

# Strategic Legacy Planning for Mega-events to Achieve Sustainable Development Goals: Lessons Learnt from London Olympics 2012 and Rio 2016 for Tokyo 2021

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UN Sustainable Development Goal 11 – ‘*Make cities and human settlements inclusive, safe, resilient and sustainable*’.

*‘From our longstanding experience of putting sport at the service of society, we know that we have to bring the benefits of sport to where the people are – this means in the cities and urban areas of our world ... We are honoured to sign a new partnership with UN-Habitat to support SDG 11, to make cities more resilient and sustainable’.* - Thomas Bach, the ninth president of the International Olympic Committee



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## ABOUT THE AUTHOR

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# EXECUTIVE SUMMARY

Mega-events are powerful catalysts of urban development that reshape the host city's context (Arthur, 1994). The Olympics, in particular, not only generate short-term tourism and global visibility but also leave a long-term regeneration legacy for local communities (Kassens-Noor et al., 2015). Recognising this, the International Olympic Committee (IOC, 2001) has increasingly embedded legacy into the bidding process, with event-promoters often positioning the Games as a driver of wider urban transformation (Tseng, 2012). The COVID-19 pandemic, which curtailed the expected four-week short-term tourism impact of the Tokyo 2020 Olympics, underscored the importance of tangible and enduring urban legacies over transient economic boosts. This is directly aligned with the United Nations' Sustainable Development Goals (SDGs), particularly SDG 11, which calls for 'inclusive and sustainable urbanisation' by 2030—making it highly relevant to post-Olympic urban strategies.

This paper critically analyses legacy planning for the London 2012, Rio 2016, and Tokyo 2021 Olympic Games through the lens of SDG 11, mapping out common patterns of lessons learnt from the case studies. Recent cases reveal both opportunities and pitfalls in delivering sustainable Olympic legacies. London 2012, despite its structured 'learning legacy' framework, struggled to equitably distribute regeneration benefits across all communities (Watt, 2013). Rio 2016, meanwhile, illustrated the challenges of post-Games venue maintenance, with underused facilities often criticised as 'white elephants'. Tokyo 2021, staged amid the pandemic, shifted attention toward long-term urban resilience, prioritising reusing some of the existing venues and redeveloping athletic village. The findings point to some recurring regeneration challenges: how to secure enduring use of Olympic infrastructure, deliver housing that is truly affordable, and ensure that regeneration benefits are shared fairly across communities.

These lessons are critical for Tokyo and potentially future host cities. To ensure an inclusive and lasting urban legacy, host cities must move beyond broad promises and translate global frameworks into concrete, context-specific strategies. This requires transparent long-term operational planning, stronger oversight of public-private partnerships, and integrated approaches to affordable housing. Above all, future Olympics must be clear on both the why and the how: why legacy is important as part of the sustainable urban development of the Tokyo and future Olympics and how these SDGs can be effectively localised to serve host-city communities. Clarity on who the development is ultimately for is equally vital, ensuring that urban transformation delivers meaningful, lasting benefits for local citizens. Strong institutional coordination, robust accountability mechanisms, and genuinely equitable urban models are essential if the Olympics are to leave behind not just infrastructure as an output, but enduring social outcomes.

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# 1. Introduction

## 1.1. Brief overview of mega-events and their impact on host cities

Mega-events are urban developments that shape the current urban context (Arthur, 1994). The Olympics is an excellent example of a mega-event that does not only attract short-term tourism and media exposure but also leaves urban development opportunities for local citizens in the long term – a regeneration legacy (Kassens-Noor, 2016). The International Olympic Committee (IOC, 2001) emphasises that legacy has become a crucial element within the bidding process. Event promoters of host cities have highlighted the benefits and functions of the Olympics as a catalyst to other urban projects to expedite the wider urban regeneration process (Tseng, 2012).

In 2015, the UN set out 17 Sustainable Development Goals for 2030. Specifically, SDG 11 promotes sustainable cities and communities to enhance 'inclusive and sustainable urbanisation and capacity for participatory, integrated and sustainable human settlement planning and management'. In the context of post-Olympics urban development, the vision of SDG 11, in parallel with the greater emphasis on legacy planning of the Olympics, is directly applicable to future urban developments in future host cities (Los Angeles 2028, and Brisbane 2032).

