



Sustainability report

**FIS Nordic World
Ski Championships 2025**
26th February – 9th March 2025



The most sustainable World Ski Championships of all time?

The most sustainable World Ski Championships of all time? Those of us who love cold winters can see that the climate is changing. More extreme weather threatens the sport of skiing. For example, a **50km race** in the World Championships could never be carried out today without artificial snow.

Therefore, we wanted to use the attention a World Championship generates to show the world, the sports community, and other organizers that it is possible to host major championships in a more responsible way. We wanted to demonstrate practical measures and reach out with a message of action.

On the road to the World Championships, we were committed to involving as many people as possible and creating an arena for learning. Although there were no large conferences, we held several gatherings characterized by learning and sharing experiences. In this work, we have tried to **leave no stone unturned**, both to do more ourselves, but also to make it easier for those who follow in our footsteps.

After the World Championships, we spent time reviewing the numbers. This was the first World Championship in Nordic disciplines with a dedicated Sustainability Manager, and the work was anchored in a dedicated **Sustainability Strategy**. The strategy was based on the UN's Sustainable Development Goals, and we prioritized **six specific goals** where we believed the World Ski Championships could have the greatest positive impact.

To translate the strategy into action, we defined **12 lighthouse projects** – concrete initiatives in areas where we could make the most impact. These projects were the driving force behind our sustainability work and exemplified our approach:





One of our goals was to achieve a financial profit. Unfortunately, we did not succeed in reaching this target. A crucial aspect of sustainability is nonetheless positive value creation. Even though the organizing committee did not achieve a surplus, the impact analysis conducted by Sponsor Insight shows that the event generated a total economic impact of **622.2 MNOK** for the Trondheim region. This confirms that the championship delivered significant value to the community, despite the lack of direct profitability for the organizer.

During the championship, we highlighted our commitment through the '10 Days of Sustainability' concept, addressing a new theme each day. To make this report accessible and recognizable, we have structured it according to these same thematic days. We will take you through our initiatives day by day, before finally presenting the complete climate accounting figures at the very end of the report—providing full transparency on our actual environmental footprint."

Throughout the planning phase, we have collaborated closely with the next organizer, Falun 2027, to ensure exactly this kind of experience sharing.

Ola Rønning
Head of Sustainability
Ski-VM Trondheim 2025



Equality

For the first time in history, there were equal prize money and equal distances for both women and men in a World Championship in Nordic disciplines. Trondheim 2025 aimed to facilitate equal opportunities and contribute to a more inclusive and equitable future for the sport of skiing.

Together with the project [Like Muligheter](#) (Equal Opportunities), Thon Hotels, and Coop, Ski-VM 2025 secured equal prize money for all future World Championships in Nordic disciplines.

- **Equal Prize Money** Trondheim 2025 offered equal prize money to women and men. For the first time in history, prize money was equal across all disciplines in a World Championship in Nordic disciplines. This was made possible in collaboration with the *Like Muligheter* project.
- **Expanded Program for Women's Nordic Combined** Two additional events were organized for women's Nordic Combined, making this the first championship with two individual World Championship events for women. The Mixed Team competition, introduced in Planica, was continued, and an extra event was added. For the first time since women's Nordic Combined was included in the World Championships, the women competed three times.
- **Awareness Campaign for Clean Sport** Trondheim 2025 supported the awareness campaign "[ÆRLIG TALT](#)" ("Honestly Speaking"). Together with Therese Johaug, Trond Nystad, and Max Hauke, the organizers worked to prevent doping, build positive attitudes, and challenge the community to take concrete action to protect clean and healthy sports in the lead-up to the World Championships in Trondheim.
- **Equal Distances** There were equal distances for women and men in Cross-Country skiing. Both women and men concluded the World Championships by skiing the **50km race**.
- **Relocation of Ski Jumping Event** The Mixed Team Ski Jumping competition was moved to the **Large Hill**. Consequently, for the first time, women had two World Championship events on the Large Hill. The total number of events on the program remained the same as before, but the men had only one event on the **Normal Hill**.
- **First Fluorine-Free World Championship** Trondheim 2025 conducted the first fluorine-free World Championship in Nordic disciplines. The International Ski and Snowboard Federation (FIS) introduced a total ban on fluorine products starting from the 2023/24 ski season because these products pose a risk to both health and the environment. The implementation was a significant step towards a more sustainable sport and an important HSE (Health, Safety, and Environment) measure for **wax technicians**.
- **FIS Development Training Camp** As the World Championship organizer, Trondheim 2025 committed to sharing knowledge through the FIS Development Training Camp in Granåsen. Over 30 athletes and coaches from various parts of the world participated in the gathering to strengthen



recruitment to the sport. Through interaction, knowledge sharing, and the joy of skiing, the dream of participating in a World Championship was created for these athletes on the World Championship courses.

Next Generation

Trondheim 2025 had a clear focus on engaging and inspiring the next generation. We facilitated activities that created the joy of sports, promoted sustainable development, and emphasized values that would characterize the future of sports. The power lays in the next generation that would drive the sport of skiing forward.



- **The Children's World Championship ("Barnas VM")** Trondheim 2025 took extra responsibility for arranging a championship for the future. Children were highly involved in the process. Among other things, they drew the logo and named the mascot. Over 6,500 children's drawings served as the inspiration behind the design of the Championship mascot, **Snedi**.
- **The Children's Mini-World Championship** The Children's Mini-World Championship was organized with a focus on play and the joy of skiing. This was a **travelling ski tour** that helped create good skiing experiences in local communities and served as an arena for building event expertise. A total of 140 Children's Mini-World Championship events were arranged across the country in the lead-up to the World Championship.
- **Empowering Youth with MOT** Together with our community partner **MOT**, "The Dream Day" (*Drømmedagen*) was arranged in Granåsen on February 28th. The collaboration with MOT aimed to strengthen the work of developing robust and inclusive youth. It was an important partnership between two actors sharing common values related to mastery and community.
- **Experts in Teamwork (EiT)** On the road to the World Ski Championships, students from **NTNU**, Norwegian University of Science and Technology, specifically from the course **Experts in Teamwork**, were engaged to work interdisciplinarily on relevant issues. The students contributed solutions within transport, social sustainability, climate accounting, and weather technology.

