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FIFA WORLD CUP 2026: A DEFINING TEST FOR SUSTAINABLE GLOBAL EVENTS

THE CLIMATE BILL OF THE EXPANDED FIFA 2026

Executive Insight

The 2026 FIFA World Cup marked a major turning point for global sport and stands as one of the most significant environmental case studies ever linked to a mega-event.

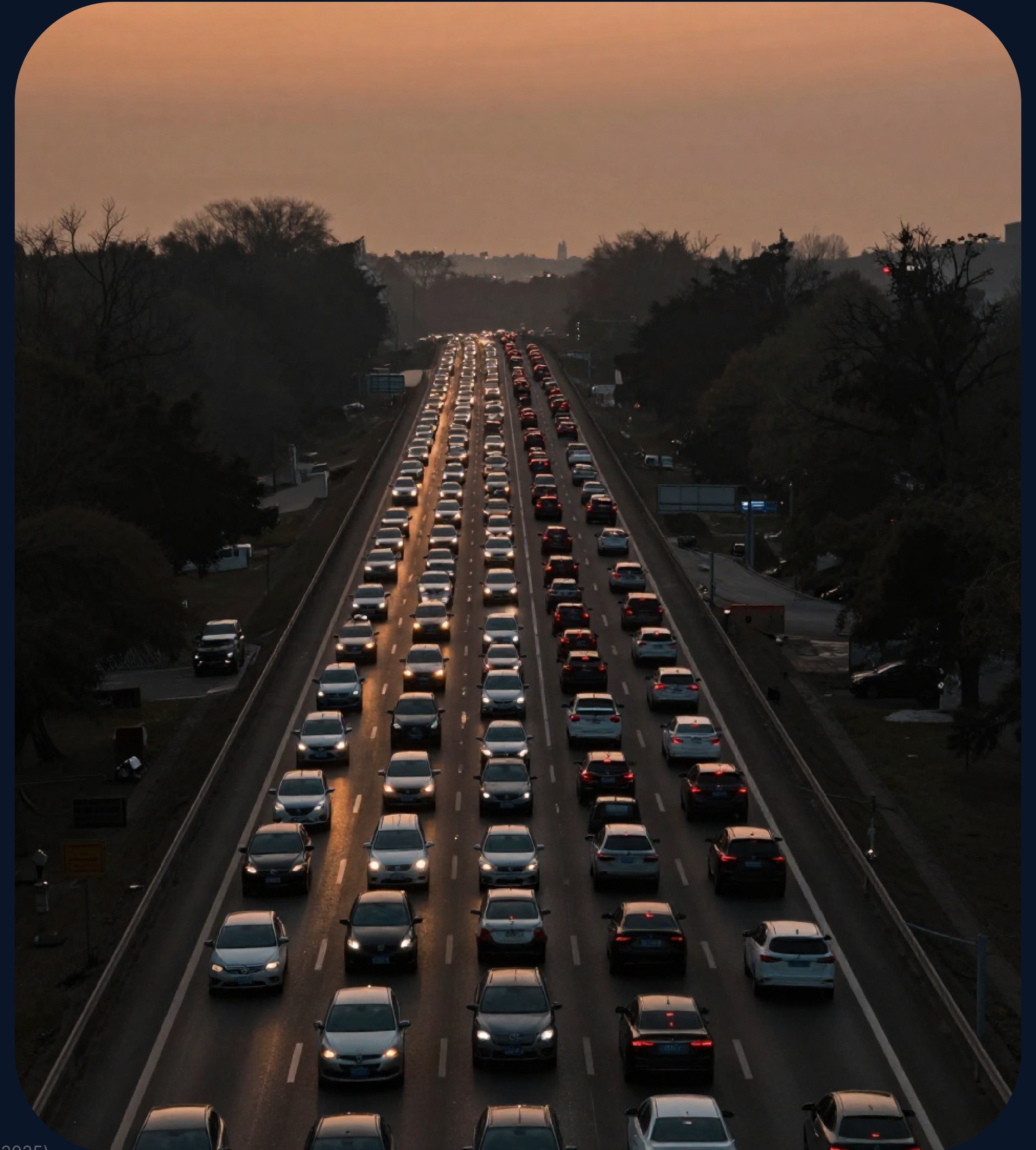
Expanded to **48 teams**, **104 matches**, and **16 host cities** across Canada, Mexico, and the United States, the tournament generated an estimated **7.8 to 9.0 million tonnes of CO2e**. This footprint is more than double the reported emissions of the FIFA World Cup Qatar 2022.