By investigating the most recent summer Olympics cases, in 2012, London recognised the importance of sustainable legacy planning by producing a learning legacy. Rio de Janeiro, in 2016, has been well known for its run-down sporting venues and infrastructure failing to utilise the regeneration legacy. Following the success of Tokyo Olympics 1964, meaning re-emergence, rehabilitation, and regeneration from WWII, the 2021 Games mean a sustainable recovery from the Tohoku earthquake and Fukushima nuclear disaster (and now from the COVID-19 pandemic). The UN and the event organisers have recognised the strong linkages between the SDGs and sporting events, focusing on tangible contributions to specific SDGs. This collaboration highlights the importance of mega-events in reaching the SDGs and the power of the Olympics to promote sustainable post-game urban regeneration.

## 1.2. Importance of sustainable development in mega-events

Sustainable development is critical for mega-events and the Olympics because these events have significant economic, social, and environmental impacts on host communities. Mega-events attract large numbers of visitors, require significant infrastructure investments, and generate a significant amount of waste and

emissions. Without sustainable development planning, the negative impacts of these events can outweigh the benefits and leave a lasting negative legacy.

According to the International Olympic Committee (IOC), sustainable development is defined as *‘the balanced integration of economic, social, and environmental factors to ensure that development meets the needs of the present without compromising the ability of future generations to meet their own needs’* (IOC, 2016). The IOC has identified sustainable development as one of its three key pillars, along with sport and culture, in order to promote responsible and sustainable Olympic Games.

Goal 11: SDG 11 is to *‘Make cities inclusive, safe, resilient and sustainable’*. The targets of SDG 11 include *investment in public transport, creating green public spaces, and improving urban planning and management in participatory and inclusive ways*. SDG 11 has 10 targets to be achieved, and this is measured with 15 indicators.

Thomas Bach, the ninth president of the International Olympic Committee, stated that *‘from our longstanding experience of putting sport at the service of society, we know that we have to bring the benefits of sport to where the people are – this means in the cities and urban areas of our world ... We are honoured to sign a new partnership with UN-Habitat to support SDG 11, to make cities more resilient and sustainable’*. (IOC, 2023)

### **1.3. Project Goals and Objectives**

This research will focus on the connection between the past and the future of the Olympics in spatial planning terms. The overarching aim is to examine the spatial and societal lessons from two recent Olympics cases and attempt to provide recommendations to the Tokyo and potentially future Olympics – which will lead to two main research questions.

1. What are the needs for long-term urban transformation during the post-Olympics period in Tokyo?
2. What are the lessons in advancing SDG 11 learnt from the legacy planning of the London and Rio Olympics?
3. How important and why was legacy as part of the sustainable urban development of Tokyo Olympics?

The first question will examine the past by drawing themed lessons from two previous cases. The second is a follow-up question that applies lessons learnt from previous cases to inform some tangible recommendations for future mega-events. The findings will provide a sustainable development framework

in the context of the Tokyo and potentially future Olympics as a way of implementing and localising SDG 11.

#### **1.4. Research Value**

The research findings will be invaluable for both the future and the past cases. The findings of lessons will contribute to the ongoing redevelopment process in Stratford, London, as well as the procrastinated regeneration process in Rio, as a reflection of genuine regeneration impacts, especially in the social and spatial context for planning practitioners.

With the COVID-19 pandemic, this research focusing on legacy planning for the Tokyo and future Olympics has become more relevant and significant than ever before. This is because, with fewer or no foreign spectators at all, the story of tourism stimulation and short-term economic stimulus during the Olympics period would make less sense. The focus will then shift to the long-term implications for legacy planning during the post-event period to justify the most expensive Summer Olympics in history. Indeed, from a sustainable development perspective, the Olympics is about leveraging a short-term event into a long-term positive legacy. This research aims to bring in lessons from the London and Rio Olympics to Tokyo Olympics and possible the future Games. The Olympics is not only a four-week mega-event but a 40-year urban transformation process that impels sustainable growth.

#### **1.5. The Structure of This Paper**

This paper proceeds with a detailed literature review that defines key theoretical frameworks, followed by an in-depth case study analysis of Tokyo 2021, London 2012, and Rio 2016. These three Olympics were selected as case studies because the research was conducted shortly after the Tokyo Games; more recent Olympics could not be included due to time and resource constraints. A comparative analysis then synthesises the findings across these three distinct contexts, leading to a discussion of broader implications. The paper concludes with a summary of the key findings and a set of practical recommendations tailored to foster more sustainable legacies within the SDG framework in the future.

## **2. Literature Review**

### **2.1. SDG11 and Urban Transformation through Olympics**

Sustainable development is a concept that involves meeting the needs of the present generation without compromising the ability of future generations to meet their own needs. It is a development approach that seeks to balance economic growth, social well-being, and environmental protection in order to create a sustainable future for all. Sustainable development is important in mega-events, such as the Olympics, because these events have the potential to generate significant economic, social, and environmental impacts on the host city and its surrounding regions.