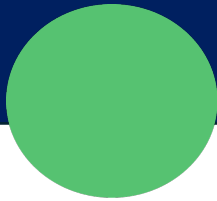


- **World Championship Week ("VM-Uka")** An activity week was facilitated for thousands of children in kindergarten, primary school, and lower secondary school. The World Ski Championships and sustainability were put on the schedule through activities and culture related to the history of the World Championships in Nordic disciplines.



The logo is inspired by over 6,500 drawings from children and young people who participated in the drawing competition for Trondheim 2025. A people's festival (*folkefest*), diversity, inclusion, and the joy of skiing are important themes in the logo and the visual identity of Trondheim 2025.

The World Championship mascot, **Snedi**, also represents key values for the championship. Snedi is a combination of a snowman and a bird, with colorful feathers symbolizing the UN's Sustainable Development Goals. This fits well with the ambition of Trondheim 2025 to be the most sustainable World Championship in Nordic disciplines ever. **Nadia from Frøya** designed the drawing that contributed to the development of our beloved mascot.



Nadia





Local

The World Ski Championships in Trondheim had a clear ambition to engage the entire Trøndelag region, from Bindal in the north to Rindal in the south. This local commitment was evident in food, culture, and business.

A core element was the focus on local food from Trøndelag, served in Granåsen and at the Medal Plaza in collaboration with [Oj! Trøndersk Mat og Drikke](#). The region was also heavily involved through arts and culture, where 1,000 local performers from seven regions participated, creating a vibrant public festival.

Furthermore, the championship engaged the local business community through the sponsorship network **SPOR**, which brought together over 200 companies to promote sustainable value creation.

- **Local Food Production in Focus** As Norway's leading food region, Trøndelag delivered an impressive culinary offering throughout the championship. The concepts and menus were based on **The Trøndelag Food Manifesto** (*Trøndersk Matmanifest*), with regional ingredients and local production at the forefront.
- Throughout the World Championships, visitors to Granåsen and the Medal Plaza could enjoy **locally sourced** and sustainable food, contributing to local value creation and celebrating Trøndelag's food traditions. All food vendors had at least one plant-based option on the menu.
- **The Entire Region at the World Championships** The entire Trøndelag region was involved in the World Championships. Each competition day, a specific region was invited to Granåsen and the Medal Plaza. In total, 1,000 local cultural actors from seven regions presented cultural performances in Granåsen and at the Medal Plaza throughout the championship.
- **A Memorable Festival** The public was invited to 12 championship days with a spectacular, diverse, and versatile cultural program in Trondheim and Trøndelag. A cultural program was facilitated that embraced the World Ski Championships' own events as well as activities organized by other cultural actors and institutions, both professionals and volunteers.
- **"Culture Date" with the Business Community** Value creation in culture and business in Trondheim was facilitated. A **"Culture Date with the Business Community"** was arranged, where creative and performing artists met with event companies, real estate firms, and trade and tourism actors.
- **Local Artists** In collaboration with **Kjøpmannsgata Ung Kunst (K.U.K.)**, six local artists created the prizes for all the medal winners.



The Business Network SPOR was created to unite the Trøndelag business community and ensure sustainable procurement. Over 200 companies became members. The goal was to create an arena helping the business community gather strength and make a difference for the region.

- An inside experience of the Championship through network meetups and gatherings.
- Simple ways for companies to join the journey with activities, as well as a ticket guarantee.
- A dedicated digital marketplace to post offers and utilize offers from other network members.
- **Spor-Camp** in Granåsen during the championship – an informal and natural meeting place.



Inclusion

Ski-VM 2025 (Trondheim 2025) had a stated ambition to be a championship for EVERYONE. The World Championship took a clear role as a social entrepreneur, with a vision of creating an inclusive arena and meeting places that demonstrated the power of a major championship.

For us, the championship was about much more than gold medals and cheering crowds; it was a valuable opportunity to show how sports could highlight important social actors, give new chances to those who had been left out, and gather the entire region for a celebration where everyone felt welcome and valued.



We established a strong collaboration with **NAV** (The Norwegian Labour and Welfare Administration), who visited the organization weekly to identify opportunities, participate in meetings with partners, and create arenas for work training and inclusion.

- **Introduction of Community Partners** Trondheim 2025 was the first World Championship in Nordic disciplines to include a dedicated "Community Partner" level. The community partners **MOT**, **Livsglede for Eldre** (Joy of Life for the Elderly), **Kreftforeningen** (The Norwegian Cancer Society), and **Bufetat** (The Norwegian Directorate for Children, Youth and Family Affairs) used the power of the World Ski Championships to achieve their goals and reach a broad audience.
- **Collaboration with Hogst AS** The public areas along the trails were cleared of forest in collaboration with **Hogst AS** and **Bymarkveteranene**. Hogst AS, which employs former convicts, gave people an opportunity to enter the job market through this work.
- **Focus on Foster Care** The organizers wanted to increase awareness and knowledge about foster homes. Together with our community partner **Bufetat**, Trondheim 2025 highlighted the need for good and safe upbringing conditions during the championship.
- **Cancer Prevention Awareness** Efforts were made to promote the importance of physical activity in preventing serious illness. Together with our community partner, **The Norwegian Cancer Society**, the World Ski Championships served as an arena where the public was met with information about the Cancer Society's work.
- **A Work-Inclusive Arena** In the planning and implementation of the World Championships, there was excellent collaboration with NAV, and between 5-7 people participated in work training within the World Championship organization (LOC) over a prolonged period.
- **Sports Creates Chances** In collaboration with the organization **Idretten Skaper Sjanser** ("Sports Creates Chances"), people with substance abuse challenges were given an opportunity to participate in both the planning and implementation of the World Championship.
- **Work Training for Youth** Together with NAV and **Jobbhuset**, work training was facilitated for young people outside the workforce. On a weekly basis, dozens of young people were given responsibility for preparation work in Granåsen and took part in a community on the road to and during the World Championship.

