently working on promoting a safer practice of our sport. Here is done so far in 2023:</p> <ul style="list-style-type: none"> <li>• Work with WeMountain on a safety education program.</li> <li>• Provide free mountain safety e-workshops for riders, staffs and volunteers</li> <li>• Safety workshop for media</li> <li>• Workshops on mental health &amp; concussion with The Ellie Soutter Foundation to FWT Pro, Qualifier and Junior riders.</li> <li>• Baseline ImPACT tests offered to all FWT riders</li> </ul> <p>3. PROMOTING A MORE EQUAL PRACTICE OF THE SPORT</p> <ul style="list-style-type: none"> <li>• offsetting airplane emission (important to find reliable partner)</li> <li>• managing airplane transportation to reduce flights</li> <li>• 1% of turnover investing in global sustainability programs</li> <li>• enhancing athletes and supporters to use train between events close by (by reducing ticket to the events by 10% for fans and covering athletes train transportation by 100%)</li> <li>• start to using drones instead of helicopters for filming</li> </ul>
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<p>Foundation for mountain sports</p> <p><a href="https://www.sustainablemountainalliance.org/">https://www.sustainablemountainalliance.org/</a></p> <p><a href="https://www.sustainablemountainalliance.org/wp-content/uploads/2022-SMA-Annual-Report.pdf">https://www.sustainablemountainalliance.org/wp-content/uploads/2022-SMA-Annual-Report.pdf</a></p> <p>Mountain sports</p>	<p>Implementing competition call to find a solution under the project: Air Quality &amp; Sport Challenge.</p> <p>The aim: generate viable and creative solutions, which can be leveraged by international sport federations, sport event organisers, mountain resorts and athletes to tackle climate change.</p> <p>Leading solutions from the call:</p> <p>Selected solutions to measure and mitigate the effect of poor air quality on athletes:</p> <ul style="list-style-type: none"> <li>• <u>AQMesh</u> is a small-sensor air quality monitoring system offering real-time hyperlocal pollution data. Measuring key pollutants known to affect human health and athlete performance, AQMesh combines an ability to monitor pollution in almost any location globally with proven robustness and data accuracy.</li> <li>• <u>Plair SA</u> develops and commercialises advanced laser-based instruments for real-time microbial, allergen, and bioaerosol detection. The Plair systems replace microbial identification and particle counting, increasing efficiencies and automation and allowing the improved management of risks related to biocontamination, allergies and asthma.</li> <li>• <u>Airly</u> offers a comprehensive solution for air quality monitoring. Their proprietary low-cost sensors deliver accurate, hyper-local, real-time air quality data, enabling to monitor and forecast air quality, analyse trends and sources, develop data-led policy, and track improvements.</li> </ul> <p>Selected solutions to clean polluted air and / or reduce air pollution:</p> <ul style="list-style-type: none"> <li>• <u>Camfil</u>'s high-quality, energy-saving filters help protect people, processes and products from particulate matter (PM). Customers can choose from a wide variety of filters designs and classes – ePM10 to ePM1 – to meet their unique challenges. The filters comply with EN779, ISO 16890 and ASHRAE 52.2 standards.</li> <li>• <u>ADD Swiss</u> distributes exclusively the GENANO air decontamination devices. The GENANO patented technology decontaminates and sanitises indoor air. The devices work with a dual technology, ionisation and electrostatic and kills 99,999% of all microbes, viruses, bacteria, mold and micro-organisms.</li> <li>• <u>Pluvo</u> develops and deploys solutions that actively monitor and remove airborne pollutants from the built environment at scale, helping their partners create healthier and safer spaces for all. The Pluvo Column internally cleans and monitors local air pollution while</li> </ul>
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	<p>externally providing displays for public engagement, and brand sponsorship.</p> <ul style="list-style-type: none"> <li>• <u>Active Giving</u> offers physical and digital solutions that engage individuals and companies in activities that benefit human health (sports) and the health of the planet (tree planting). Their solutions empower communities around the world to create a climate collection action through sports.</li> </ul> <p>Solutions selected to rethink mobility:</p> <ul style="list-style-type: none"> <li>• Visda considers air quality as a key factor for the performance of athletes in training and in competition. Their digital solution helps athletes and event organisers to plan sport activities and major sport events. This is done via data-driven anticipation of risks and AI for optimisation of training and competition schedules and locations.</li> <li>• <u>Qaptis</u> can reduce the carbon emissions from any heavy-duty vehicles by 90% with a plug &amp; play CO2 capture technology, while using the same vehicles and the same infrastructure. This pragmatic solution is particularly suited to remote locations where alternative energy sources are difficult to provide.</li> <li>• <u>Sword Venue</u> Venues and sites represent a great challenge when organizing an event. They constantly change and must meet high levels of standards and specifications. Sword Venue is a digital collaborative solution with a toolbox to help you plan and deliver.</li> </ul>
<p>Project: SIEPPUR 'Sustainable Snow Management'</p> <p>Nordic sports on snow e.g. Biathlon, Cross country <a href="https://www.biathlonworld.com/news/sustainable-snow-management-project/39fpQJYyy9vpbVOTewPjIO">https://www.biathlonworld.com/news/sustainable-snow-management-project/39fpQJYyy9vpbVOTewPjIO</a></p>	<p>Evolution of the practices used in Livigno. Located at 1800m altitude in the Alps, this location has had an artificial snow-making system since 2014 and a snow farm since 2017. The venue initially used wood chips to cover the snow storage, which had to be transported 70km and took 7-10 days to install. The current method involves using wood wool, which can be reused, leaves the snow clean, and takes 1-2 days to install. Additionally, a snow damper is now used to transport the snow, saving about 20% of the snow.</p>