Mega-events, such as the Olympics, have the potential to bring numerous benefits to the host city, including increased tourism, economic growth, and infrastructure development. However, these events can also have negative impacts, such as environmental degradation, displacement of local communities, and social inequality. Therefore, it is important to ensure that mega-events are planned and managed in a way that promotes sustainable development and minimises their negative impacts.

Sustainable development in mega-events involves the integration of sustainability principles into all aspects of the event, from planning and design to implementation and evaluation. This includes measures to reduce the event's carbon footprint, protect natural resources, promote social inclusion, and create lasting legacies for the host city and its residents. For example, the London 2012 Olympics implemented a number of sustainable development initiatives, such as the use of renewable energy, sustainable transport options, and the creation of new green spaces (IOC, 2016).

Sustainable development is a critical concept in mega-events, such as the Olympics, because these events have the potential to generate significant economic, social, and environmental impacts on the host city and its surrounding regions. By promoting sustainable development principles, mega-events can create lasting benefits for the host city and its residents while minimising their negative impacts.

### **2.2. Legacy planning**

While broadly understood as 'what is left behind' after a mega-event, the concept of 'legacy' lacks a universally agreed-upon definition, a single theoretical framework, or a precise timeframe, leading to considerable inconsistencies in its contextualisation and measurement across various studies (Preuss, 2007; Scheu et al., 2021). Legacies are multifaceted, encompassing planned versus unplanned outcomes, positive

versus negative consequences, and tangible (e.g., new infrastructure, renovated venues) versus intangible (e.g., enhanced city image, shifts in social attitudes) dimensions (Gratton and Preuss, 2008). The undetermined duration of these legacies further complicates their quantification, making it nearly impossible to provide precise long-term assessments (Preuss, 2007).

Legacy planning is a critical aspect of mega-events, particularly when it comes to ensuring sustainable development outcomes. A growing body of literature has examined the role of legacy planning in promoting sustainable development in the context of mega-events, such as the Olympic Games. Several studies have highlighted the importance of sustainable development legacies as a way to ensure that mega-events generate long-lasting benefits for host communities. Toohey and Veal (2000) argued that sustainable development legacies are critical for ensuring that mega-events do not have negative impacts on the environment and local communities. Similarly, Cashman (2006) noted that sustainable development legacies can help to promote economic development and social equity while minimising negative impacts on the environment. Many authors have examined specific sustainable development legacy initiatives and their outcomes. Henderson and Hinch (2012) studied the sustainable development legacies of the Vancouver 2010 Winter Olympics and found that they had a positive impact on local economic development, environmental sustainability, and social inclusion. Other authors have explored the challenges and limitations of sustainable development legacy planning for mega-events. Grix and Houlihan (2014) noted that sustainable development legacies can be complicated by factors such as competing stakeholder interests and a lack of funding. They also highlighted the need for clear sustainability goals and monitoring mechanisms to ensure that sustainable development legacies are achieved.

Previous research on sustainable development legacy planning for mega-events underscores the need for approaches that are not only comprehensive but also explicitly integrated across economic, social, and environmental dimensions (Smith, 2012; Müller, 2015). When legacy strategies align these dimensions, they can generate tangible benefits such as long-term job creation, improved environmental performance through sustainable infrastructure, and enhanced social inclusion via accessible public spaces and affordable housing initiatives (Gold & Gold, 2013; Kassens-Noor, 2016). At the same time, the literature highlights persistent challenges: competing priorities between government bodies, private investors, and local communities (Horne & Whannel, 2012); resource constraints that limit follow-through after the event (Preuss, 2019); and the tendency for short-term political or commercial interests to overshadow long-term sustainability objectives (Toohey, 2008; Gaffney, 2010).

### **2.3. Sustainable Urban Transformation**

The United Nations' Sustainable Development Goals (SDGs) provide a critical and comprehensive framework for evaluating mega-event legacies, particularly SDG Goal 11: *'Make cities and human settlements inclusive, safe, resilient and sustainable'* (UN, 2015; UN-Habitat, 2016). Key targets within SDG 11 include enhancing inclusive and sustainable urbanisation (11.3), ensuring universal access to safe, inclusive, and accessible green and public spaces (11.7), and promoting participatory, integrated urban planning and management. Achieving sustainable urban development necessitates integrated strategies that prioritise affordable and inclusive housing, heritage preservation, and stronger local governance, all supported by robust, disaggregated data. The concept of a 'just city' is intrinsically linked to the level of citizen participation in the planning process and the existing social equity within a city (Portella, 2021).