To put this in perspective: 9 million tonnes of CO2e is equivalent to nearly **2 million cars** driven for an entire year – or every registered vehicle in New Zealand on the road non-stop for 12 months. Laid end-to-end, those cars would stretch across **9,500 football pitches**.

THE DEFINING LESSON

Infrastructure was not the primary emissions challenge.
Mobility was.

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At a Glance

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7.8–9.0M t

CARBON FOOTPRINT

Estimated total greenhouse gas emissions of the 2026 tournament.

48 Teams

UNPRECEDENTED SCALE

The largest cohort of competing nations in the history of the tournament.

104 Matches

EXPANDED PLAY

Representing a massive 62% increase in match volume versus Qatar 2022.

16 Cities

HOST VENUES

Distributed across three giant nations and multiple distinct climate zones.

87.8%

SPECTATOR TRAVEL

The primary environmental driver, caused entirely by fan long-haul and regional transit.

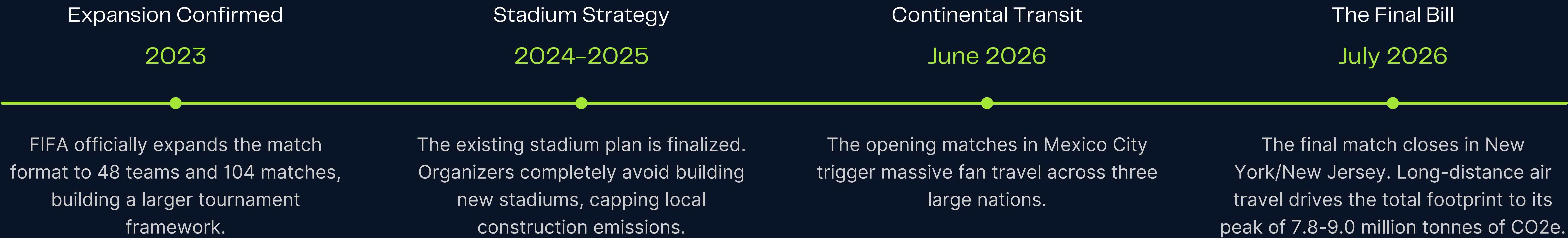
39 Days

TOTAL DURATION

The official tournament window, running from 11 June to 19 July 2026.

Visual Timeline: How the Footprint Grew

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The Tourism Anomaly & Aviation Routemap

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The Influx Shift (2025 vs. 2026)