Circularity

For a single event like the World Ski Championships, thinking circularly is crucial to reducing environmental impact. This is about how Trondheim 2025 prioritized



reuse and sustainability at all levels, with a particular focus on circular resource use in close collaboration with our partners.

A prime example of this is the furnishing of the "**Royal Cabin**" (*Kongehytta*), which was done almost exclusively using furniture delivered to the recycling station. We also aimed to create a world-class waste solution for our arenas. Our figures show that we reduced the amount of waste by over 40% compared to the last World Ski Championships held in Norway.

Collaboration is essential to keeping our promises. Together with environmentally conscious partners, we prioritized environmentally friendly packaging and ensured reuse, source separation, and composting.

- **Single-Use Packaging** During the World Ski Championships, we served thousands of meals. Choosing the right packaging was critical. Together with **Retura TRV**, **NorEngros**, and **Stora Enso**, packaging was selected based on production methods and research to ensure maximum recyclability. This specific packaging had to be used by all vendors.
- **The Plastic Cleanup Campaign ("Plastdugnad")** In collaboration with the **Norwegian Retailers' Environment Fund** (*Handelens Miljøfond*), 600 children and young people from local sports clubs helped clear the forest areas around the arena after the World Championship. For every participant, the sports club received NOK 500 to support local children and youth sports.
- **The Royal Cabin ("Kongehytta") 2025** There are strong traditions regarding the "Royal Cabin" during major championships. During the World Ski Championships in Trondheim, two rooms in the ski jumping and cross-country arena buildings were converted into a royal lounge. These rooms were furnished by **BruKOM** and were almost exclusively fitted with furniture that the people of Trondheim had delivered to the recycling station at Heggstadmoen.
- **Food Rescue and MATHilde** Don't throw away food! Edible food was given away, while food that became waste was fed into the composting machine **MATHilde**. MATHilde reduced food waste to soil improvement products within 24 hours, processing 2,619 kg of food waste.
- **World-Class Waste Solution** We required full control of waste in the arenas. It was made simple for the public to deliver and sort their waste correctly. Together with **Trondheim Municipality**, waste was put on the agenda, and the World Ski Championships served as a test arena for waste solutions for future major events.
- **Sustainable Textiles and Arena Branding** The championship utilized a large volume of textiles for branding on fences and grandstands. We strived for circularity by storing reusable materials in Granåsen and donating textiles to reuse projects. However, a significant amount unfortunately ended up as waste. This is a key learning point, and reducing textile waste is an area that requires focused effort in future events.
- **Plastic-Smart Championship** Together with **Trøndelag County Council**, the use of plastic in sports and major events was put on the agenda. There are still significant opportunities in sports to reduce plastic consumption.



Trondheim 2025 worked systematically to eliminate the use of single-use plastics, replacing them with other materials or reusable products.

- **Responsible Consumption and Production** Strict requirements were set for suppliers, and a purchasing checklist was developed for our own organization. This ensured responsible consumption and helped avoid unnecessary production. The goal was to demonstrate that a World Championship could be conducted with a focus on reuse and repurposing.
- **Granåsen: An Everyday Facility** The World Championships in Nordic disciplines were hosted in a new activity park. **Granåsen Sports Park** is a major facility for year-round daily use for Trondheim's population of all ages, adapted for elite sports, recreational users, and para-sports.

75 tonnes of total waste: This is a full 20 tonnes LESS than our target, and an incredible 50 tonnes less than during the World Championships in Holmenkollen in 2011!

50% sorting rate: Far above our expectation of 40%! This means that as much as 37.5 tonnes of waste have been recycled.

MAThilde delivered: Our faithful compost machine "MAThilde" converted almost 3 tonnes of food waste into 700 kg of nutrient-rich compost.

Post-sorting: An additional 1.6 tonnes of residual waste was post-sorted to maximize recycling.

Cleaning up the forest: A massive 6 tonnes of waste was cleared from the forest and the areas around Søreim after March 8th.

Deposit Champions: An incredible 19,822 bottles and cans were manually picked out from residual waste and sent to Infinitum. Every single one counts!

Hazardous waste management: 100 kg of hazardous waste, including ski wax, gas canisters, and batteries, was handled safely





Diversity

Trondheim 2025 placed a clear focus on diversity and inclusion, with a desire to create a more accessible and equitable sport for everyone.

A historic moment was the inclusion of **Para Cross-Country Skiing** in the official World Championship program for the first time. This marked an important recognition of para-athletes' contributions to the sport and emphasized how diverse abilities and life experiences can inspire increased activity and strengthen the community.

In line with this, equal prize money was also introduced for para-athletes, a milestone that brings para-sport a significant step closer to equality.

Trondheim 2025 also became the first sport event in Norway to receive **The Accessibility Label** (*Tilgjengelighetsmerket*), a testament to our systematic efforts to include everyone in the World Championships. To further emphasize the importance of accessibility, a guide for accessibility at major winter events was developed, supported by the **Stiftelsen Dam**.

During the event itself, both **live captioning** and **sign language interpretation** were offered at several events, alongside specialized transport arrangements to ensure that everyone with specific needs could participate and enjoy the World Championship experience.