A profound tension exists between the nature of mega-event planning, typically top-down, fast-paced, and capital-intensive, and the core principles of SDG 11, which call for inclusive, participatory, and equitable urban development. This conflict often results in situations where the drive for rapid development and market forces takes priority over community-led initiatives and social impact. As a result, mega-events, despite their stated goals, may unintentionally worsen existing urban inequalities rather than reduce them. The speed and scale required for delivering such events can bypass the slower, more deliberative processes necessary for meaningful participation and fair outcomes, limiting the potential for achieving the broader objectives of sustainable urban development under SDG 11.

### **2.4. Theoretical Frameworks for Analysing Mega-event Impact**

Several theoretical frameworks offer valuable lenses through which to analyse the complex impacts and legacies of mega-events, providing a structured approach to understanding their multifaceted outcomes.

#### **2.4.1. White Elephant: Venue and Olympic Park Legacy**

The 'white elephant' claim has long been a crucial lens for understanding the post-event utility and financial viability of venues and large-scale urban (re)developments. Originating from the concept of a burdensome yet magnificent possession, a 'white elephant' in the context of mega-events refers to costly, obsolete, or underused constructions that become significant financial burdens for host cities (Santos, 2024). This argument highlights the tension between the symbolic architecture and spectacle desired during the bidding and event phases, and the practical realities of post-event legacy, including ongoing costs, maintenance, and relevance to local needs (Flyvbjerg et al., 2003). The prevalence of such venues reflects systemic

failures in long-term planning for utilisation and maintenance, often stemming from a focus on the event's short-term grandeur rather than its practical post-event long-term value.

#### **2.4.2. Gentrification and Housing Rights: Olympic Village and Housing Legacy**

Many critical studies on gentrification and housing rights provide a critical framework for evaluating the social impact of Olympic Villages and surrounding residential developments on local communities. Mega-events frequently act as powerful catalysts for urban redevelopment, leading to increased property values and the displacement of lower-income residents from their established communities (Davies et al., 2020). This displacement may involve both direct and indirect violations of housing rights, as authorities sometimes employ tactics such as the dissemination of false information or the distortion of facts to pressure residents into leaving. The core issue is how these large-scale urban transformations, ostensibly for public benefit, often serve to benefit outsiders and wealthier newcomers rather than genuinely addressing the housing needs of existing local residents (Lees et al., 2016).

#### **2.4.3. Demonstration Effect for Infrastructure: Urban Connectivity and Transport Legacy**

The 'demonstration effect' could be effectively applied to assess how mega-events are used to justify and accelerate large-scale infrastructure investment, particularly in urban transport and connectivity levers. In this context, the Olympics act as a powerful 'deadline driver', providing an undeniable impetus to fast-track complex infrastructure projects that might otherwise face prolonged delays (Poynter and Viehoff, 2019; Goldstone, 2017). This accelerated development is often presented as a way to demonstrate urban modernity, efficiency, and progress to international audiences and investors, thereby enhancing the host city's global image and competitiveness (Roche, 2000; Flyvbjerg et al., 2003).

### **3. Methodology**

This study adopts a case study, site visit, desk-based document review and comparative analysis design to examine strategic legacy planning for Sustainable Development Goal 11.3 through the lens of London 2012, Rio 2016 and Tokyo 2021. Four complementary methods: site visits, documentary analysis, research-community engagement and thematic comparative analysis are triangulated to produce a robust, multi-dimensional account without formal expert interviews.

### 3.1. Research Design and Approach

This study adopts a qualitative, comparative case study approach to critically analyse the strategic legacy planning and outcomes of three recent Olympic and Paralympic Games: London 2012, Rio 2016, and Tokyo 2021. The primary goal is to gain an in-depth understanding of how these mega-events influenced urban development and their legacy outcomes, specifically in relation to SDG 11. By comparing diverse contexts, the research aims to identify common patterns, unique challenges, and transferable lessons, integrating empirical observation with a robust analysis of secondary data. This approach allows for a nuanced exploration of the ‘why’ and ‘how’ behind specific legacy outcomes, which is crucial for understanding the multifaceted nature of mega-event legacies and their complex interactions with urban sustainability (Yin, 2018).

### 3.2. Data Collection

A multi-faceted approach to data collection was employed to ensure comprehensive coverage and triangulation of findings:

- **Site Visits and Observation:** Field visits to each Olympic site provided first-hand spatial insights into enduring infrastructure and community interaction.
  - London 2012: Queen Elizabeth Olympic Park (QEOP), East Village, and adjacent neighbourhoods.
  - Rio 2016: Barra da Tijuca Olympic Park and residential redevelopment in Ilha Pura.
  - Tokyo 2021: National Stadium Heritage Zone and Tokyo Bay Olympic Village redevelopment, Harumi Flag.