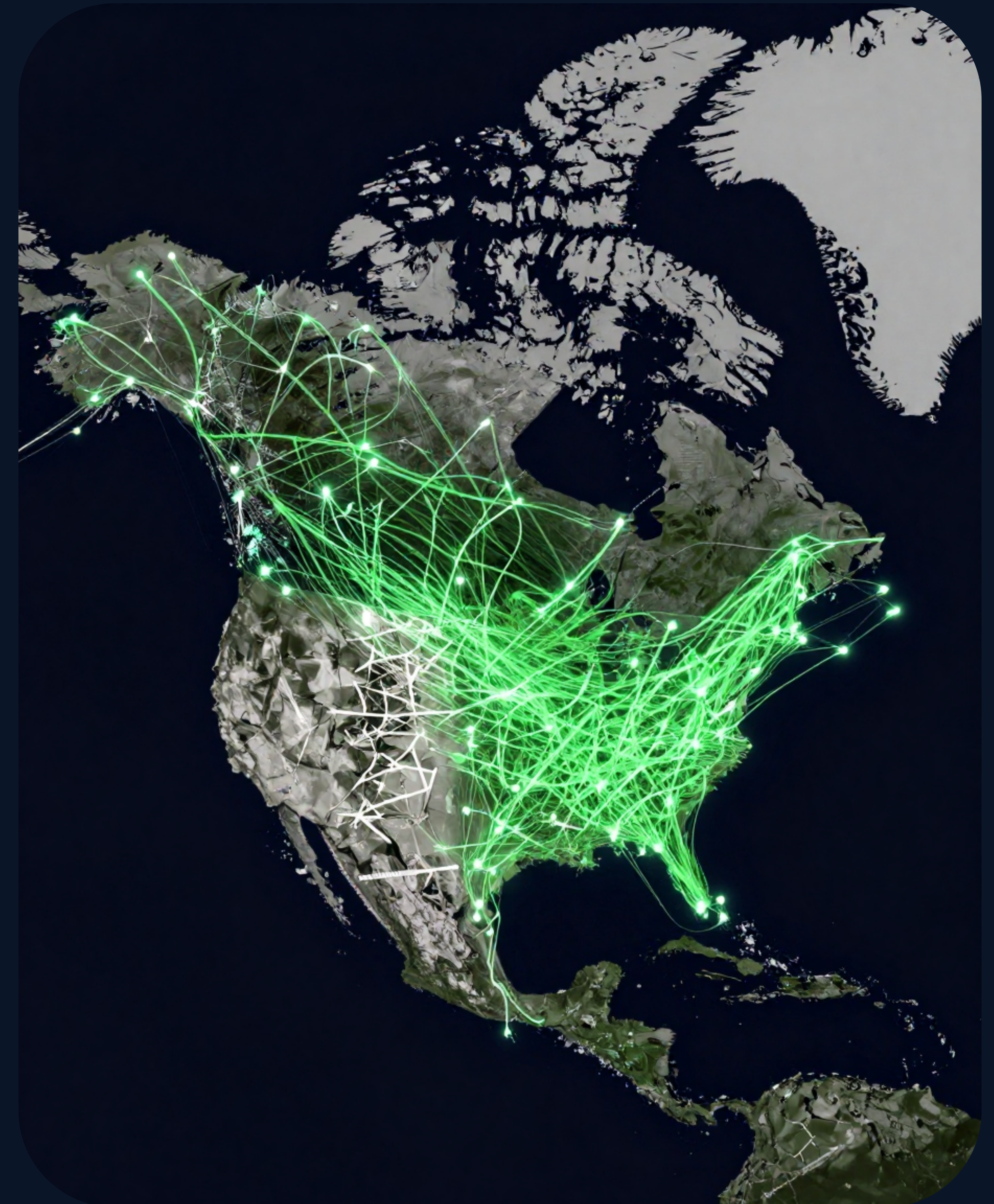
The Baseline Year (2025): International travel to the US, Canada, and Mexico followed standard, predictable summer holiday patterns utilizing optimized point-to-point airline hub routes.

The Tournament Spike (2026): The event injected an extra 5 to 11 million international visitors into host cities. Flight searches surged by 60% for host cities like Monterrey and 30% for Mexico City compared to the previous year.

The Routing Anomaly

Optimized vs. Chaotic Transit: In a standard travel year, commercial flights are mathematically routed to maximize fuel efficiency. During the 2026 tournament, fan match schedules created a highly fragmented transcontinental zig-zag network.

Vast Distances: Supporter groups frequently traveled thousands of kilometers between games. This chaotic, high-frequency transit generated **6.8 million tonnes of CO2** from spectator flights alone.