- **Para Cross-Country Skiing – A Historic First** For the first time in a World Championship in Nordic disciplines, Para Cross-Country Skiing was included in the official program.
- **Prize Money for Para-Athletes** We worked to ensure decent prize money for para-athletes at the World Ski Championships in Trondheim. All gold medalists received NOK 60,000, silver medalists NOK 40,000, and bronze medalists NOK 25,000. Importantly, this prize money also applied to the **guides** accompanying visually impaired athletes. This milestone took para-sport a significant step closer to a more equal sport.
- **The Accessibility Label (*Tilgjengelighetsmerket*)** The event was the first sports event in Norway to be awarded the Accessibility Label. This certification confirmed that the event was adapted for people with disabilities and that Trondheim 2025 had worked systematically to include everyone.
- **Guide for Accessibility at Winter Events** With support from Stiftelsen Dam, a comprehensive guide for accessibility at major winter events was created.
- **Live Captioning:** Live captioning via mobile phone was offered in Granåsen and at the Medal Plaza.
- **Sign Language Interpretation:** Sign language interpretation was provided in both Granåsen and at the Medal Plaza for several World Championship events.



Goals for an Accessible and Inclusive Event

- Everyone should feel welcome in the arenas, regardless of functional ability.
- Everyone (in the LOC and volunteers) must take responsibility for facilitation and accessibility within their areas.
- People with cognitive impairments must also experience genuine facilitation and inclusion.
- Volunteering should be open to all, regardless of functional ability.
- Facilitation should utilize new technology and innovative solutions.

Key Achievements

- Qualified for the **Accessibility Label** as the first sports event and the first outdoor winter event (previously only awarded to cultural centers/festivals).
- Trained 450 volunteers in accessibility and dementia awareness, and provided an e-learning course for 2,400 volunteers.
- **Tangible inclusion:** Almost 300 transport orders for accessibility needs, nearly 300 tickets sold for wheelchair accessible seating (*HC-plass*), 39 captioning and sign language assignments, daily food accommodations for allergies/intolerances, and volunteers with both hidden and visible disabilities.
- Cultural performers with cognitive and complex disabilities on stage.

Pioneering Work for the Future

- Winter-specific accessibility facilitation.
- Invited and included all five major groups of disabilities.
- Unified Culture and Sports.
- Live captioning on mobile devices.
- Involvement of interest organizations and competence environments in the planning phase.
- Created a "Best Practice" guide which will serve as a foundational handbook for accessibility.

Green Mobility

Transport is typically the largest source of emissions associated with major events. The World Ski Championships aimed to help reduce the event's climate footprint through conscious transport choices.

This involved close collaboration with partners operating buses, cars, trains, and trams to develop and offer transport solutions that were sustainable, simple, attractive, and efficient. We successfully encouraged a large proportion of the public to use public transport, with hundreds of thousands of journeys made by bus to and from Granåsen.

Public Transport Success 204,000 people travelled on the "Granåsen 2025" route. For the World Championship shuttle specifically, we invested in a mix of fuel technologies, with 28% electric buses and 36% biogas buses. This resulted in a significant proportion of the total 180,402 kilometers driven by shuttle buses being fossil-free.

Despite these positive results, experience underlines that transport remains a major emission source. It highlights the importance of reducing the total need for transport and increasing the share of zero-emission vehicles in future events.



- **No Public Parking in Granåsen** To reduce CO₂ emissions from private cars, no public parking was offered in Granåsen. Each full bus replaced 40 cars, meaning the bus journey emitted 75% less CO₂ per person compared to a diesel car. This measure saved the environment from emissions equivalent to around 7,500 cars in a continuous 30 km long traffic jam.
- **308,000 bus passengers to Granåsen** 204,000 people took the public shuttle "Granåsen 2025", and 104,000 people took reinforced scheduled buses to areas around Granåsen.
- **Facilitating Cycling and Skiing** We facilitated bicycle and ski parking, as Trondheim 2025 wanted the audience to be able to arrive at the arena by walking, cycling, or skiing. Dedicated ski and bicycle parking zones were therefore established within walking distance of the arena.
- **Electric Transport Fleet** A fleet of 76 electric cars from our partner **Nardo Bil** was used during the World Championships. These electric vehicles transported accredited guests, goods, and services, helping to halve greenhouse gas emissions compared to if fossil-fuel cars had been used for the same tasks. The total driving distance for these cars was 166,440 km.
- **The World Championship Tram** In collaboration with **Boreal**, we facilitated the use of the tram to and from the World Championship arenas. This was a popular and emission-free transport option for many spectators.
- **Electric Buses for Accredited Transport** Electric buses were used to transport athletes, journalists, and officials on designated routes between the airport, hotels, and the World Championship stadium in Granåsen, further reducing local emissions. The buses were charged at **Aneo's** charging stations at Nyhavna.





Act, Belong, Commit

AktiVM was the public health project for Trondheim 2025. The initiative aimed to engage and include the population in the run-up to the World Championships in Granåsen through physical and social activity.



AktiVM utilized the "**Act-Belong-Commit**" (**ABC**) framework as its scientific basis for good mental health. The project identified UN Sustainability Goal 3 (Good Health and Well-being) as a priority area.

The project was divided into three categories:

1. **Flagship Activities:** Our largest concepts, which facilitated participation for as many people as possible.
2. **WSC Campaigns:** Activities targeted at specific audiences and geographies.
3. **Low-Threshold Activities:** Simple activities that people could do alone or together with others to improve public health, without performance requirements.



- **WSC Trails (VM-løyper)** 50 "World Championship Trails" were opened throughout the region as low-threshold hiking destinations offering great nature experiences. A marked trail was established in every municipality in Trøndelag, and 10,000 check-ins were registered on these trails.
- **Activity Cards for Children** A deck of cards featuring 25 physical and social activities, adapted for children to perform in groups, was developed and distributed to 40 kindergartens across the country.
- **Children's Mini-World Championship** A travelling cross-country ski series focusing on play and the joy of skiing engaged over 40,000 children.
- **Early Birds** Since May 2017, people across Norway were activated on the first Friday of every month with 30 minutes of joint morning exercise. The final "Early Birds" session was held at the **Medal Plaza** in Trondheim on March 7th at 06:30. The event took place at 45 locations in and outside Trøndelag.
- **Activity Days for Youth** Four activity days were arranged for lower secondary school students, focusing on teambuilding as well as physical and social activity.
- **Activity with Meaning** This was a collaborative project with our community partner **Livsglede for eldre** ("Joy of Life for the Elderly"). The goal was to promote physical and social activity across generations. An online portal provided inspiration and tips for activities that could be carried out before, during, and after the championship.