These visits enabled visual verification of the current state of the venues, housing development and transport connectivity.

- **Desktop Research and Document Review:** Extensive desktop research formed the backbone of the data collection. This involved a systematic review of a wide array of publicly available secondary sources. These included official planning reports from organising committees and governmental bodies, detailed legacy strategies, academic publications (peer-reviewed journal articles, books, theses), news archives, and policy documents. This method allowed for the examination of official narratives, critical perspectives, and empirical evidence related to the three case studies, discerning both planned aspirations and actual outcomes (Bowen, 2009).
- **Challenges with In-depth Interviews:** While in-depth interviews with stakeholders in all three cities were intended to gather primary qualitative data, this method encountered significant

limitations. Low response rates from relevant experts, particularly in Rio and Tokyo, constrained the effectiveness of formal interviews, limiting the depth of direct stakeholder perspectives that could be incorporated.

- **Informal Conversations:** To gain additional contextual understanding and practitioner insights, informal conversations were held with professionals and experts at urban planning conferences and industry events (see Appendix A). These discussions provided valuable qualitative perspectives on the challenges and opportunities in mega-event legacy planning.

### 3.3. Data Analysis

A systematic qualitative content analysis approach was applied to the collected documentary and observational data. This involved identifying, analysing, and reporting recurring patterns and key themes within the information. The process followed established guidelines for thematic analysis, including familiarisation with the data, generation of initial codes from the textual content, searching for overarching themes that captured significant patterns, and refining these themes for coherence and distinctiveness (Lochmiller, 2021).

A comparison between the selected cases was then applied to highlight similarities and differences in how legacy goals were planned and implemented across London, Rio, and Tokyo, specifically in connection to SDG 11. Findings were organised under three main themes, directly informed by the theoretical framework:

- **Venue and Park Legacy:** Analysed through the lens of the white elephant argument, focusing on the risks and realities of underused or unsustainable venues and large-scale Olympic park developments.
- **Housing and Community Impact:** Examined concerns around the gentrification and housing rights issues, evaluating the impact of Olympic Villages and surrounding residential development on local communities, particularly concerning displacement, sense of belonging, affordability, and ownership.
- **Transportation Connectivity:** Assessed through the application of the demonstration effect in the context of infrastructure delivery lifecycle, exploring how mega-events are used to justify and accelerate urban transport investment and broader infrastructure development.

This structured approach allowed for a deep engagement with the qualitative data, revealing both explicit statements and underlying meanings related to legacy outcomes, and facilitating a robust comparative analysis.

### **3.4. Research Limitations**

Several limitations inherent to the proposed methodology are acknowledged. The limited success in conducting formal, in-depth interviews, especially with stakeholders in Rio and Tokyo due to access barriers and limited interest, meant that primary qualitative data from these crucial perspectives was less comprehensive than initially intended. In addition, the reliance on publicly available secondary data, while extensive, may inherently present a curated or incomplete picture of certain outcomes, particularly concerning sensitive social issues or financial details that may not be fully disclosed in official reports. Furthermore, the subjective nature of observational data, while valuable for empirical insight, is subject to researcher interpretation. Limited time and resource constraints on site also affected the depth of site-specific analysis, particularly for the more geographically distant cases of Rio and Tokyo, potentially limiting the granularity of some findings. While efforts were made to triangulate information from various sources to enhance credibility, the study's findings are shaped by the availability and nature of the existing documented evidence.

## **4. Case Study 1: Understanding the Needs of Legacy Planning for Tokyo Olympics 2020**

### **4.1. Overview of Urban Development in Tokyo Olympics**

Tokyo 2020's legacy planning centred on two principal development zones, Heritage Zone and Tokyo Bay Zone, each with tailored strategies to maximise sustainability and post-Games legacy planning.

#### **4.1.1. Heritage Zone**

The Heritage Zone's strategic legacy planning for the New National Stadium and the Yoyogi National Gymnasium demonstrated a clear commitment to sustainable development. The New National Stadium, designed by renowned architect Kengo Kuma, was constructed with a 'Stadium in the Forest' concept, utilising wood from all of Japan's 47 prefectures to reduce its carbon footprint (IMechE, 2020). The stadium's design also incorporated natural ventilation systems to regulate temperature and solar panels to generate electricity, further highlighting its environmental considerations (ibid.). Beyond the new construction, the organisers' approach to the Yoyogi National Gymnasium, a legacy venue from the 1964 Tokyo Games, was to preserve and reuse it rather than demolish and rebuild (IOC, 2020). This strategy

prevented the creation of 'white elephants' and demonstrated a clear focus on long-term sustainability by capitalising on existing infrastructure and historical legacy.