<p>Sports wear circulation Skiers and snbers</p>	<p>Sports wear circulation</p> <p>Cirkel Supply Co.: a Swiss based company that specializes in apparel rental, offering skiers &amp; snowboarders a new, circular way to reduce the impact of their sport by renting premium outerwear. Because many skiers and snowboarders only get to the mountains for a week or so each winter, a huge amount of outerwear sits in a closet for most of the calendar year. Through Cirkel Supply Co., circular economic principles come into play, enabling those occasional adventurers to reduce the impact of their next big trip.</p>
<p>FIS Alpine World Ski Championships 2019 in Are</p> <p><a href="https://sustainabilityreport.com/2018/11/22/fis-alpine-world-ski-championships-2019-achieves-iso-20121-certification/">https://sustainabilityreport.com/2018/11/22/fis-alpine-world-ski-championships-2019-achieves-iso-20121-certification/</a></p>	<p>Becoming the first fossil fuel free World Championships was the flagship sustainability ambition. Although it will just fall short of that goal, the event was expected to be 80% fossil fuel free after commissioning electric snowmobiles, electric cars and investing in renewable energy.</p>
<p>FIS IMPACT PROGRAMME TO A MORE SUSTAINABLE AND INCLUSIVE SNOW SPORTS ECOSYSTEM 2024</p> <p><a href="https://www.fis-ski.com/en/international-ski-federation/news-multimedia/news-2022/fis-impact-programme-q-a-with-fis-sustainability-director">https://www.fis-ski.com/en/international-ski-federation/news-multimedia/news-2022/fis-impact-programme-q-a-with-fis-sustainability-director</a></p>	<p>Three areas are mentioned</p> <ol style="list-style-type: none"> <li>1. ECO-RESPONSIBLE CHOICES             <ol style="list-style-type: none"> <li>1. CLIMATE CHANGE</li> <li>2. BIODIVERSITY AND NATURE PROTECTION</li> <li>3. CIRCULAR ECONOMY</li> </ol> </li> </ol> <p>Planned actions, practices (chosen):</p> <ul style="list-style-type: none"> <li>-&gt; Measurement (Carbon footprint 2023 / 2024 calculation (FIS as an organisation + events),</li> <li>-&gt; Maximize the use of renewable energy in FIS offices,</li> <li>-&gt; FIS sustainability car / travel policy,</li> <li>-&gt; Pilot project on fan mobility (through the use of a specific app) to reduce spectators' transport emissions</li> <li>-&gt; FIS Rainforest Initiative</li> <li>-&gt; Guidelines for more sustainable events</li> <li>-&gt; offsetting (FIS Rainforest Initiative, Offsetting mechanism (platform) for NSAs, athletes, LOCs and spectators)</li> <li>-&gt; raising awareness among athletes, NSA's and the broader winter sports community (Sustainability Reward Programme, FIS sustainability training course, etc.)</li> <li>-&gt; Specific training course for the ski slopes homologators, RDs, TDs and LOCs + checklists to control the application of nature protection inside the venues</li> <li>-&gt; FIS4trees Native forest in our ski world + FIS wild bees and bugs houses / hotels</li> <li>-&gt; ISO 20121 mandatory for FIS World Ski and Snowboard</li> </ul>



	<p>Championships (starting from 2028)</p> <p>-&gt; Projects to implement sustainability in the production or recycling of skiwear</p> <p>2. Inclusive, protecting human rights and using sports, as a vehicle for wellbeing</p> <ol style="list-style-type: none"> <li>1. Human rights</li> <li>2. INCLUSION / ACCESSIBILITY AND SPORT / WELLBEING</li> </ol> <p>Examples of action plan:</p> <p>-&gt; refugees inclusion by pilot projects (youth and adult)</p> <p>-&gt; Unify the women's committees of each discipline into one committee</p> <p>-&gt; Safeguarding rules and policies (Increase the robustness of safeguarding practices to become more athlete-centered and traumainformed)</p> <p>-&gt; responsible eating for fans, athletes and all the FIS community</p> <p>3. RESPONSIBLE GOVERNANCE</p> <p>-&gt; Annual FIS Impact Report</p> <p>-&gt; Virtual sharing spaces on sustainability for LOCs and NSAs</p> <p>-&gt; education projects as webinars,</p>
<p>SNOW FOR THE FUTURE, Norwegian project with FIS</p> <p><a href="https://www.sintef.no/en/projects/2019/snow-for-the-future-will-produce-artificial-snow-s/">https://www.sintef.no/en/projects/2019/snow-for-the-future-will-produce-artificial-snow-s/</a></p> <p><a href="https://xn--snkompetanse-wjb.no/wp-content/uploads/2022/12/Snow-for-the-Future-introduction_Ole-M-Moen.pdf">https://xn--snkompetanse-wjb.no/wp-content/uploads/2022/12/Snow-for-the-Future-introduction_Ole-M-Moen.pdf</a></p> <p><a href="https://xn--snkompetanse-wjb.no/seminarer-og-workshops/?lang=en">https://xn--snkompetanse-wjb.no/seminarer-og-workshops/?lang=en</a></p>	<p>Snowmaking with heat pumps</p> <p>Production of snow using heat from closest centres (e.g. geothermal energy).</p>
<p>La Molina - Spain's oldest ski resort</p> <p><a href="https://edition.cnn.com/2024/01/20/travel/artificial-snowmaking-technology-">https://edition.cnn.com/2024/01/20/travel/artificial-snowmaking-technology-</a></p>	<p>Snow Laboratory, and run by the Barcelona Institute of Materials Science (ICMAB-CSIC) and FGC Turisme, which manages public ski slopes, the project will make fake snow by adding a mineral to the water going into snow guns, the machines that pump out water and air at high pressure to create snow. It reduces water usage and energy. Pilot test is done on La Molina Ski Resort.</p>