The Contrast Matrix

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DIMENSION	NORTH AMERICA 2026	QATAR 2022	STRATEGIC INSIGHT
Total Carbon Footprint	7.8M - 9.0M tCO2e	3.6M - 3.8M tCO2e	Emissions more than doubled despite lower stadium-building impacts.
Infrastructure Share	~3.1% (~238k tonnes)	~24.6% (~893k tonnes)	Reusing existing venues successfully cut construction emissions.
Spectator Travel Share	~87.8% (~6.8M tonnes)	~33%	The environmental focus shifted entirely from stadiums to the skies.
Match Volume	104 Matches	64 Matches	Spreading games over a continent heavily amplified transport demands.

The Decoupling Paradox

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The Correlation Analysis

The 2026 World Cup broke historical records, bringing in an unprecedented **\$13 billion in revenue** for the three-year commercial cycle. However, this financial growth was directly tied to a massive surge in carbon emissions. Expanding the format to 48 teams added 40 extra matches, instantly injecting an extra **594,000 tonnes of CO2** into the atmosphere through extended travel, shipping, and stadium operation requirements.

The True Mitigation Cost

The Carbon Debt: Independent resource economists calculate that completely offsetting the tournament's greenhouse gas footprint requires a **\$787 million investment**.

Funding Options: If passed directly to game attendees, clearing this debt would require a carbon levy averaging **\$114 per match ticket**. Alternatively, adding a micro-fee of just **\$4.50** to each of the estimated 1.8 billion broadcast views would generate enough capital to fully wipe out the tournament's transit debt.



The Thermal Toll & Operational Strain

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The Micro-Climate Micro-Grid

The Summer Heat Crisis: Extreme weather shifted stadium cooling from a basic utility into an intense energy challenge.

Host Venue Risk: Six out of the sixteen host venues faced extreme summer heat stress. Venues like AT&T Stadium in Dallas regularly experienced outdoor temperatures over **35 degrees C**, pushing indoor and outdoor July Wet Bulb Globe Temperatures (WBGT) to a dangerous **28.6 degrees C** that breached safe playing thresholds.

Operational Demands: To ensure safety, eight stadiums required immediate, high-energy climate controls, running heavy industrial HVAC systems around the clock to chill playing bowls and stands.

6 / 16 host venues at extreme heat risk | **8** stadiums requiring industrial cooling



The Mathematical Footprint of a Hot-Zone Match

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Direct Cooling Grid Consumption

A modern, enclosed stadium using high-intensity industrial HVAC systems consumes between 5 and 10 Megawatts (MW) of power during a live match event.

