Paris 2024: A Model for Greener Games

By Atalay Atasu and Luk Van Wassenhove , INSEAD

With a bold ambition to halve greenhouse gas emissions, the Paris Olympics and Paralympics are raising the bar for future international events.

International sporting events are hardly associated with sustainability – not when organising a massive event successfully is in itself a tall order on many fronts. For the upcoming Olympics and Paralympics, we're talking about hosting and housing 15,000 athletes and potentially 13 million spectators across 35 venues in France for a month.

Against the odds, can Paris 2024 be a new model for sustainability for future games? The organisers certainly hope so with their bold plan to reduce greenhouse gas (GHG) emissions by 50 percent, as compared to the average emissions of the London (2012) and Rio (2016) Games.

Undoubtedly, keeping the GHG emissions in check adds layers of complexity to an already mammoth undertaking. But this is just what the Paris 2024 committee did, understanding its potential emissions before the winning bid was announced in 2017, and setting a carbon budget more than five years

before the event.

Know your “problem”: The minute details of a mega event

The biggest hurdle to GHG reduction is invariably “where to start?” As with all effective solutions, it begins with knowing the “problem”. The committee did this by identifying the range of carbon-emitting activities, from preparing and operating the games to closing it.

As Director of Sustainability of Paris 2024, INSEAD alumna Georgina Grenon, and her Climate and Biodiversity team led by Benjamin Leveque, developed comprehensive estimates for the direct and indirect emissions (scopes 1 to 3) associated with each activity. They categorised these activities into transportation, construction and games operations, and found that each accounted for about a third of the baseline budget (see figure 1). In other words, carbon reduction needs to be tackled on multiple fronts.

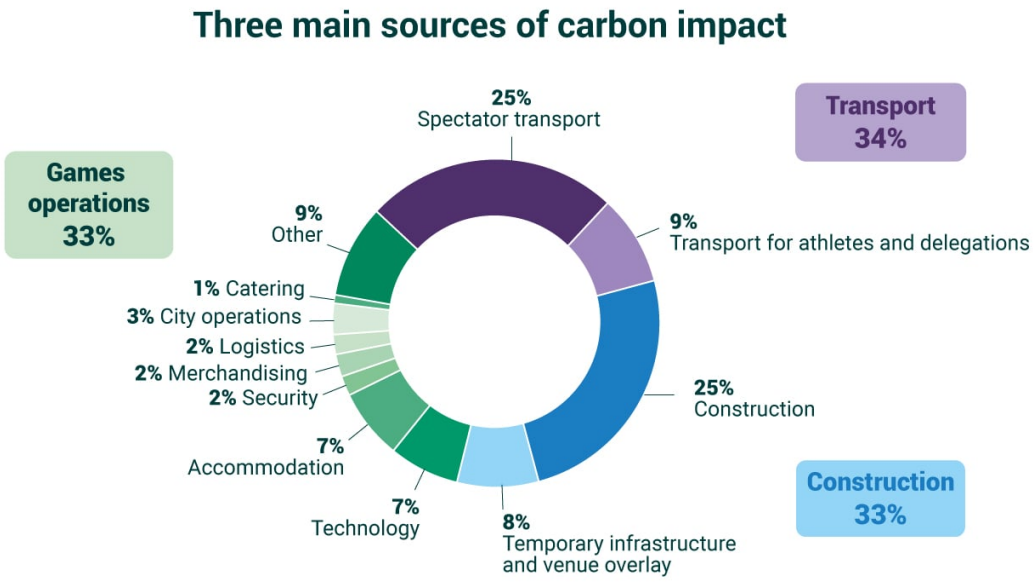

Figure 1: The carbon impact of the range of activities to prepare, operate and close the games, categorised into games operations, transport and construction. (Source: Paris 2024 sustainability team)

The team then estimated emissions from the items to be sourced – from ping pong balls to construction materials, to the food and beverage needed to

serve over 13 million meals. Calculation of the material footprint alone took Caroline Louis, the circular economy expert of the team, over a year. According to the analysis, materials required for temporary infrastructure (construction and furnishing) make up about 84 percent of the projected material footprint (see figure 2). Clearly, this is a good place to start.