### 4.1.2. Tokyo Bay Zone

On reclaimed land south of the city centre, the Tokyo Bay Zone hosted the Olympic Village, waterfront parks, and ten new competition venues. The athlete village at Harumi Flag exemplified circular-economy principles: modular timber construction, on-site renewable energy generation, and use of local materials (Planet Ark, 2021). Designed from the outset for conversion into over 5,600 residential units, retail shops, and childcare centres, the village now forms a vibrant mixed-use neighbourhood (Mitsui Fudosan, 2023). New promenades, cultural pavilions, and green spaces knit the district into the wider metropolitan fabric, anchoring further private investment (TMG, 2021).

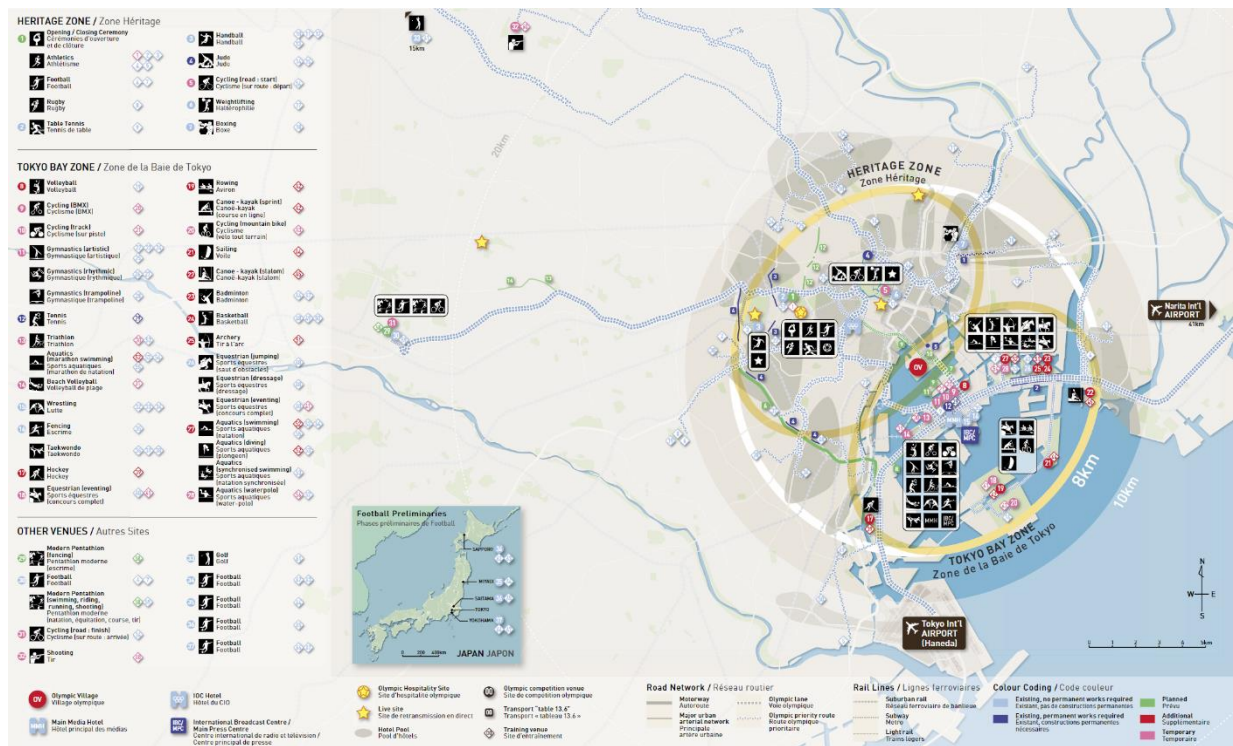


Figure 4.1 Tokyo Olympics 2021 Venue Location (Heritage Zone & Tokyo Bay Zone) (Source: IOC)

### 4.2. The Objectives of the Olympic Games in Tokyo

The Tokyo 2020 Olympic Games were designed not only as a sporting event but as a strategic tool to enhance Japan's global standing, stimulate economic growth, and promote sustainable urban development. In the context of post-pandemic recovery, organisers aimed to position Tokyo as a resilient global city capable of hosting major international events, with the goal of entering the top three of the Global Power

City Index and attracting investment in tourism, culture, and high-end real estate (Mori Memorial Foundation, 2016). A central focus was the revitalisation of the Tokyo Bay area, using Olympic infrastructure, including the new stadium and a dual-zone urban strategy (Heritage and Bay Zones), in order to drive mixed-use development and reinforce Tokyo's economic leadership (TMG, 2021). Framed as the 'first SDGs Olympics,' Tokyo 2020 also embraced sustainability, pledging 100% renewable energy at venues, zero-waste operations, and alignment with the UN Sustainable Development Goals through stakeholder engagement and legacy planning (Planet Ark, 2021).