<a href="https://climate-intl/index.html">climate-intl/index.html</a>	
<p>"Learn to ski" Program of the Ministry of Youth and Sports 2013- <a href="http://mpes.government.bg/Pages/Press/News/Default.aspx?evntid=2032">http://mpes.government.bg/Pages/Press/News/Default.aspx?evntid=2032</a></p>	<p>This program gives children the opportunity not only to ski, but to be in the mountains. The "Learn to Ski" program covers hundreds of children every year who take their first steps on the snow with the help of qualified coaches. The training of the students is carried out by professional ski instructors and so far over 40,000 children have been trained within the initiative, and in parallel they have been taught respect and love for the mountains and nature and their protection. Statistics show that over 60% of program participants continue to practice winter sports.</p>
<p>You And the Mount <a href="https://youandthemount.com/">https://youandthemount.com/</a></p>	<p>The project encourages young people to continue to seek sustainable tourism and sports and to understand that unreasonable behavior in the mountains sometimes leads to serious consequences. The initiative teaches basic skills that are essential for practicing tourism and sports in the mountains. Young people improve skills that will be useful not only in the mountains, but also in their everyday life. Through the activities of the project, the young people are taken out of their comfort zone, solve cases that they may encounter in the mountains, but these skills they could use in their lives going forward.</p>
<p>WINTER SPORT IS COMING <a href="https://www.wintersportcamp.eu/">https://www.wintersportcamp.eu/</a></p>	<p>"Winter Sport is Coming" project aims to promote winter sports not only as a physical activity, but also as an educational tool to support social inclusion, intercultural dialogue and European citizenship among young people from different backgrounds through the development and implementation of the "Winter Sports Program ". From a long-term perspective, the goal of the project is to increase the participation of young people in winter sports and to create a camp model that includes elements of non-formal education and in the future can be implemented by other sports organizations.</p>
<p>Serre Chevalier - the 'most sustainable ski resort' in Europe</p> <p>A mix of 3 renewable energy sources - solar, wind and hydraulic</p> <p><a href="https://chaletline.co.uk/blog/2024/03/how-serre-chevalier-has-become-the-most-sustainable-ski-resort-in-europe/">https://chaletline.co.uk/blog/2024/03/how-serre-chevalier-has-become-the-most-sustainable-ski-resort-in-europe/</a></p>	<p>Ski resorts have a key role to play in climate change mitigation and energy transition. Some ski areas have started to produce renewable energy. In the French Alps, the Serre Chevalier ski area has launched the "EnR by Serre Chevalier" programme, with the objective of achieving 30% self-consumption of renewable energy by 2023. Serre Chevalier has successfully engaged in climate change mitigation by developing ambitious energy installations in just a few years. The initiative takes advantage of existing buildings and structures, reducing the impact on the landscape and biodiversity. In addition, experimenting with new technologies such as wind power at high altitudes and hydro power on the artificial snow network, can advance new energy production techniques in the high mountains. For these reasons, the Serre Chevalier ski area has been awarded during the 2022 EUSALP Energy Award.</p>