$$E(\text{match}) = 7.5 \text{ MW} \times 4 \text{ hours} = 30 \text{ MWh}$$

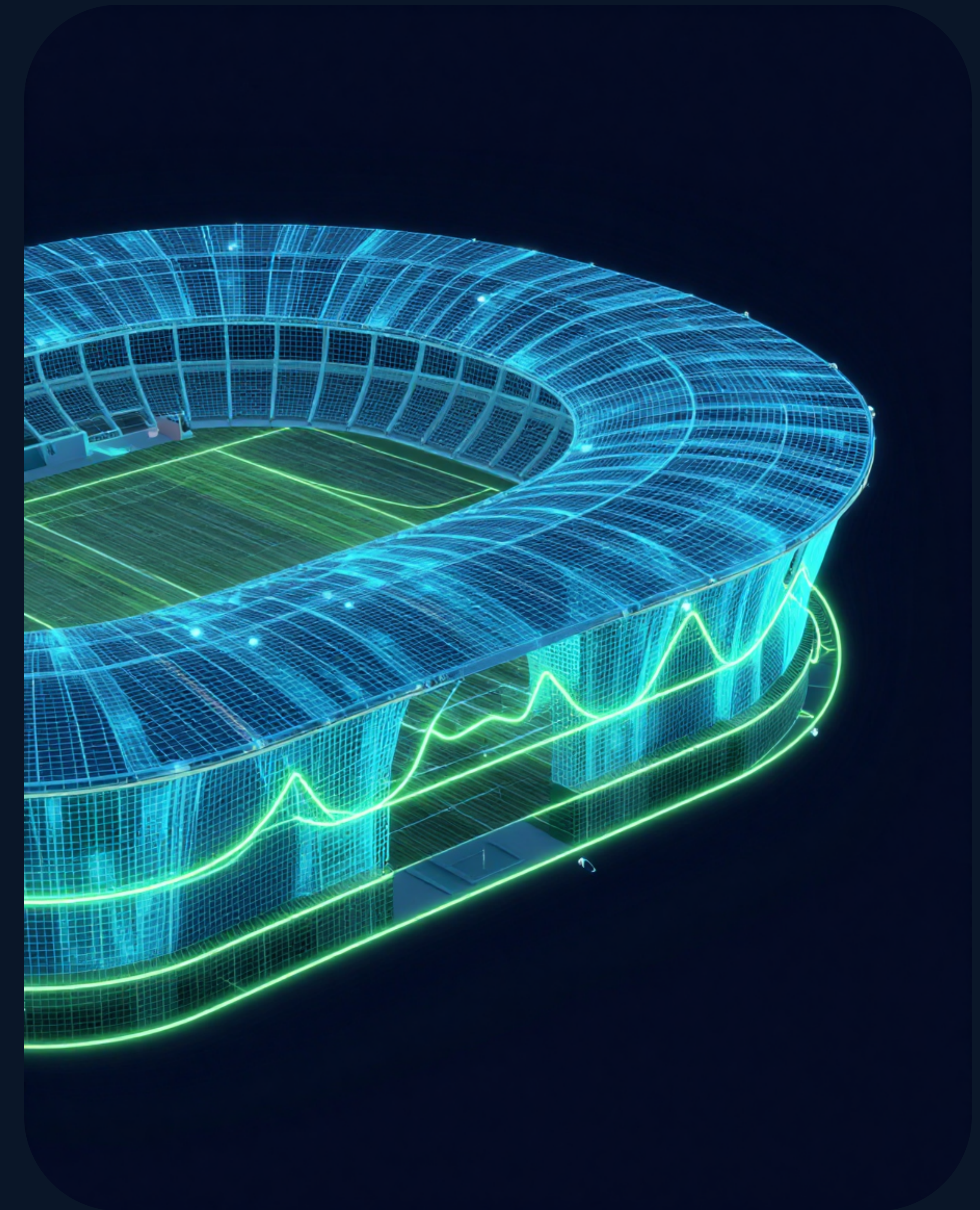
The Resulting Carbon Burden

Using a regional grid emission factor of approximately 0.38 tonnes of CO₂e per MWh:

$$\text{Carbon Burden} = 30 \text{ MWh} \times 0.38 = 11.4 \text{ tonnes CO}_2\text{e per game}$$

The Impact of Scale (104 Matches)

Scaling these cooling demands across hot-zone matches created an intense, localized energy draw. While reusing existing stadiums successfully cut construction emissions, it locked organizers into an operational loop: burning heavy grid power to shield fans and athletes from the very warming trends accelerated by expanding global tournaments.



Why This Matters: 3 Pillars of Urgency

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1.

The Equation Shifted

The event proved that mega-sporting emissions have fundamentally changed. By reusing existing professional stadiums, infrastructure accounted for a minor 3.1% of the total footprint. The carbon burden has officially shifted from building materials to transport grids.

2.

Operational Reality

Climate change is no longer a future projection; it is a live operational risk. The tournament had to navigate extreme North American summer heat, exposing six host cities to severe heat stress and requiring immediate, energy-heavy cooling measures across eight venues.

3.

Unresolved Loophole

Spectator transit generated roughly 6.8 million tonnes of CO₂e - nearly nine-tenths of the entire footprint. Because cross-border travel relies heavily on international aviation, the bulk of this environmental damage sits in a regulatory gray zone, completely escaping host-nation targets.