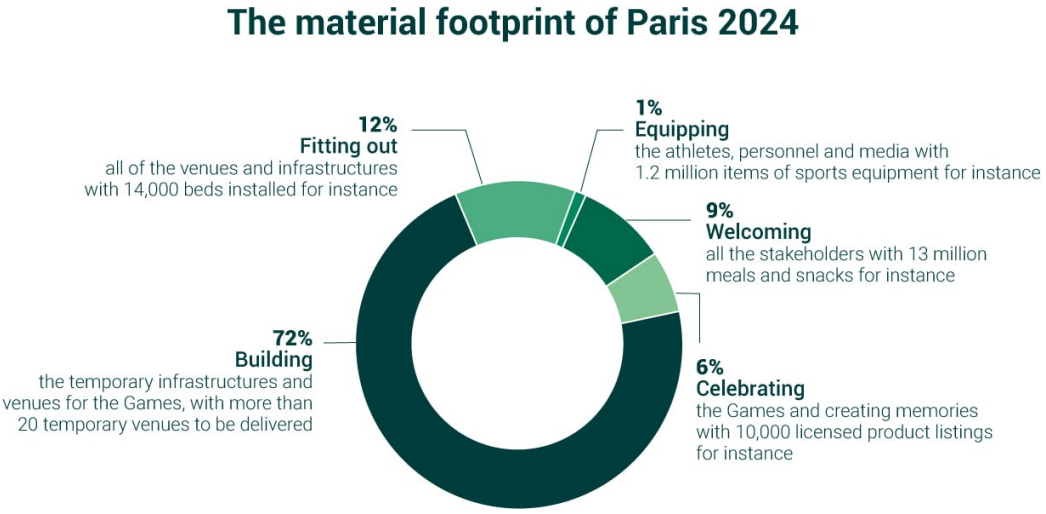

Figure 2: The material footprint corresponds to the total weight of all the resources mobilised for the games. Resources refer to all of the products, materials, raw materials, goods or consumables purchased, leased, used or produced by Paris 2024 and the stakeholders involved in delivering the games. (Source: Paris 2024 sustainability team)

Designed for sustainability

One of the unintended legacies of Olympics and tournaments of similar scale are the purpose-built structures left conspicuously obsolete after the curtains fall.

That said, Paris 2024 is designed for sustainability from the start. Apart from the purpose-built athletes' village and Aquatic Centre, 95 percent of the infrastructure is either existing or temporary. For these, low emissions is part of the design requirement. In particular, for temporary infrastructures, the team developed guidelines for facilities and furnishings such that rental is

preferred over ownership, less material is used, and the materials could be repurposed or recycled after the games.

Where transportation is concerned, even though the committee has managed to convince five delegations from Belgium, Germany, the Netherlands, Switzerland and the UK to commit to travelling to France by train, it has limited control over major components such as spectator air travel. But deliberate spatial planning can minimise travelling during the games. Events are mostly located within a 10-km radius of the Olympic village. Competition venues were chosen so that spectators can access venues around Paris by **public transport** (mostly powered by electricity, gas and hydrogen) or even cycling along 418km of cycle lanes.

As for Games operations, serving over 13 million meals and 18 million beverages needs careful planning to meet a precise goal: limit emissions from the purchasing, preparation and delivery of food (including handling of food waste) to about 1 kg **CO2eq** per meal. As such, meals are designed to include a high proportion of plant-based ingredients. Apart from making deliberate food choices, buying food locally can help reduce emissions.

For a start, 100 percent of fruits, vegetables, cereals, meat, eggs and dairy products will be sourced from France and transported overland to reduce flights. Overall, 80 percent of food will originate from France, and 25 percent will be procured from sources no further than 250km from competition sites.

Reducing waste through circular systems

Paris 2024's sustainable approach to food and beverage is not complete without appropriate waste management. This is a matter of scaling up what is practised in France by law: **food waste prevention** and **compulsory composting**. Excess food will be donated, and food waste will be converted into animal feed, compost or energy.