<p>The ASCENT project</p> <p>Promoting responsible recreation in popular natural sites: the Trolltunga experience</p> <p><a href="https://www.ascent-project.eu/trolltunga-norway/">https://www.ascent-project.eu/trolltunga-norway/</a></p>	<p>The ASCENT project has sought to implement solutions that respect local traditions and practices. In Norway, access to natural sites is not regulated and the practice of outdoor sports is strongly encouraged. By limiting the impact of tourism without restricting access to natural sites, the measures taken at Trolltunga respect local cultural practices in accordance with the 1957 Norwegian Outdoor Recreation Act.</p>
<p>The SIMILE project</p> <p>promoted citizen science as a way to involve citizens in monitoring and raising awareness for better water management in mountain areas.</p> <p><a href="https://progetti.interreg-italiasvizzera.eu/it/b/78/sistemainformativoperilmonitoraggiointegratodeilaghiinsubriciedeiloroe">https://progetti.interreg-italiasvizzera.eu/it/b/78/sistemainformativoperilmonitoraggiointegratodeilaghiinsubriciedeiloroe</a></p>	<p>The SIMILE project not only used technology to improve the monitoring of Alpine lakes, but also involved citizens. By relying on citizen science, the project has found an innovative way to raise public awareness of water management issues, and has also promoted a more inclusive and innovative governance of natural resources.</p>
<p>Engadin Skimarathon, Switzerland</p> <p><a href="https://www.engadin.ch/en/naturally-sustainable/clean-events/">https://www.engadin.ch/en/naturally-sustainable/clean-events/</a></p>	<p>The Engadin Skimarathon, one of the largest cross-country ski races in the world, is committed to sustainability and environmental stewardship. The event organisers have implemented various sustainable practices, such as waste reduction and recycling programmes, renewable energy usage, and eco-friendly transportation options for participants and spectators.</p> <p>Additionally, the Engadin Skimarathon collaborates with local environmental organisations to minimize its ecological impact and preserve the pristine Alpine environment.</p> <p>Through these efforts, the event strives to set an example of responsible event management and promote sustainability in winter sports.</p>
<p>International Biathlon Union (IBU)</p>	<p>The International Biathlon Union (IBU) is setting a standard in sustainability by spearheading impactful climate initiatives within the sport sector. Here's an overview of their best</p>

<p> <a href="https://www.biathlonworld.com/news/ibu-climate-action-biathlon/3xYTk4NCktzjkLNCVb6map">https://www.biathlonworld.com/news/ibu-climate-action-biathlon/3xYTk4NCktzjkLNCVb6map</a> </p>	<p>practices:</p> <ol style="list-style-type: none"> <li>1. Climate Commitments: The IBU is dedicated to reducing the sport's climate impact by 50% in alignment with the Paris Agreement by 2030. As one of the first sports organizations to join the global UN Race to Zero, the IBU aims to achieve net zero emissions by 2040.</li> <li>2. Carbon Footprint Tracking: Since the 2021/2022 season, all IBU event hosts are required to track and report their CO2 emissions. This tracking tool encompasses emissions generated by both events and the IBU as an organization, allowing for comprehensive monitoring and reduction efforts.</li> <li>3. Integration of Climate Considerations: The IBU is integrating climate considerations into the review of formats and calendars of future seasons. Sustainability concepts will be developed for each event organizer applying to host in the 2026-2030 cycle, and third-party certification for event sustainability management will apply to World Championships from 2027 onwards.</li> <li>4. SIEPPUR Project: The IBU leads the SIEPPUR project, focusing on sustainable snow management in collaboration with leading institutions and national federations. The project aims to gather high-quality data, define best practices, and enhance the accessibility and resource efficiency of sustainable snow-making practices.</li> <li>5. Recognition and Partnerships: The IBU's extensive work in sustainability has been recognized internationally, including receiving the IOC Carbon Action Award in 2022. The IBU collaborates with various organizations, such as the Olympic Sports Alliance and the Green Approaches in Management for Enhancing Sports (GAMES) project, to promote sustainability and decarbonization strategies.</li> <li>6. National Federation Support: The IBU funds projects at the national level to develop sustainability strategies and action plans, emphasizing environmental and social sustainability.</li> <li>7. Full Fluor Ban: The IBU is implementing a full fluor ban to mitigate environmental concerns, with meticulous controls and consultations in place.</li> <li>8. Awareness and Communication: Partnering with Viessmann, the IBU promotes and celebrates sustainability initiatives through the Climate Club Trophy and the Biathlon Climate Challenge, engaging fans worldwide in climate action.</li> </ol>
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	<p>The IBU's holistic approach to sustainability, from carbon footprint reduction to stakeholder engagement, serves as a best practice model for sports organizations worldwide, showcasing their commitment to environmental stewardship and climate leadership.</p>
<p>The Federation of Excursionist Organizations of Catalonia</p> <p><a href="https://www.feec.cat/wp-content/uploads/2022/08/Decaleg-del-bon-esquiador-de-muntanya.pdf">https://www.feec.cat/wp-content/uploads/2022/08/Decaleg-del-bon-esquiador-de-muntanya.pdf</a></p> <p><a href="https://www.feec.cat/wp-content/uploads/2022/12/Decaleg-del-bon-raquetista.pdf">https://www.feec.cat/wp-content/uploads/2022/12/Decaleg-del-bon-raquetista.pdf</a></p>	<ul style="list-style-type: none"> <li>- Information campaigns how to behave in mountains</li> <li>- Information distribution to tourists online and mobile</li> <li>- Preparation of tips book for mountain visitors with all necessary instructions</li> </ul>
<p>IBU Sustainability Seminar Oberhof 2023</p>	<p>Background of the Seminar</p> <p>As a snow sport, biathlon is directly impacted by climate change. In response, it has adopted an ambitious sustainability strategy 2020-2030 with ambitious climate commitments such as reducing its footprint by 50% against 2019 baseline by 2030 while becoming climate neutral by 2030 and net zero in 2040.</p> <p>From the long term perspective, the energy crisis is both a blessing and a curse. The energy cost increases and high inflation rates are impacting everyone in the Biathlon family. Meanwhile, the current situation provides an opportunity to review consumption patterns and practices to save energy (fuel, power, etc) and costs across the board. Through careful analysis and targeted efforts many biathlon stakeholders have found opportunities to gain efficiencies and reduce energy consumption by up to 20%.</p> <p>To respond to the much greater crisis, the climate crisis, these energy efficiency measures need to become the new norm of doing business in the future. Rule exceptions need to become permanent. Importantly, these energy saving practices need to be accompanied by a series of “decarbonisation measures”. These will ideally include projects that help the biathlon family transition away from fossil fuels to renewable energy in all areas of operations, substituting carbon-intensive with low-carbon transport fuels,</p>