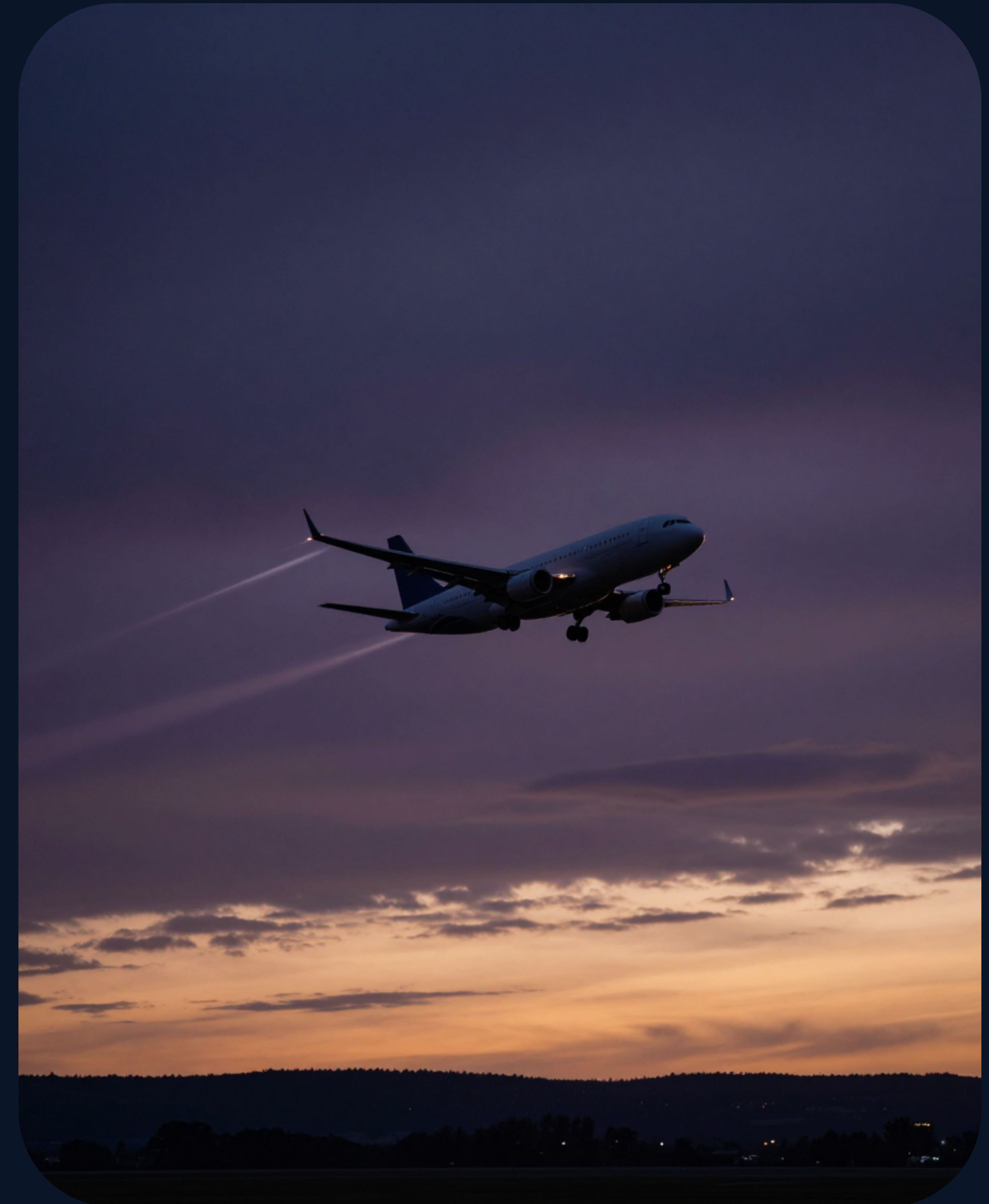
Key Insight: The Mobility Shift

The Climate Story Was Not About Stadiums

Aviation and mobility emerged as the defining sustainability challenge of modern sports. While Qatar 2022 generated massive construction-related emissions by building seven new venues from scratch, the North American tournament successfully kept infrastructure impacts low by utilizing existing commercial facilities.