Managing plastics and other wastes is yet another challenge. The athletes' restaurant, which will serve 40,000 meals a day, will use only reusable tableware – a feature unseen for decades. Free water fountains will be available to all, and reusable bottles are allowed in the venues. Water and soda fountains and reusable cups will be supplied to reduce single-use plastics by 50 percent compared to the London Games. Any other plastic bottles used will be recycled by the drinks vendor.

As for infrastructure, construction and management is based on a circular system model. The Paris 2024 team prioritised service tenders whereby providers retain ownership and are responsible for delivering and retrieving the materials after the event. This model ensures that providers are financially incentivised to maximise the lifespan of their assets and materials – such as establishing a second-hand furniture market after the event.

This circular approach is paying off. Of the 6 million items needed for the Games, the organisers estimate that agreements are in place for the repurposing or recycling of 90 percent of them. Plans for the remaining items are underway.

Powering the games with minimal environmental cost

Besides materials, energy is a major contributor to environmental impact. This proved to be another area where the Paris 2024 team had to flex its creative muscle.

Given that as many as three billion people will be watching the live broadcast of the Olympics, energy security is non-negotiable. But so is GHG reduction. Instead of relying on emissions-intense diesel generators like most broadcasters, the Sustainability team joined forces with the Energy team (led by Frederic Le Brun) to develop a novel three-layer energy sourcing model.

The French grid, which generates electricity mainly through nuclear and renewables, makes up the first layer. The grid operator ENEDIS's capacity is sufficient to meet the energy needs of the Games. This means that powering the month-long event could be 95 percent emissions-free.

In case of contingencies, the main venues have secondary (backup) access to the grid. Finally, in the unlikely event that both grid connections fail, generators will be activated as a backup. When grid access is not technically possible, second-generation biodiesel will be used to power the generators where possible, and innovative battery-powered generators will be used in venues like the Gardens of Versailles.

In addition, Paris 2024 will supply all venues with 100 percent renewable electricity generated by EDF from its wind and photovoltaic (PV) farms, or PV panels installed at Olympics facilities, including a temporary floating PV farm in the Seine. This three-layer backup structure is a first in the history of the Games and could become the new standard for energy resilience and

sustainability.

Collaborating to leave a green legacy

For Paris 2024 to achieve its ambitious sustainability goals, its networks and influence play a crucial role. With so many moving parts, it would not have been possible to do it alone. This is evident in its partnership with grid operator and energy providers like ENEDIS and EDF, public transport operator Île-de-France Mobilités, furniture and food suppliers like Carrefour and Sodexo. In addition, to oversee and support all these transformations throughout the run-up to the Games, Paris 2024 has created the **Ecological Transformation Committee** with external experts.

The Paris 2024 emissions project will not only significantly reduce the GHG emissions of the world's largest sporting event, but will also set new standards in decarbonisation and resource reduction for future mega events. These legacies include:

- **An improved energy infrastructure:** Paris 2024 has accelerated planned improvements to the reliability of the French grid. The national energy companies have installed high-voltage grid underground to support the secondary grid access, allowing future events to connect to the grid and be less reliant on diesel generators. This new grid-connection solution has secured state funding to be rolled out to 300 cities in France.
- **A low-carbon city district:** The construction of the Olympic Village generated 30 percent less emissions per square metre than a typical urban district in France. After the games, the Village will be repurposed to provide housing and offices for about 12,000 people. It will be a model for future large-scale residential projects for its cutting-edge construction techniques and use of recycled materials.
- **Increased awareness and capability:** In planning and operating the event, thousands of managers have gained experience and know-how in sustainability – not only the Paris 2024 sustainability team but also the energy team, the food and beverages team, the procurement team, suppliers and partners, among others.

What has been built, in fact, is a lasting sustainability ecosystem that will inform not just future games and events, but also the decarbonisation of business and society. From this perspective, the most important legacy of the Paris 2024 Games may well be another major step forward in humanity's

bid to save the planet.

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Sustainable Business

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Besides research and teaching, SBI also develop frameworks and tools to help business leaders integrate sustainability into core business functions and innovate business models to create value for companies and society. SBI aspires to be a collaborative platform for sustainability- and circularity-focused organisations to share best practices and ideas, and form partnerships.