	<p>finding ways to electrify, LED-ify, and implement new types of energy storage and temporary power solutions, such as batteries.</p>
<p>Munich Municipality Winters in the city</p> <p><a href="https://www.munich.travel/en/topics/sports-leisure/winter-sports-in-the-city-center">https://www.munich.travel/en/topics/sports-leisure/winter-sports-in-the-city-center</a></p>	<p>Guides and recommendation how to practice winter sports in the city and around:</p> <p>Winter sports in the city accessible for citizens:</p> <ul style="list-style-type: none"> <li>- Cross-country skiing</li> <li>- Sledging</li> <li>- Curling</li> <li>- Ice skating</li> </ul>
<p>International Ski Mountaineering Federation ISMF</p> <p><a href="https://www.ismf-ski.org/webpages/sustainability-commission/rules-documents/">https://www.ismf-ski.org/webpages/sustainability-commission/rules-documents/</a></p>	<p>Recommendation to create in each winter sport international federation a body responsible for sustainability action in chosen disciplines and event management.</p> <p>The Sustainability Commission (“Commission”) is a working commission established by the ISMF Council (“Council”) to coordinate the sustainability efforts, within the appointed members.</p> <p>The vision of the Sustainability Commission is to value sustainability in all aspects of the ski mountaineering by providing healthy and decent sports and working environments for all and by leading the transformation towards a circular and sustainable sport.</p> <p>The mission of the Sustainability Commission is to be dedicated to developing a sustainable environment which fosters and inspires towards protection of the environment when organizing and promoting ISMF activities, and empowering individuals to become responsible for contributing to a sustainable future.</p> <p>These regulations shall apply to all activities, events, and operations organized or sanctioned by the ISMF.</p>
<p>Ski Resort in Switzerland, Engelberg</p> <p><a href="https://www.myswitzerland.com/es/planificacion/sobre-suiza/sostenibilidad/actividad">https://www.myswitzerland.com/es/planificacion/sobre-suiza/sostenibilidad/actividad</a></p>	<p>In Engelberg, all mountain transport runs on 100 % hydropower therefore it is almost CO2-neutral.</p>

es/sustainable-activities-in-winter/11-estaciones-de-esqui-de-suiza-que-apuestan-por-la-sostenibilidad/	
Ski Resort Baqueira – Beret  <a href="https://www.baqueira.es/en/environmental-sustainability-and-management">https://www.baqueira.es/en/environmental-sustainability-and-management</a>	<p>In recent years, Baqueira Beret has been committed to improving the Resort's capacity to innovate, by prioritising snow production and reducing energy consumption. The actions taken in this area have led to a 33% reduction in energy consumption.</p> <p>All the cannons are controlled from the Resort's machinery rooms, which in recent years have also had several elements upgraded, such as frequency converters and pipes, resulting in 20% less consumption compared to the original components.</p> <p>The 2022-2023 season, electric vehicle charging points have been installed in the Orri and Telecabina car parks, in accordance with Royal Decree-Law 29/2021 of 21 December, on the adoption of urgent measures in the field of energy to promote electric mobility, self-consumption and the deployment of renewable energies.</p> <p>Some other recommendations and information campaign for clients implemented:</p> <ul style="list-style-type: none"> <li>-Use litter garbage cans to keep the mountain clean. If you do not find any trash around you, keep the garbage in your pocket or backpack and throw it later in its corresponding container.</li> <li>-Respect the flora and do not disturb the animals.</li> <li>-If you are a smoker, keep the cigarette butt in a plastic bag and throw it in its corresponding garbage can. Not only can it pollute the forest, but it is also creating a real fire risk.</li> <li>-Plastic bottles or bags have a great environmental impact if left in nature and should therefore be avoided.</li> <li>-Responsible consumption of water, energy and materials.</li> <li>-Travel by public transport to get to know the area, thus reducing the amount of CO2 emissions caused by the trip.</li> </ul>