However, these structural savings were completely wiped out by the emissions from long-distance fan transit. With nearly **88% of all emissions originating in the air**, long-distance transport now stands as the single largest climate risk for future global sporting events.

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Zero-New-Build Standard

The tournament successfully proved that mega-events can keep structural footprints low by prioritizing venue reuse over new construction, setting a vital baseline for future host selections.

Expansion vs. Climate

Broad commercial growth plans, such as FIFA's partnership with Aramco, are estimated to link an extra 30 million tonnes of corporate ecosystem CO2e to the sport - far eclipsing the direct footprint of the games.

Climate Adaptation

Protecting play from severe heat is now a permanent logistical requirement. Industrial stadium cooling, rapid hydration protocols, and extreme heat safety measures have transitioned from minor options into core operational standards.



Lessons for Global Organisations

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Cross-Industry Translation

The systemic travel and transport challenges identified at the 2026 World Cup apply directly to other massive global operations:

COP Climate Summits: Balancing global delegate travel against international climate policy goals.

Olympic & Paralympic Games: Managing transit infrastructure for multi-sport fan bases.

International World Expos: Spurring mass tourism without exceeding regional transit capacities.

Corporate Summits: Re-evaluating large-scale international gatherings in line with net-zero roadmaps.

Key Governance Questions

Transit Accountability: Who holds final structural responsibility for international passenger aviation emissions?

Carbon Inventories: How should highly mobile events be accurately calculated within a host nation's climate ledger?

Scaling Limits: Can global events continue to expand their match volume while genuinely aligning with net-zero pathways?

Final Reflection

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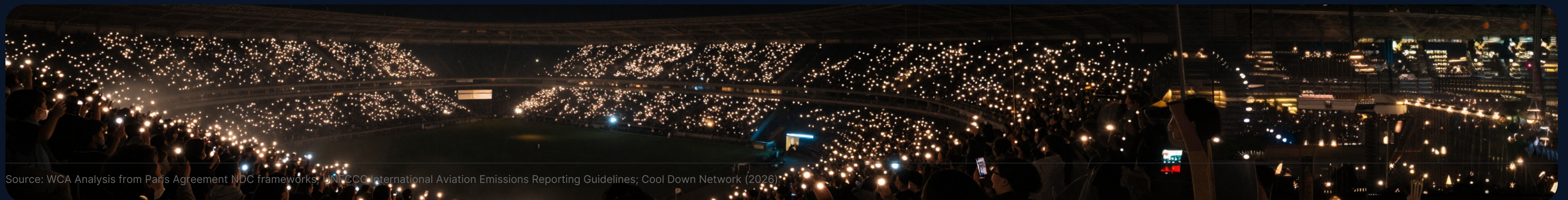
The Unaccounted NDC Loophole

As the tournament concludes, a critical accountability gap remains. Because this massive footprint was generated for short-term entertainment, the 87.8% carbon spike driven by international aviation slips through standard Paris Agreement boundaries. None of the host nations - the US, Mexico, or Canada - account for these transient flight emissions within their national climate pledges (NDCs), leaving the true climate bill off the books.

The Athlete Catalyst for Collective Action

Sport possesses an unparalleled cultural superpower. By leveraging the trusted voices of elite participating athletes, nations can spark a grassroots consumer climate movement. If global sports stars successfully inspire their massive fan bases to make minor, collective changes in transport choices, home energy use, and daily consumption, the resulting emissions savings can easily offset and neutralize the tournament's entire travel debt.

"The environmental challenge facing global sport is no longer primarily about what is built. It is about how billions of people move - and how they are inspired to act."



Source: WCA Analysis from Paris Agreement NDC frameworks; UNECCC International Aviation Emissions Reporting Guidelines; Cool Down Network (2026).



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Connect With World Climate Athletes

For additional information, collaboration opportunities, or media enquiries regarding this report, please reach out directly.

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Driving global collective climate action through the unparalleled voice of sports.