WSC Knitting (VM-strikk) WSC Knitting was primarily a digital knitting community in the form of a Facebook group with **11,000 members**. The goal was to gather people with a passion for knitting to share ideas, inspiration, and patterns. Recurring themes included "The Official World Championship Sweater," the "Litjåsen" sweater, and "The Athlete's Mitten".

Together with **Coop**, knitting cafés and "knitting cinemas" were arranged. A heartwarming highlight was the collection of home-knitted mittens in the WSC pattern, which were given to all participating athletes.



Footprint

For a major event like the World Ski Championships, significant greenhouse gas emissions are inevitable. Trondheim 2025 took this seriously and worked actively and purposefully to reduce the event's total climate footprint.

This was a team effort involving the entire organization. Everyone contributed, from reducing unnecessary snowmobile use and prioritizing emission-free bus transport, to finding more environmentally friendly solutions for heating tents.

Hosting trial events on the road to 2025 was a crucial part of this work, providing valuable insights into potential emissions and identifying areas for reduction.

- **Handing Over the Baton** For the first time, a World Championship in Nordic disciplines will hand over a climate account to the next organizer. Trondheim 2025 contributed to the development of the measurement tool **Green Producers Tool**, which measured the championship's direct and indirect CO₂ emissions.
- The goal was to hand over these climate accounts, complete with concrete actions and experiences, to the next organizer, **Falun 2027**. This allows them and future organizers to improve their efforts in minimizing climate footprints.



- **Heating of Tents** Wood pellets were used to heat public tents in Granåsen instead of diesel generators. To achieve the same heating effect with diesel, approximately **340,000 liters of diesel** would have been required.
- **Backup Power** Batteries were utilized as backup power instead of diesel generators to secure the TV broadcast for viewers at home.
- **Eco-Lighthouse Certified** The event was **Eco-Lighthouse** (*Miljøfyrtårn*) certified. This certification confirmed the event's systematic work with climate and the environment and was an important step towards becoming a sustainable World Championship.
- **Snow for the Future** We participated in the steering group of the research project "**Snow for the Future**". The project, focusing on the development of efficient and environmentally friendly snow production in urban landscapes, was vital for the **continued existence of the sport**. Insights from "Snow for the Future" were used to develop the 2025 World Ski Championships' snow plan to ensure a snow guarantee.
- **10,000 Tree Seedlings** Together with our partner **Stora Enso**, 10,000 tree seedlings were distributed during the World Ski Championships. Planting trees is a proactive climate measure that creates well-being while binding significant amounts of CO₂ over their lifetime.

Spectator Transport: Methodology and Carbon Footprint Analysis

Background and collaboration

- The analysis of audience emissions (Scope 3) was conducted in collaboration with the Norwegian University of Science and Technology (NTNU) through the interdisciplinary course Experts in Team (EiT). The objective was to develop a robust methodology for estimating the indirect emissions associated with spectator travel to and from the championship—a significant component of the total event footprint that is often difficult to quantify.

Methodology and data foundation

To ensure accurate estimates, the project group developed a hybrid model that combines qualitative field data with large-scale ticket sales data:

- **Data Foundation:** Physical interviews were conducted to map actual travel habits and transport mode preferences. These findings were cross-referenced with Ticketmaster data covering approximately 230,000 tickets.
- **Modeling:** Using an *Inverse Distance Weighting* (IDW) model and geolocation, travel patterns were extrapolated to the full audience. The model calculates the probable mode of transport for each individual ticket buyer based on the distance from their registered home address to Trondheim6.
- **Calculation:** Emission factors from the *Green Producers Tool* were applied to convert the calculated travel distances into CO₂ equivalents.

Results and Key Findings

- The model estimates the total carbon footprint from audience travel to be 8,347 tonnes of CO₂ equivalents8.
- **Average Emission:** Each round trip generates an average of **42.9 kg CO₂e**9.
- **Transport Modes:** Private cars (44.9%) and buses (24.7%) were the most common modes of transport, while air travel accounted for 23.6% of the journeys.



Heroes

The power of the World Ski Championships lays in the people, in the incredible spirit of **dugnad** (volunteering) and the enormous engagement that drove the entire event.

Trondheim 2025 was completely dependent on volunteers, and the response from people wishing to contribute was enormous. Thousands of volunteers showed up with impressive dedication, and their contribution was invaluable to creating a successful championship. Their engagement was not just about making the event run, but also about building community and creating a positive experience for everyone.



- **The Spirit of Dugnad** We could never have carried out the World Ski Championships without **2,400 fantastic volunteers**. Volunteering provided the opportunity to mobilize towards a common goal, build knowledge and awareness around sustainable choices in society to "save the winter," and highlight social sustainability.
- **Competence Development for Volunteers** An e-learning course was developed to contribute to competence development. The course involved training in climate and social issues, making the volunteers ambassadors for a sustainable event, confident in HSE (Health, Safety, and Environment) and their role as hosts.
- **Young Leaders Program** A **Young Leaders Program** was developed for young adults aged 18-26. Several gatherings were held on the road to the World Championships, focusing on leadership, sustainability, event management, and technology. The goal was to develop the next generation of leaders.
- **Volunteer Hours** The volunteers worked a total of approximately **398,000 volunteer hours**. This corresponds to **204 FTE**.
- **Nationalities** Volunteers from over **ten nationalities** were part of the volunteer staff. Volunteers from several continents contributed to knowledge sharing, and the sport forged ties across borders.
- **Gender Balance** Gender balance was actively pursued among volunteers and in the World Championship organization. In the organizing committee (LOC), the distribution was **50/50**, and among the 2,400 volunteers, there were **48% women** and **52% men**.
- **Age Groups** Having a wide range of age groups in the volunteer staff was important to ensure an inclusive community. The youngest volunteer was **18 years old**, while the oldest was **86 years old**.