Blizzard Company <a href="https://www.blizzard-tecnica.com/global/en/recycle-your-boots">https://www.blizzard-tecnica.com/global/en/recycle-your-boots</a>	Recycle Your Boots initiative was born from the consciousness that our society globally is producing an enormous quantity of waste and that plastic has become a big problem.
Sustainable Ski Resorts examples <a href="https://mindfulescapes.com/journal/experiences/worlds-most-sustainable-ski-resorts/">https://mindfulescapes.com/journal/experiences/worlds-most-sustainable-ski-resorts/</a>	<p>1 Parks City Mountain Resort</p> <p>Park City, collects 95% of food scraps and organic materials, sending them to a digester to produce bio-based fertilizer. The resort was recognized in the EpicPromise sustainability report for recycling 400 chair lift pads.</p> <p>2 Ruka and Pyhä</p> <p>The first Finnish ski resorts to sign the European Union's energy-efficiency agreement, Ruka and Pyhä set the bar among sustainable ski resorts in Europe. Their eco-friendly efforts include energy-efficient ski lifts, monitoring of snowmaking and heating, and the construction of snow fences to reduce reliance on artificial snow. Ruka also uses environmentally friendly hydroelectric power, while Pyhä has made headlines for becoming the first carbon-neutral ski resort in Finland. For skiers who want to support sustainably minded ski areas, these two under-the-radar resorts are a great place to start.</p>
Milano Cortina 2026 <a href="https://milanocortina2026.olympics.com/s3fs-public/documents/2024-06/Sustainability%20Impact%20and%20Legacy%20Report%202023.pdf?VersionId=ofY5jM3wfyWCGJTsZ0yrwBHDQacPIImRo">https://milanocortina2026.olympics.com/s3fs-public/documents/2024-06/Sustainability%20Impact%20and%20Legacy%20Report%202023.pdf?VersionId=ofY5jM3wfyWCGJTsZ0yrwBHDQacPIImRo</a>	<p>The Milano Cortina 2026 strategy assume some measures and sustainability reporting standards that must be disclosed in order to monitor the event impact.</p> <p>Fondazione is developing specific KPIs to measure the impact of the Milano Cortina 2026 Games. The support of technology will allow to develop a specific digital platform to gather and elaborate social and environmental data.</p> <p>To date, the KPIs have been identified as outcome KPIs up to 2026 and 2030 to measure long-term legacy aspects and as process KPIs related to the actions in the Sustainability and Legacy Implementation Plan to monitor the progress of the actions chosen to achieve the targets.</p> <p>The IOC has decided to use the newly-published guides</p>

	<p>from the Organisation for Economic Co-operation and Development (OECD) as the reference to track, measure, and evaluate the long-term effects of the Olympic and Paralympic Games. The aim is to create a consistent approach for all future Olympic Games, by adopting a reliable framework, endorsed by third parties, to evaluate the impacts for host communities and regions.</p>
<p>Ski wax Asnes</p> <p><a href="https://www.en.asnes.com/prодукт/coll-tex-skin-ski-wax-fellevoks/">https://www.en.asnes.com/prодукт/coll-tex-skin-ski-wax-fellevoks/</a></p>	<p>Most of ski wax is made with petroleum, Åsnes is making 100% PFC free and biodegradable proofer for climbing skins and skis</p>
<p>#BeKULT initiative by Allgäu Triathlon</p> <p><a href="https://www.allgaeu-triathlon.de/bekult/">https://www.allgaeu-triathlon.de/bekult/</a></p>	<p>Waste Reduction and Recycling</p> <p>The #BeKULT initiative by Allgäu Triathlon included pre-ordered jerseys, eliminating change bags, offering regional and vegan catering, and using reusable cups at catering points. This solution is possible to adapt in winter sports events as well.</p>
<p>Narvik 2029 FIS Alpine World Ski Championship</p> <p><a href="https://planetski.eu/2024/06/05/narvik-in-norway-awarded-2029-ski-world-championships/">https://planetski.eu/2024/06/05/narvik-in-norway-awarded-2029-ski-world-championships/</a></p>	<p>Narvik 2029 plans to host a low-emission FIS Alpine World Ski Championship by utilizing renewable energy, promoting electric transport, implementing sustainable infrastructure, and focusing on waste reduction and biodiversity protection, while striving for carbon neutrality through offsets and community engagement.</p>
<p>The Zamboni Ice Recycling System.</p> <p><a href="https://iihfstorage.blob.core.windows.net/iihf-media/iihfmvc/media/downloads/sustainability/9182_iihf_poster_70x100_190902_south-africa-2019.pdf">https://iihfstorage.blob.core.windows.net/iihf-media/iihfmvc/media/downloads/sustainability/9182_iihf_poster_70x100_190902_south-africa-2019.pdf</a></p>	<p>Water-saving practices at Ice Hockey Rinks and Venues</p> <p>The Zamboni Ice Recycling System. This allows ice sloughed off to be stored in a snow pit, allowing the natural melting of ice to be re-used for the ice rink. This process saves water and reduces the energy used to warm the water.</p> <p>Dehumidification and Air-conditioning</p> <p>The South African arena improved its refrigeration system, keeping the ice hard without extra power and saving over 1.25 million kilowatts annually. Heat recovery and dehumidification keep the air dry and bleachers warm. Energy-efficient air conditioning meets Montreal Protocol standards and reduces energy use.</p> <p>Removing the need to have printable programmes. Integrate the programmes on your website, design an App and provide WLAN at the arena (see on page 20 how IIHF created an App for the 2015 U18 Ice Hockey World Championship)</p>

