



## **Sustainability and Clean Energy at the PyeongChang 2018 Winter Olympics**

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Since 2006, the International Olympics Committee (IOC) has focused on implementing clean and sustainable energy practices while creating an infrastructure for the Olympics. In July 2015, the PyeongChang Organising Committee for the 2018 Olympic and Paralympic Winter Games (POCOG) released their 2018 Sustainability Framework to share their vision on a clean and sustainable Winter Olympic games. This was followed by a Sustainability Interim Report released in February of 2017 to detail the progress since the initial Sustainability Framework. In December 2017, POCOG released another report: the Sustainability Pre-Games Report. This report details POCOG's efforts and achievements that have been made towards the sustainability of the PyeongChang 2018 Winter Games as laid out in their initial 2015 Sustainability Framework report. POCOG hopes to go beyond their "zero emissions" goal using greenhouse gas reduction strategies focused in five areas: establishing green transport infrastructure, self-sufficient renewable energy, sustainable construction, minimization of carbon emissions, and green procurement. The following article is a summary of the efforts and achievements that POCOG has made as laid out in the Sustainability Interim Report and Sustainability Pre-Games Report.

It is estimated that as many as 1,753,000 domestic and international travelers will visit the Venue Cities from every region in Korea. Thus, POCOG has deemed it necessary to focus on developing environmentally friendly transportation strategies, including managing greenhouse gas emissions from vehicles. POCOG hopes to address this first area of focus through the construction of express railroads that will connect venues and associated facilities in the region, and the establishment of transfer centers and IT-based green transportation systems including train stations and terminals. One of the

strategies to help POCOG achieve its green transport infrastructure goal is the construction of the Wonju-Gangneung Express Railroad. The express railroad in Korea is a high-speed rail system that significantly reduces travel time. Where it would have previously taken approximately 5.5 hours to travel from Seoul to Gangneung, the express railroad would reduce that travel time to just over 1 hour. Because this high-speed rail emits less greenhouse gasses by a factor of 8, every 420,000 visitors that use the express rail would amount to a reduction of 6,654 metric tons of greenhouse gas compared to traditionally fueled transportation methods. Additionally, POCOG hopes to deploy clean energy technologies for transportation such as electric vehicles, hybrid vehicles, and natural gas vehicles to be used by staff members, athletes, and spectators for transportation between venues.

POCOG hopes to supply the energy needs of the 2018 Winter Games using clean, renewable energy generation in the form of wind, solar and geothermal generation sources. In order to reduce greenhouse gasses, POCOG has installed renewable energy in new venues to lower the consumption of fossil fuels. Solar and geothermal energy generators were installed in the Gangneung Ice Arena, Kwangdong Hockey Centre, Alpensia Sliding Centre, and Jeongseon Alpine Centre. Furthermore, while the expected required capacity during the 2018 Winter Games is 190 megawatts, the host city PyeongChang can supply 145-megawatts of wind energy from an already existing turbine generator. To account for the difference between the existing and expected capacity, 32-megawatt wind power complexes were constructed. The total electric capacity that can be delivered by the existing and new wind projects will account for 93% of the expected electricity needs.

Another area of focus for the sustainability of the 2018 Winter Games is the sustainable and environmentally friendly design of the venues and other facilities. These building designs are in compliance with international standards, and these designs allow for a reduction in energy costs and greenhouse gas emissions through the use of high energy efficiency and passive design. POCOG has obtained green building certificates for many of their new building designs. The Alpensia Sliding Centre and Alpine Centres are eco-friendly snow and sliding facilities that have obtained the preliminary certification of Top rating in G-SEED and 1+ rating in energy efficiency. The four new ice rink designs were completed in 2014, and they obtained the preliminary certification of excellence level in G-SEED.

A fourth focus for the POCOG in developing sustainable energy practices for the 2018 Winter Games was the reduction and offsetting of greenhouse gas emissions. POCOG aims to be able to produce zero greenhouse gas emissions from the preparations prior to the Olympic Games up until the Opening Ceremony. One facet of this effort is the creation of the Environment

and Greenhouse Gas Information System (EGIS). The EGIS is a web-based system that was created to manage greenhouse gas emissions, air quality, indoor air quality, and water quality. While previous attempts have been made to create a sustainable environment for past Winter Games, this is the first Olympic games to feature such a monitoring program.

The final focus of POCOG's efforts to create a sustainable 2018 Winter Games was the Green Procurement Plan. This plan involved the purchasing and procurement of green products and technologies. The Departments of Gangwon Province that were tasked with preparing Olympic venues, such as the Snow and Ice venues, purchased green products to account for 30-40% of their procurement portfolio.

The sustainability efforts taken by POCOG to create an environmentally friendly infrastructure for the 2018 Winter Games will not only pave the way for future planning committees to improve upon the zero-emissions concept, but also spur widespread deployment and further research on clean energy technologies for Korea's domestic use.

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#### REFERENCES

[February 2017 POCOG Sustainability Interim Report](#)

[December 2017 PyeongChang 2018 Pre-Games Sustainability Report](#)

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