Part 2:

Climate Accounts: World Ski Championships Trondheim 2025

Trondheim 2025 had a clear ambition to be a pioneering championship in sustainability. As part of this effort, we prepared a comprehensive climate account to map and report our greenhouse gas emissions.

The main purpose of this document is to create transparency around the event's climate footprint, share our experiences, and establish a valuable benchmark that can set a new standard for future major sporting events.

Note: This climate account was prepared by the organizer of the 2025 World Ski Championships. It is important to emphasize that this is a practical report based on recognized methods and tools, rather than an academic scientific study. We have worked to the best of our ability to create as honest and transparent an account as possible. However, in an extensive and complex data collection process, some data may be incomplete.

Method and Tools To ensure a systematic and standardized approach, the entire climate account was prepared using the **FIS CO₂ Calculator**. This is a climate tool developed by the **Green Producers Club**, specifically adapted for skiing and snowboarding events.

The calculator is based on the internationally recognized **Greenhouse Gas (GHG) Protocol**, the most widely used standard for measuring and reporting greenhouse gas emissions. This framework ensures that our calculations are comparable and accountable. As an organizer, we served as a pilot for FIS in using this tool, providing a unique opportunity to contribute to the development of a common standard for the entire ski family.

Delimitation and Scope The report covers greenhouse gas emissions over which the World Ski Championships Trondheim 2025, as the local organizer (LOC), had direct control and ownership.

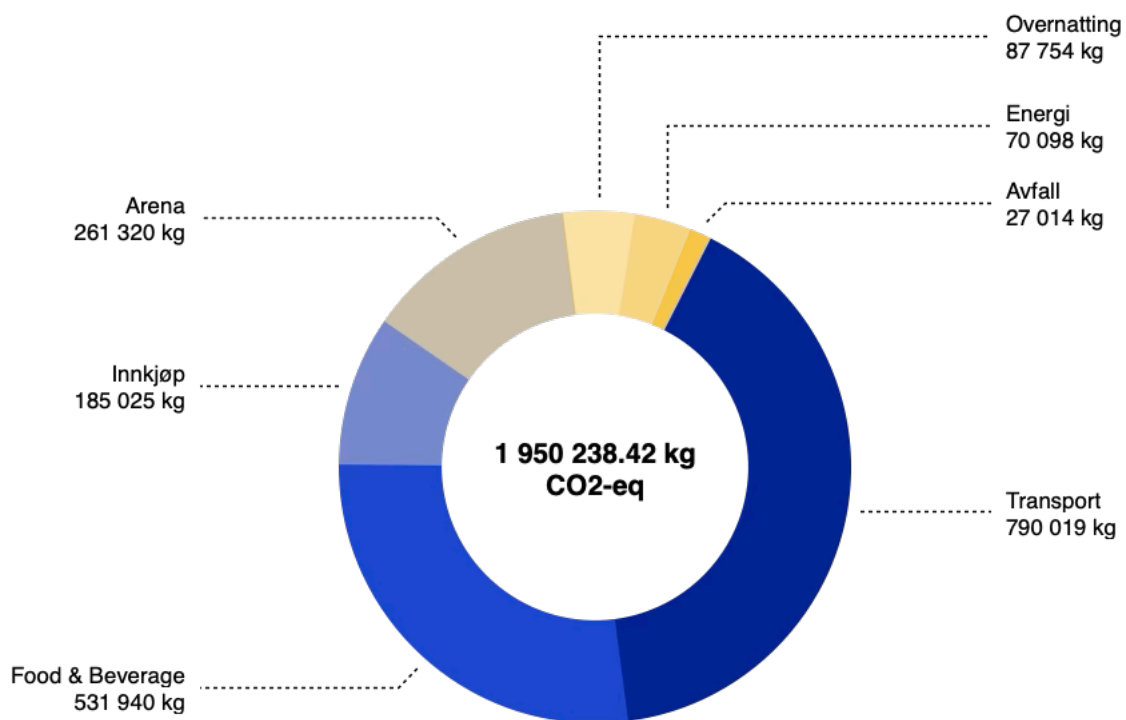
The delimitation follows guidelines from the International Ski and Snowboard Federation (FIS), defining the division of responsibilities between the LOC, FIS, national ski federations, and other actors. This is done to avoid double reporting. For instance, international flights for athletes and support staff are not included in these accounts, as this responsibility lies with the national federations.

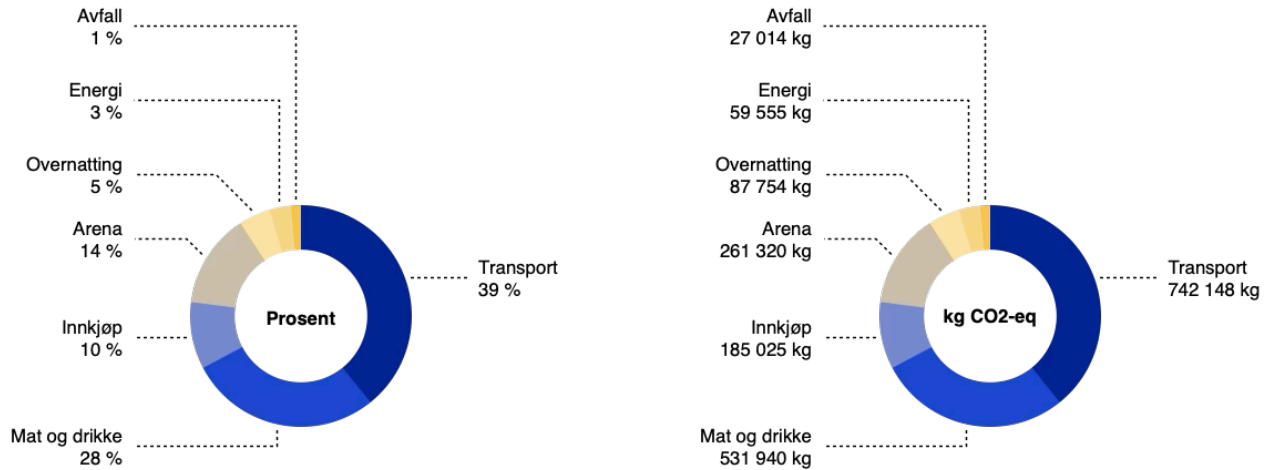
Our accounts cover all relevant emissions within **Scope 1** (direct emissions), **Scope 2** (indirect emissions from purchased energy), and **Scope 3** (other indirect emissions in our value chain). This includes key areas such as:



- **Transport:** Local transport of the public, accredited personnel, goods, and equipment.
- **Energy:** Power consumption and heating of fixed and temporary installations.
- **Food and Beverage:** All catering at the arenas and under the auspices of the World Championships.
- **Procurement:** Goods and services, ranging from clothing and equipment to marketing and production materials.
- **Arena and Temporary Infrastructure:** Temporary structures such as grandstands, tents, and stages.
- **Waste:** Handling of all waste generated by the event.

Through this report, we present our findings, analyze the most important emission sources, and share experiences from the measures implemented to reduce the event's climate footprint.





Food and beverage

| Category | Total emissions (kg CO2e) | Percentage | Quantity (approx.) |
|--|---------------------------|--------------|--------------------|
| 1. Meat-based meals | 227,243.38 kg | 42.59 % | 69,738 portions |
| 2. Buffets (hotel, guest catering) | 122,923.90 kg | 23.03 % | 72,999 portions |
| 3. Beverages | 98,127.10 kg | 18.39 % | 122,300 liters |
| 4. Miscellaneous (hot dogs, pizza, sandwiches) | 33,913.67 kg | 6.35 % | 47,443 portions |
| 5. Ingredients and snacks | 33,490.48 kg | 6.28 % | 7,760 kg |
| 6. Meat-free meals | 6,025.79 kg | 1.13 % | 7,690 portions |
| 7. Cutlery, crockery, etc. | 2,950.02 kg | 0.55 % | 173,500 units |
| TOTAL | 533,674.34 kg | 100 % | - |

Note: The number of units is estimated based on available data.

The figures for food and beverage clearly indicate where the largest emissions lie, confirming that menu choices significantly impact the total climate footprint.

- **Meat-based meals**, particularly those containing **red meat (26.4%)**, represent by far the most emission-intensive category.
- **Beef** alone accounted for over **21%** of the total food emissions.
- This underscores that reducing the serving of red meat is the most effective single measure for cutting emissions in this category.

Overall, the various buffets (breakfast, lunch, dinner) account for nearly a quarter of the the food and beverage emissions. This is due to both the large volume of



food served and the fact that buffets often contain a mix of different food items, including meat.

Although nearly **11,500 meat-free meals** were served (approx. 5.4% of the total), these accounted for just over **1%** of the total food emissions. This illustrates the significant positive climate impact of choosing plant-based dishes over meat. The findings point to a substantial potential for emission reduction by increasing the proportion of meat-free options on the menu at future events.

Transport

Transport emissions by category

| Category | Total emissions (kg CO ₂ e) | Percentage | Distance driven (km) |
|--|--|--------------|----------------------|
| 1. Truck transport (Goods) | 430,531.12 kg | 54.46 % | 194,296.48 km |
| 2. Work machines (Arena operations)* | 130,814.91 kg | 16.55 % | 2,086.82 km |
| 3. Bus transport (Passenger) | 110,094.10 kg | 13.93 % | 231,044.77 km |
| 4. Passenger cars (Passenger) | 53,695.58 kg | 6.79 % | 327,510.02 km |
| 5. Air transport (Passenger) | 23,250.85 kg | 2.94 % | 108,706.19 km |
| 6. Vans and small trucks | 21,973.75 kg | 2.78 % | 62,036.96 km |
| 7. Other transport (Ship, Train, etc.) | 19,988.24 kg | 2.53 % | 39,854.82 km |
| TOTAL | 790,348.55 kg | 100 % | 965,536.06 km |

*Work machines include tractors and snow groomers. Kilometers are only registered for tractors, as snow groomers were measured in liters of fuel. The actual distance for this category is therefore higher.

Transport emissions by energy source

| Energy Source | Total emissions (kg CO ₂ e) | Percentage | Distance driven (km) |
|---------------------------------------|--|--------------|----------------------|
| 1. Fossil Fuel (Diesel, Petrol, etc.) | 739,837.45 kg | 93.61 % | 410,224.28 km |
| 2. HVO100 (Renewable Diesel)* | 17,897.26 kg | 2.26 % | 33,652.84 km |
| 3. Biogas | 16,311.46 kg | 2.06 % | 58,434.70 km |
| 4. Electricity | 16,302.38 kg | 2.06 % | 354,518.05 km |
| TOTAL | 790,348.55 kg | 100 % | 856,829.87 km |



The by far largest emission source was **truck transport**, which alone accounted for **54.5%** of the total transport emissions. Additionally, work machines such as tractors and **snow groomers** contributed **16.6%**.

Significant effect of electrification and alternative fuels: A key finding is the positive effect of using renewable energy sources. Over **41%** of the total distance for road transport was covered by electric vehicles. Although passenger transport by car and bus covered the longest distances, their emissions were relatively low thanks to a high share of electric vehicles and the use of biogas. This demonstrates that the commitment to zero- and low-emission solutions for passenger transport was a highly successful measure.