<p>NHL Green Game Day</p> <p><a href="https://dr.library.brocku.ca/bitstream/handle/10464/14957/Brock_Kelly_Nolan_2020.pdf?sequence=1&amp;isAllowed=y">https://dr.library.brocku.ca/bitstream/handle/10464/14957/Brock_Kelly_Nolan_2020.pdf?sequence=1&amp;isAllowed=y</a></p>	<p>Encouraging the distribution of used items for donation.</p> <p>On NHL Green Game Day, the Leafs hosted a used hockey equipment drive at the Air Canada Centre, donating the items to the MLSE Foundation's Hockey in the Neighborhood Program, which recycled the gear to support local communities.</p>
<p>Rain-to-Rink Initiative by The Seattle Kraken of the NHL</p> <p><a href="https://www.athensjournals.gr/sports/2023-5334-AJSPO-Weese-03.pdf">https://www.athensjournals.gr/sports/2023-5334-AJSPO-Weese-03.pdf</a></p>	<p>The Seattle Kraken, who joined the NHL in 2021, implemented several sustainability programs at their home, Climate Pledge Arena, including the innovative "rain to rink" method that uses recycled rainwater to create ice. This involves over 500,000 litres of rainwater used to layer the rink.</p>
<p>Sustainability Report FIS Nordic World Ski Championship Oberstdorf 2021</p> <p><a href="https://www.researchgate.net/publication/349762206_Sustainability_Report_FIS_Nordic_World_Ski_Championship_Oberstdorf_2021">https://www.researchgate.net/publication/349762206_Sustainability_Report_FIS_Nordic_World_Ski_Championship_Oberstdorf_2021</a></p>	<p>Good practice of a transparency reporting</p> <p>The sustainability strategy was developed in such a way that it maps out clearly defined actions, backed up by appropriate indicators while allocating measures in a transparent manner. For this purpose, a monitoring process was set up, in order to check the implementation of the measures against their effectiveness.</p> <p>The Sustainability Report for the World Championships is to instruct the participants and the public about the status of the implementation. Furthermore, a conclusive overall assessment of the World Championships is to take place.</p> <ul style="list-style-type: none"> <li>- The legal regulations for nature and environmental protection have been complied with to 100%.</li> <li>- Open and binding communication with the involvement of all stakeholder groups has been established.</li> <li>- Use of existing facilities and trails (&gt; 80%).</li> <li>- No new developments in the nature conservation area "Allgäuer Hochalpen".</li> <li>- Issues regarding nature and agriculture and the dimensions of sustainable construction have been considered.</li> <li>- 100% regenerative energy for the World Championships and operation of the sporting sites in Oberstdorf from 2021 onwards.</li> <li>- Follow-up use of the sports facilities secured.</li> <li>- Environmentally friendly execution of the World Championships ensured in all sectors.</li> </ul>

<p>Carbon-Reducing Events</p> <p>University of New Brunswick  <a href="https://www.unb.ca/initiatives/assets/documents/sustainability-green-event-guide.pdf">https://www.unb.ca/initiatives/assets/documents/sustainability-green-event-guide.pdf</a> </p>	<p>Green event guide</p> <p>Main recommendations:</p> <ul style="list-style-type: none"> <li>- Requesting organic, locally produced food and beverages to cut transportation emissions. If this is not possible, try to serve Fair Trade products;</li> <li>- Considering vegetarian options if a meal is being offered.</li> <li>- Reducing waste produced by eliminating any disposable items such as cups, plates, containers, etc. Avoid plastic water bottles and cans as well.</li> <li>- Using online ticket options, such as Eventbrite, or e-mail ticket confirmation if tickets are being sold for the event. Also, try to avoid printing by using electronic promotion of the event. If posters are required, try printing on recycled paper.</li> <li>- Encourage carpooling or provide shuttles to the event to reduce transportation emissions.</li> <li>- Reduce energy use by minimizing light, water, and heating/air conditioning used.</li> <li>- If there are prizes, consider items that promote sustainability, such as coffee thermoses, mugs, or reusable bags.</li> <li>- Use goods or services that result in minimal environmental impact.</li> </ul>
<p>Restore and Regenerate Nature</p> <p>The International Union for Conservation of Nature</p> <p>Part of FIS policy</p> <p><a href="https://www.fis-ski.com/inside-fis/fis-future/sustainability">https://www.fis-ski.com/inside-fis/fis-future/sustainability</a></p>	<p>The IUCN (The International Union for Conservation of Nature) - Sports for Nature Framework, launched in December 2022, was created to tap into sport's enormous potential to drive positive change. The Framework aims to deliver transformative, nature-positive action across sports by 2030 and beyond, enabling sports to champion nature and contribute to its protection and restoration. FIS signed the framework in September 2023, which commits the federation to report annual progress on the Framework's four principles:</p> <ol style="list-style-type: none"> <li>1. Protect nature and avoid damage to natural habitats and species</li> <li>2. Restore and regenerate nature wherever possible</li> <li>3. Understand and reduce risks to nature in your supply chains</li> <li>4. Educate and inspire positive action for nature across and beyond sport.</li> </ol>
<p>Zero Emission Rides Objectives</p> <p>World Snowboard Federation</p> <p><a href="https://www.worldsnowboardfederation.org/news/initiative/education-sport-zero/">https://www.worldsnowboardfederation.org/news/initiative/education-sport-zero/</a></p>	<p>The good practices are distributed in five categories: digitalisation, mountain, equipment &amp; facilities, transportation &amp; education.</p> <p>Objectives: innovative practices of grassroots snowboarding in order to increase accessibility and participation of youth people in sport activities while empowering them in the fight against climate change. Educational pathways for youth people to become net zero riders, workshop and training to</p>