The Tokyo 2020 Olympic Games (held in 2021 due to the COVID-19 pandemic) were envisioned to create a legacy of sustainability, showcasing Japan's technological strength and commitment to environmental advancement. Aspirations included promoting international exchange through educational initiatives and fostering an inclusive society. The postponement itself, a first for the Olympic Games, presented unprecedented challenges, but the event was ultimately positioned as a show of recovery from a global crisis.

#### **4.3. What are the needs for long-term urban transformation during the post-Olympics period in Tokyo?**

Despite strong aspirations, the one-year postponement of the Tokyo 2020 Olympic and Paralympic Games was unprecedented and created major organisational and financial challenges (Baade & Matheson, 2021). Reframed as a message of '*hope, solidarity and peace*' amid crisis (Bach, 2021), the pandemic context meant the event was held without spectators, drastically reducing short-term local revenue and amplifying debates over its justification given the Olympics bid and return on investment at the time (IMF, 2021). With short-term benefits diminished and public scepticism high, city leaders and organisers reframed the Games as a springboard for long-term urban planning and development. This shift aimed to place greater emphasis on delivering tangible and inclusive legacy outcomes, such as housing, environmental innovation, and infrastructure upgrades, as a way to restore public trust, rebuild optimism, and demonstrate that the Olympics could still generate lasting value for the city despite the extraordinary circumstances (TMG, 2021).

##### **Venues and Olympics Park**

One of the most urgent needs is to ensure that the new and refurbished facilities do not become high-cost maintenance burdens with limited everyday value. Although this is a common challenge for most host cities, it became a more concerning topic for Tokyo given the lack of tourism and short-term economic boost.

This requires that Olympic Park and other venues be actively reconfigured for regular community use, with public access and planning design measures introduced for the Games sustained beyond the event. Tokyo's strategy to avoid 'white elephants' by reusing 1964 venues and designing new structures for long-term purposes provides a strong foundation, but ongoing investment, operational planning, and integration into neighbourhood life remain necessary. Retrofitting venues with available low-carbon technologies can further improve energy performance and reduce maintenance costs.

### **Olympics Village and Housing**

The Athletes' Village has been redeveloped into the Harumi Flag residential project in the Tokyo Bay area (IOC, 2022). Conceived to meet local housing needs, the development emphasises sustainability, notably becoming Japan's first hydrogen-powered neighbourhood, with plans for active use of hydrogen energy in both residential and commercial facilities (Government of Japan, 2020). To realise its legacy potential, Tokyo must ensure that Harumi Flag genuinely contributes to inclusive housing for a diverse resident base, including a mix of for-sale and rental housing, assisted living, childcare, and senior/shared housing within its Port Village (Mitsui Fudosan, 2023).

*The development aims to create a vibrant community that is comfortable to live in and attracts a diverse range of people, provide shops and community support facilities that create vibrancy and develop open spaces where people of all ages can gather and have a good time (TMG, 2022).*

Although there was no explicit framing of the development as 'affordable' in terms of targeted pricing or eligibility criteria from official documentation or government publications, to attract a diverse range of people to live in Harumi Flag, it is important to set out clear strategies to maintain affordability over time, prevent speculative ownership, and encourage social interaction among residents from different backgrounds. Timely occupancy and effective integration with surrounding neighbourhoods will also be critical to delivering the project's intended social value.



Figure 4.2 Overview of the Tokyo 2020 Olympic and Paralympic Village, highlighting the transformation from an international trade centre to the athletes' village to Harumi Flag Residential development (Source: Tokyo Metropolitan Government).

