To: Thomas Bach, President, International Olympic Committee
Tony Estanguet, President, Paris 2024 Organising Committee for the Olympic and Paralympic Games
Pierre Cunéo, Director of Transport, Paris 2024 Organising Committee for the Olympic and Paralympic Games

Copy to:
Anne Hidalgo, Mayor of Paris

Hydrogen cars risk derailing green credibility of Paris Olympics

Open letter from scientists concerned that hydrogen cars are misaligned with net-zero

Dear Mr Bach, Mr Estanguet, Mr Cunéo,

As qualified scientists, academics and engineers, our first priority is to represent scientific fact.

While we commend the 2024 Paris Olympics in aiming to halve carbon emissions compared with editions of the Games in the 2010s, we note the plan includes using "a fleet of clean vehicles to transport the Olympic and Paralympic family". Within this, the Toyota Mirai which is a hydrogen fuel-cell car, has been named the official vehicle of the Olympics. It will be used alongside 10 hydrogen fuel-cell coaches to transport athletes and visitors.

We are writing to express our concern that Toyota's promotion of a hydrogen car is scientifically misaligned with net-zero and will damage the reputation of the 2024 Games.

Opportunity remains to reroute, and we urge that you require Toyota to replace the Mirai with a Battery Electric Vehicle (BEV) as the official Games vehicle. The reasons are as follows:

1. The IPCC is clear that Battery Electric Vehicles represent the most effective way to decarbonise passenger transport. Hydrogen used to power road transport is not aligned with the world's net-zero goals and ultimately risks distracting and delaying from the real solutions we have available today.

2. Green hydrogen powered fuel-cell vehicles require three times more renewable electricity than equivalent Battery Electric Vehicles. As a result, they require three times more renewable electricity-generating infrastructure such as wind turbines and solar panels, and are at least three times more expensive to run than BEVs.

Given many countries have yet to achieve 100% renewable energy in their electricity grids, it's important to note that adding renewable electricity into the grid reduces emissions far more than producing highly energy inefficient green hydrogen and converting it back to electricity in a fuel-cell car. This means every hydrogen vehicle powered by green hydrogen represents a failed opportunity cost for the climate.

3. Almost all hydrogen today is made from fossil fuels with unabated emissions. Hydrogen itself is not an energy source, it must be made from other sources of energy. 99% of hydrogen today is made from fossil fuels without carbon capture and storage, and consequently the global hydrogen market currently emits approximately the same emissions as the global aviation industry. It is essential that these emissions generated by hydrogen manufacture are cleaned up before introducing new end uses for hydrogen.

According to the International Energy Agency the uptake of low emissions hydrogen remains limited, accounting for only 0.6% of total hydrogen demand. Their chart paints a striking picture of the challenge in meeting low emission hydrogen targets. Consequently sectors with limited clean energy solutions who will rely on hydrogen are already planning to use fossil fuels or fossil fuel hydrogen instead due to the lack of clean hydrogen supply. Failing enough green hydrogen made from renewable electricity, fuel-cell vehicles using fossil fuel hydrogen would actually end up generating 30-50% more emissions than simply using fossil fuels in the first place, depending on the application.

4. Hydrogen cars are not a viable net zero solution. **Because of the high cost and poor availability of fuel, sales of hydrogen cars are in rapid global decline.** There are approximately 1000 times more BEVs than hydrogen vehicles in the world, with consumers overwhelmingly choosing BEVs as a more compelling option. The limited hydrogen refuelling infrastructure available in some countries has begun to shrink quickly as high fuel costs, high costs of maintaining hydrogen delivery equipment and lack of hydrogen supply are forcing them to close. This is the case in California, the UK and Denmark. Electric vehicle charging infrastructure is much more readily available in every country, with consumers able to charge their vehicles at home or in thousands of public charging locations. The consequence of aggressively promoting hydrogen vehicles at the Olympics will inevitably delay the roll-out of BEVs, damaging the progress of the energy transition.

5. Hydrogen cars and buses have already failed around the world - including during the 2020 Tokyo Olympics. Trials of hydrogen powered cars and buses have repeatedly failed around the world, including in the US, Germany, the UK and France (both in Montpellier and Pau), primarily due to higher costs than electric vehicles and lack of hydrogen supply. Hurdles have plagued taxi operators in Japan who have been trialling the use of the Toyota Mirai, with drivers citing high fuel costs, a lack of efficiency and lack of refuelling infrastructure. Academics are also warning in Australia against wasting public subsidies on hydrogen buses.

The 2020 Tokyo Olympics was a significant example of hydrogen mobility not meeting expectations. It was billed as the first ‘Hydrogen Olympics’, and a hydrogen society was promoted as a green solution, including hydrogen for road transport. Former prime minister Shinzo Abe announced that “cars and buses will run through the city powered by hydrogen, and the athletes’ village will run on electricity made from hydrogen”. Despite the promotion, the reality of the 2020 Games was that high costs and lack of hydrogen supply meant that only a few hydrogen powered buses ran short routes. The hydrogen used for these buses is thought to have been unabated ‘grey’ hydrogen, making the well-to-wheel emissions worse than if they simply ran on diesel fuel.

Lastly, we feel it’s important to conclude that even Toyota admits that its Mirai model has not been successful. Toyota itself does not plan to transition to hydrogen cars, with industry data showing hydrogen cars will make up around 0.0% of its production by the end of this decade - a rounding error.

We urge the International Olympic Committee to enforce that Toyota switches the official Olympics vehicle, and the entire Olympic vehicle fleet, to 100% Battery Electric Vehicles for the 2024 Games.

We remain at your disposal should you wish to discuss this with us further.

Sincerely,

Signatories

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