	<p>empower youth riders and their families to take action against climate change. Opportunity analysis to assess.</p> <ul style="list-style-type: none"> <li>○ Winter sports wiki : educational platform (Webpage on which we discuss and explain a number of subjects that are related to winter sports and have a connection with the environment, to raise awareness. E.g. what animals will you find in the mountains, what is snow farming, what is a glacier.)</li> <li>○ Digitalization: bridging gaps from governance to youth</li> <li>○ Waxing your board : Eco friendly waxing</li> <li>○ Reducing the gear : Circular economy (It was common to get new clothes every year for the new season. Since 2021 we are not automatically giving our staff and athletes new clothes for the upcoming season, but we really ask them, what they need for the next season. And we already saved 30% of our jackets with this action.)</li> </ul>
<p>Ski Slope Planting Restoration study</p> <p><a href="https://link.springer.com/article/10.1007/s00267-011-9797-y">https://link.springer.com/article/10.1007/s00267-011-9797-y</a></p>	<p>Commercial nonnative erosion-control mixes are often used for revegetation of managed lands, where ongoing disturbance or specific requirements for low-stature vegetation apply (such as ski slopes). However, native species can and should be used in these situations, to restore ecosystem functions and services provided by these lands. Choosing native plant species for such applications calls for identifying appropriate reference communities. Where low stature disturbance-tolerant vegetation is desirable, intermediate successional communities found in similar disturbed environments represent the most appropriate references. This study describes a rational, science-based approach to selecting plant species for restoration of managed lands, and develops suitable native planting palettes for actively operating ski slopes in the northern Sierra Nevada. The presented baseline palette contains habitat generalists most likely to succeed in ski slope restoration throughout the region, while an extended species list allows for site-specific additions and adjustments. The species identified in this study may also be appropriate for use in restoration of other managed lands in this region. Furthermore, the methods described in this study can be used to select appropriate seral species for restoration of managed lands (including ski slopes) in other regions of the world.</p>

Source: based on own elaboration



Considering above classification of best sustainable practices, a successful event can be seen as such only if organised in compliance with the precepts of sustainable politics. In fact, the main words to create a sustainable sporting event are: self-sufficiency, prevention, eco-responsibility, proximity and shared responsibility. It is necessary to remember and, above all, to put them into practice.

## Summary

To sum up solutions that support sustainability in winter sports we can group them in chosen categories:

### Air pollution

- Measurement and control tools
- Reduce transportation carbon footprint:
  - o Cosharing transport initiative
  - o Event price reduction if transportation by train
  - o Organising collective transport system
  - o EV charging points during event
  - o Organising series of events in a way to reduce quantity of travels or distance
  - o Cooperation with local public transportation
  - o Using drones instead of helicopters for filming
  - o Local suppliers for all event requirements in order to reduce transportation effect

### Social aspects and governance

- Educational initiatives
  - o Promoting safer practice of sports and mountain behaviour
  - o Organising workshops and seminars not only during events but in the meantime as well.
- Volunteers engagement
- Raising awareness among athletes, NSA's and the broader winter sports community
- Cooperation with local research centres looking for best sustainable solutions
- Promoting winter sport activity achievable for local community
- Youth programmes to learn how to ski or skate
- Promoting responsible recreation in popular natural sites
- Regulations in sport associations, federations about sustainability policies implementations
- Sustainability reporting standard implementation should help to be more reliable and transparent

### Compensation and offsetting

- % of turnover reinvesting in sustainable initiative (mind the reliability and transparency in this projects)
- Offsetting with external reliable partners recommended and double checked with NSA.

### Energy

- New technologies such as wind power at high altitudes and hydro power on the artificial snow network, can advance new energy production techniques in the high mountains.
- Geothermal centres

### **Snow and Ice management**

- Producing snow with lower usage of water adding special minerals
- Artificial snow production in higher temperatures
- Storage of snow methods
- Reusable of water from produced ice for Ice rinks
- Snowmaking with heat pumps
- Production of snow using heat from closest centres (e.g. geothermal energy).

### **Equipment and infrastructure**

- Sports wear circulation – renting spots of sports apparel instead purchasing equipment for such a short season

### **Nature and environment protection**

- Adjusted events schedule to protect nature, species behaviours in chosen regions in cooperation with local environmental officers or research centre
- Operating time of winter sport center adjusted to environmental conditions
- Monitoring of Alpine lakes

### **Waste management**

- Water management and water recycling
- Waste recycling and plastic limitation with reusable items
- Food management
- Local suppliers of food
- Donating used equipment and items to local sports community associations

It is important to mention that changes in policy at international level is needed. International Sport Associations should implement their own policies and rules in order to keep all events under their umbrella more sustainable. Therefore we should expect and demand changes that go from the top as international regulations and policies but also grassroots initiative that starts from the bottom because they are already tested and ready to follow.