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# WHAT IF

ON
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water.

# WHAT IF?






# The IOC & FIFA

## leased floating assets to host cities

Richard Coutts is the founder of Baca Architects who are known for having innovative projects in, on , near and under water. As the author of 'Aquatecture: Buildings and Cities designed to live and work with water', Richard has designed and built pioneering flood proof buildings and his smart cities are designed to anticipate flooding and make space for water. The practice won the Francis Tibbalds Award at the National Urban Design Awards 2016 for Eiland Veur Lent, Nijmegen, NL

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In response to the escalating challenges of climate change and urban resilience, Baca have proposed a paradigm shift in the hosting of major global events like the Olympics and the Football World Cup onto water-based platforms. By exploring the potential benefits and implications of relocating mega events onto water bodies, we delved deeper into the intersection of architecture, urban planning, and environmental sustainability.

Traditional land-based mega events often pose significant strains on infrastructure, transportation networks, and local environments. The concept of floating mega events offers a compelling alternative by harnessing the inherent adaptability of water-based structures. These platforms can adapt to rising sea levels and extreme weather events, mitigating the risks associated with climate change.

Key advantages of transitioning mega events to water platforms include enhanced spatial flexibility and efficient land use. Water surfaces offer vast expanses of adaptable space, allowing for creative event layouts and spectator experiences. Additionally, the temporary nature of these floating structures minimises permanent impacts on host cities, reducing post-event liabilities and maximising resource efficiency.

The environmental benefits of water-based event venues are substantial. Floating structures can integrate sustainable technologies such as solar panels, wave energy converters, and advanced water management systems, minimising carbon footprints and resource consumption. Furthermore, repurposing existing maritime infrastructure for mega events can catalyse investment in waterfront revitalisation and public amenities.



The costs of hosting mega-events on land have sharply risen in recent years, leading to minimal economic benefits that justify the traditional model. Large-scale events on land incur significant expenses related to infrastructure, venue construction, and operations, placing a substantial financial burden on host cities and nations. For example, the 2016 Rio Olympics cost Brazil over $13 billion, contributing to economic strain and leaving underutilised venues post-event, including the famous 'Olympic pool turning orange' and the Maracana stadium becoming deserted, with power cut due to unpaid bills (Scott, 2017).

Research by Martin Müller, David Gogishvili, and Sven Daniel Wolfe (2022) analysed major sporting events from 1964 to 2018, revealing economic unsustainability in nearly all cases, except the 2000 Sydney Olympics. Since the 2000s, such events have consistently failed due to rising costs and minimal return on investment. Alternatively, relocating events to floating structures offers economic viability. Water-based venues can be designed as modular, reusable spaces, reducing the need for extensive new construction. These facilities could be leased or sold to future host nations, offering diverse experiences through adaptable spatial configurations.

However, the impacts of the land-based model extend beyond economics, with significant social and environmental consequences. Hosting events like the Olympics often leads to resident displacement, neighbourhood disruptions, and social inequalities due to prioritisation of event-related infrastructure over community needs, seen post-London Olympics (Gibson, 2022). Major events also contribute to deforestation, carbon emissions, and habitat destruction, escalating environmental concerns (Krosofsky, 2021).

Floating architecture presents a promising solution to mitigate these environmental costs. By incorporating sustainable design principles, waterborne mega-events can substantially reduce their ecological footprint and potentially alleviate social impacts by minimising land use and preserving urban fabric.

The anatomy of major events like the Olympics or the Football World Cup has traditionally involved significant construction efforts to create new venues and infrastructure. Over time, the costs associated with these fixed assets have significantly increased, highlighting a trend of escalating expenditure in event hosting. For example, examining recent Olympic Games reveals this pattern. The 2008 Beijing Olympics had a total budget of $43.13 billion (Hein, 2012), with substantial investments in fixed assets like the Olympic Stadium at $423 million and the Aquatics Centre at $184 million. Similarly, subsequent games have seen remarkable cost spikes, with the 2020 Tokyo Olympics totalling somewhere between $15.4 and $35 billion (O'Shea and Maslow, 2023) and the construction of the Olympic Stadium alone costing $2 billion. This cost escalation underscores the financial burden associated with traditional approaches to hosting major events and the challenge of achieving a sustainable return on investment through post-event repurposing.

