

# CLIMATE FRIENDLY HEATING SOLUTIONS: INNOVATIVE BIOMASS SYSTEMS FOR TEMPORARY INFRASTRUCTURES IN GERMANY



## ABSTRACT

Germany's National Federation introduced biomass heating systems for temporary event infrastructures at the Biathlon World Cups in Oberhof and Ruhpolding, replacing fossil fuel-powered aggregates. The customised systems, which included heat recovery in Ruhpolding, reduced greenhouse gas emissions significantly and cut energy costs by 30%. Regionally sourced wood pellets further supported the local circular economy. Challenges included ensuring stable heating under cold conditions and system adaptation to temporary venues. This initiative showcases how biathlon events can pioneer practical climate-friendly solutions within their direct sphere of influence.

## WHAT WAS THE GOAL?

Temperature management of temporary infrastructure is a known source of fossil fuel consumption at major sporting events. Traditionally, hospitality tents, kitchen,

and staff areas were heated using diesel-powered aggregates, which cause greenhouse gas emissions, particle emissions, noise, and require regular refuelling.

The goal of this initiative was to replace fossil fuel-based heating with renewable biomass-based alternatives in temporary event infrastructures at the Biathlon World Cups in Oberhof and Ruhpolding. The specific objectives were:

- To significantly reduce CO<sub>2</sub> and other emissions from heating.
- To demonstrate practical solutions within the direct sphere of influence of Organising Committees (OCs), setting a visible example of climate-friendly transformation in winter sports.
- To improve energy efficiency through customised system design and integration of heat recovery where possible.

## HOW WAS THE GOAL ACHIEVED?

For the Oberhof World Cup, wood pellet heating systems were installed for the temporary tent infrastructures used for hospitality and kitchen purposes. These systems fully replaced the previously used diesel aggregates. On average, 1,200 litres of diesel per competition day were saved, avoiding both the direct combustion emissions and the indirect emissions from upstream production and transport. According to the Suter Group, this change resulted in an emission reduction of approximately 17 tonnes of CO<sub>2</sub>.

For the Ruhpolding World Cup, a more customised and innovative biomass heating solution was developed for hospitality, kitchen, and staff areas. The system integrated heat recovery technology, which reduced overall energy demand. In addition to cutting emissions, this resulted in a 30% reduction in energy costs. According to data from supplier Hargassner (SHK Journal), the system achieved a CO<sub>2</sub> reduction of 210 tonnes.

All pellets were sourced regionally, either as by-products of the timber industry or from damaged timber stocks, supporting the local circular economy.

## WHICH IBU SUSTAINABILITY ISSUES DOES IT ADDRESS?

This initiative directly addresses the following IBU sustainability issues (IBU Sustainability Strategy 2020–2030):

- **Emissions from energy use for heating, cooling and power:** By replacing diesel aggregates with biomass systems, direct and indirect CO<sub>2</sub> emissions were reduced significantly.
- **Unsustainable sourcing practices:** The use of regionally sourced wood pellets avoided reliance on fossil fuels and supported local forestry industries.
- **Waste production:** By utilising by-products of the timber industry and damaged timber, the initiative contributed to resource efficiency.



## WHAT WERE THE CHALLENGES FACED?

One of the main challenges was to identify suitable providers and technical systems that could meet the specific requirements of a winter sport event. The adaptation of biomass heating to temporary tent infrastructures demanded customised solutions and close cooperation with suppliers.

Ensuring compatibility with existing suppliers and sponsors also required careful negotiation, particularly where similar products or services were already being provided.

At Oberhof, additional difficulties arose in maintaining consistent heating levels. The system responded with a time lag, making it harder to regulate temperatures in the hospitality tents. Very cold outside conditions further tested the system, and a malfunction in one of the heating elements temporarily reduced heating capacity. Moreover, uneven heat distribution led to warmer roof layers and cooler floor areas, highlighting the need for improved air circulation or alternative hose layouts. Some heating hoses also passed through kitchen zones, where less heating was required, leading to inefficiencies.

## WHAT ARE THE NEXT STEPS?

The German NF sees significant potential for other Organising Committees to adopt alternative heating approaches for temporary infrastructures, depending on local availability. Pellet or wood chip systems are especially viable in regions where forestry by-products are abundant and can be sourced sustainably.

Building on the experiences in Oberhof and Ruhpolding, the next step is to evaluate whether similar biomass-based solutions can be expanded to other biathlon venues in Germany. This would further reduce reliance on fossil fuels and strengthen the visibility of climate-friendly energy practices within the sport.

Building on the success in Oberhof and Ruhpolding, biomass heating was also introduced at the World Cup in Schonach, where it was used across several tents, including those for VIPs, press, teams, and fans. Other German venues have also expressed interest in adopting similar systems for future events.

**Germany has shown how innovative biomass heating systems can replace fossil fuel aggregates, cut emissions, and demonstrate practical climate-friendly solutions for temporary event infrastructures.**

For further information on the sustainability work of the IBU, please visit:

<https://www.biathlonworld.com/inside-ibu/sustainability>