Energy

| Category | Total Emissions (kg CO ₂ e) | Percentage | Energy Consumption (kWh) |
|------------------------------------|--|--------------|--------------------------|
| 1. Generators (HVO100) | 26,488.94 kg | 44.48 % | 160,145.0 kWh |
| 2. Grid Electricity | 18,124.26 kg | 30.43 % | 529,186.0 kWh |
| 3. Heating with Biomass (Pellets) | 13,122.29 kg | 22.03 % | 1,133,430.0 kWh |
| 4. District Heating | 1,429.68 kg | 2.40 % | 20,424.0 kWh |
| 5. Fossil Fuel (Diesel & Propane)* | 246.37 kg | 0.41 % | N/A |
| 6. Office Operations | 141.79 kg | 0.24 % | N/A |
| TOTAL | 59,553.33 kg | 100 % | 1,843,185.0 kWh |

**Fossil fuel was measured in liters (60 L diesel for leaf blowers and 30 L propane).*

The total CO₂ emissions from energy use during the World Ski Championships amounted to **59,555.31 kg CO₂ equivalents**. Our figures show that the largest emissions came from temporary solutions, but also that conscious, sustainable choices yielded huge climate benefits.

- The largest single source of emissions was **generators running on HVO100 (44.5%)**, used to secure power supply for temporary structures.
- The second largest item was **electricity from the grid (30.4%)**, which was used to power fixed installations in Granåsen and at the Medal Plaza.
- The most significant finding is the massive emission saving from the decision to use **pellets and HVO100** for heating tents, instead of traditional diesel. This measure alone reduced emissions from tent heating by a staggering **97%**, a saving of over **1.26 million kg CO₂ equivalents**. This corresponds to an avoided consumption of nearly **350,000 liters of diesel** and was one of the most important and successful sustainability measures during the entire event.



Procurement

| Category | Total Emissions (kg CO ₂ e) | Percentage |
|---|--|--------------|
| 1. Clothing and textiles | 100,293.30 kg | 52.67 % |
| 2. Electronics and production materials | 49,675.54 kg | 26.09 % |
| 3. Prizes and merchandise | 20,523.61 kg | 10.78 % |
| 4. Consumables and equipment | 8,990.74 kg | 4.72 % |
| 5. Other | 930.28 kg | 0.49 % |
| TOTAL | 190,413.47 kg | 100 % |

Clothing and textiles, both small items (hats, gloves, etc.) and large garments (jackets, trousers), collectively accounted for **52.7%** of the total emissions from procurement. Within this category, material choice was most significant; clothes made from **synthetic fibers** accounted for the clear majority of emissions. This underscores the importance of choosing materials with a lower climate footprint, such as wool or recycled fibers.

Purchases of **PCs, office equipment, bibs, and fence/banner fabric** were the second largest emission source, with **26.1%** of the total. This shows that both the production of electronics and consumables in large volumes have a significant climate impact. A conscious strategy of renting or borrowing equipment rather than buying new has been an important measure to limit these emissions.

Arena, Snow Production, Stage, and Equipment

The CO₂ emissions from the broad category of arena, snow production, stage, and equipment were **261,319.06 kg CO₂ equivalents**.

- The by far largest single item was **scaffolding and grandstands**, accounting for **26.6%** of the total emissions in this category. This is due to the large quantities of materials required to build temporary spectator facilities and stage constructions.
- Necessary infrastructure such as **fences, barricades, and cable bridges** collectively accounted for **22.6%** of the emissions.
- Additionally, various materials such as wood, metal, and plastic accounted for **21.5%**. Within wood, **chipboard** contributed the most, but these will be reused.
- **Snow production**, an essential part of a winter World Championship, accounted for **6.6%** of the emissions in this category. This is a relatively low figure, indicating that the production of snow itself is not the most emission-intensive part of arena operations.



| Category | Total Emissions (kg CO ₂ e) | Percentage |
|--|--|--------------|
| 1. Scaffolding and grandstands | 69,586.83 kg | 26.63 % |
| 2. Infrastructure (fences, barricades, cables) | 58,992.15 kg | 22.58 % |
| 3. Material use (wood, metal, plastic) | 56,172.17 kg | 21.50 % |
| 4. Technical equipment (LED, sound, light) | 18,429.91 kg | 7.05 % |
| 5. Snow production | 17,330.06 kg | 6.63 % |
| 6. Containers and cabins | 16,981.30 kg | 6.50 % |
| 7. Other (machines, kitchen, etc.) | 15,155.50 kg | 5.80 % |
| 8. Tents and furniture | 5,957.02 kg | 2.28 % |
| 9. Arena operations | 2,714.12 kg | 1.04 % |
| TOTAL | 261,319.06 kg | 100 % |

Key Learnings

A central part of the sustainability work was identifying the largest emission sources and implementing targeted measures. The experiences from Ski-VM 2025 provide several concrete lessons for future events.

- **Energy for Heating** The decision to replace traditional diesel generators with pellets and HVO100 for heating tents was the single most effective measure. This resulted in a **97% reduction in emissions** for tent heating, saving over **1.26 million kg CO₂ equivalents** and avoiding the consumption of nearly **350,000 liters of diesel**. Future organizers should prioritize fossil-free solutions for temporary heating.
- **Transport** Even with significant efforts in sustainable transport, this remains a major emission source. Over **41% (346,823 km)** of road transport was carried out by electric vehicles. However, the analysis shows a potential for further cuts of **500,000 – 700,000 kg CO₂e** if all remaining fossil road transport had been replaced with zero- or low-emission alternatives. The recommendation is to minimize the transport need and maximize the share of zero-emission vehicles.
- **Procurement and Material Use** A circular approach is crucial. By systematically borrowing, renting, or leasing equipment rather than buying new, the need for new production is reduced. Reuse of items such as office chairs and building materials significantly minimizes indirect emissions.
- **Waste Reduction** Through a focus on waste minimization at all levels and close cooperation with suppliers, the total amount of waste was reduced by around **50 tonnes** compared to the World Ski Championships in Holmenkollen in 2011. A robust infrastructure for waste sorting is also essential.