| | 2024 Paris | 2020 Tokyo | 2016 Rio | 2012 London | 2008 Beijing |
|---|---|---|---|---|---|
| **Total Cost** | $10 bn | $15.4-35 bn | $13.2 bn | $13.3 bn | $43.13 bn |
| **Fixed Assets Cost** | | | | | |
| **Olympic Stadium** | (retrofit) $94 ml | $2 bn | $12 bn (Barra Olympic Park) | $519.96ml ($767.1ml with inflation) | $423 ml |
| **Aquatics Centre** | $174 ml | $523 ml | $50 ml | $334.69 ml | $184 ml |
| **Gymnastics Arena** | reuse | $81.61 ml | - | reuse | $79 ml |
| **Cycling Velodrome** | reuse | $100 ml | $43 ml | $130.5 ml | $45 ml |
| **Athletes' Village** | $2.13bn | $2 bn | $700 ml | $1.36 bn | $400 ml |



A notable example of these challenges is evident in the London Olympics of 2012, which aimed to strike a balance between new construction and leveraging existing infrastructure. While London successfully repurposed iconic venues like Wembley Stadium and the O2 Arena, the creation of new facilities posed significant financial hurdles. The construction of the athletes' village, a cornerstone of the event, amounted to a staggering $1.36 billion, rep- resenting over 10% of the total budget. Post-event, the fate of the Olympic Village further underscored these challenges when it was sold at a substantial loss compared to its construction cost, highlighting the economic complexities and risks associated with Olympic infrastructure (Kollewe, 2011).

Amid these challenges, there is an increasing focus on alternative event-hosting methods that prioritise sustainability and flexibility. The Paris Olympics in 2024 illustrates this shift by favouring the use of existing venues and infrastructure to reduce the necessity for extensive new construction. This approach not only aids in cost management but also supports broader environmental and social goals. Nonetheless, this strategy remains economically demanding, as evidenced by the Athletes' Village consuming 21% of the total budget and half of the construction budget (Jones, 2024).

**An Alternative Vision for the Olympics**

An innovative approach to improving the sustainability and cost-effectiveness of future Olympic Games involves utilising offshore, floating venues for critical facilities like the Olympic Stadium, Aquatic Centre, Gymnastics Arena, Cycling Velodrome, and Athletes' Village. By embracing this concept, these essential assets can be designed and constructed in modular, transportable formats that allow for easy relocation and potential leasing for future events or alternative purposes. For instance, rather than constructing permanent structures on land, a modular stadium could be engineered in sections that are easily transport by sea. These sections could then be assembled at an offshore location, providing a temporary yet sturdy venue for athletics and opening ceremonies during the Games. Following the event, the stadium could be dismantled and moved to another coastal site for reuse or leased to other cities hosting sporting events. Similarly, the Aquatic Centre, Gymnastics Arena, Cycling Velodrome, and other key facilities could adopt similar modular designs, allowing them to be floated to different ports or coastal areas as needed. This flexibility in venue deployment not only maximises resource efficiency but also enhances the potential for these assets to be repurposed by other sporting competitions worldwide. For instance, a floating Aquatic Centre could be towed to various cities for hosting international swimming championships.

The Athletes' Village, often a significant investment during Olympic preparations, could be transformed into a modular, relocatable accommodation complex. Utilising prefabricated units that can be easily assembled and dis- assembled, the Athletes' Village could serve as temporary housing during the Games and subsequently be leased or repurposed for residential or commercial use in different cities. However, Certain Olympic components, such as the Equestrian field, may remain more suitable for land-based venues, while other assets can be distributed across existing facilities within the host city.

**Temporary, Reusable Architecture**

**Learning from Nomadic Cultures**

A nomadic culture refers to a way of life in which a group of people or a society moves from place to place rather than settling permanently in one location. Nomadic cultures historically relied on hunting, gathering, or herding for sustenance, and their movements were often dictated by seasonal changes, availability of resources such as water and food, or the needs of their livestock.

Nomadic cultures typically live in temporary or portable dwellings, such as tents or yurts, which can be easily assembled and disassembled as they move. Mobility is central to their lifestyle, allowing them to adapt to changing environmental conditions and to follow the natural rhythms of the land. Nomadic cultures have existed throughout human history and can be found in various regions around the world, from the Mongolian steppes to the deserts of North Africa, the Arctic tundra, and the grasslands of North America. Each nomadic culture has its own unique traditions, customs, and ways of life, shaped by their environment, resources, and interactions with neighbouring societies.

Appropriating this culture to mega events creates an opportunity to build large scale floating buildings and infrastructure (assets) and apply an economic leasing model to mega event host cities. This potentially creates sustainable conditions both economically and environmentally through the deployment of floating assets.