## Urban Connectivity

Although Tokyo’s public transport network was already one of the most extensive in the world, the preparations for the 2020 Olympics acted as a catalyst for several major upgrades and infrastructure projects. These included the completion of the Central Circular Route (Yamate Tunnel) and the Tokyo Gaikan Expressway, which improved freight movement and inter-suburban travel and were accelerated by the Olympic timeline (Metropolitan Expressway Company Limited, 2020). Other projects, while not completed in time for the Games, saw their plans accelerated, such as the JR East Haneda Airport Access Line, now under construction, which will provide a faster, more direct connection between the airport and key city hubs. It is projected to cut travel times from Tokyo Station to Haneda from approximately 28 minutes to 18 minutes (East Japan Railway Company, 2024). The Olympic legacy also extended beyond immediate infrastructure, accelerating long-term strategic planning for the city's future. This included the formal planning and commencement of projects such as the extension of the Yūrakuchō Line from Toyosu to Sumiyoshi and the Namboku Line to Shinagawa, which will improve east–west and north-south connectivity, respectively (Tokyo Metro, 2024). While some of these projects were planned prior to the Games, the Olympic timetable accelerated decision-making and funding, bringing forward their delivery and aligning them with wider urban mobility objectives (TMG, 2021). Even without spectators due to COVID-19, looking forward, there is a need for a more integrated, long-term transport strategy that connects emerging urban districts with the wider metropolitan network, ensuring equitable access for residents, workers, and visitors. This includes assessing the feasibility of direct rail connections, strengthening multimodal integration, and improving last-mile connectivity.



Figure 4.3 Map of Tokyo 2020 Olympic Games venues and their locations across the Tokyo metropolitan area. (Source: IOC)



Figure 4.4 Planned construction of Tokyo's three ring roads connecting key urban areas and airports (Source: The Ministry of Land, Infrastructure, Transport and Tourism, Kanto Regional Development Bureau)

## 4.4. Today's Tokyo Olympics Legacy

### Japan National Stadium and Inclusive Legacy Planning

Despite its extensive public transport network, Tokyo's approach to the Olympic legacy exemplified a 'less is more' philosophy. Initially, a lavish design by Zaha Hadid, an 80,000-seat 'bike-helmet' structure, was selected but later abandoned after public backlash over ballooning costs (surpassing approximately USD 2 billion) and concerns over its scale and impact on the Meiji Shrine's gardens (Smith, 2015). In response, the project was relaunched under a more modest, context-sensitive design by Kengo Kuma, chosen for its fit-for-purpose intent and responsiveness to local aesthetics and cost realities (Tanaka, 2018). On-site observations reveal that the resultant stadium is not merely an event venue but a publicly accessible urban facility. It hosts community-oriented activities such as family sports days and includes an Olympic Museum and guided public tours, offering immersive visitor experiences and fostering local engagement. These features reflect a deliberate shift from exclusive event-focused infrastructure to inclusive, everyday urban use, a notable success in legacy delivery. Financially, the transition toward private-sector operation of the stadium aims to mitigate long-term public burden. A consortium led by NTT Docomo has agreed to a 30-year licence, paying approximately USD 338 million to manage operations, a model designed to reduce the government's fiscal responsibilities (Yamada, 2021). Tokyo's National Stadium demonstrates how embracing realism and adaptability in design, eschewing grandiose architecture, and embedding facilities into everyday urban life can yield a more socially inclusive and financially sustainable Olympic legacy.



Figure 4.5 Japan National Stadium being reused and open to the public during the author's visit. (Source: Author)



Figure 4.6 Former athletes celebrate a sports day outside Japan National Stadium. (Source: Author)



Figure 4.7 A stadium tour that opens to the public and tourists on a daily basis (Source: Author)

## **Harumi Flag**

The Harumi Flag development exemplifies Tokyo's strategic approach to post-Olympic housing, transforming the 2020 Olympic Village into a large-scale, integrated neighbourhood encompassing 5,632 residential units, including 4,145 condominiums and 1,487 rental dwellings, on approximately 18 hectares of reclaimed land in Chūō Ward (TMG, 2022). Conceived under the Tokyo Metropolitan Government's urban redevelopment programme, the complex was designed to accommodate diverse household types, including families, seniors, singles and people with disabilities, within a self-contained environment featuring schools, parks, retail spaces and support facilities (ibid.). From the outset, Harumi Flag aimed to strike a balance between spaciousness and central-city affordability. While these prices represented comparatively good value for central Tokyo, they remained largely accessible to middle- and upper-income groups rather than the broader population (NHK World, 2023). Demand was intense, with one early release oversubscribed by 71 to 1, necessitating a lottery system for high-priced units; yet speculative interest also emerged, with nearly 20 per cent of units reportedly purchased for investment rather than primary residence (ibid.). However, market forces and evolving conditions have posed challenges: some resale units now command significantly higher prices, and high rental listings indicate limited demand and ongoing affordability concerns.



*Figure 4.8 Mixed-use redevelopment at Harumi Flag progress in 2022 (Source: Author)*



*Figure 4.9 New play spaces created to enhance community life within the Harumi Flag residential development (Source: Author)*

## **Tokyo Metro and Ring Road**

While Tokyo's metropolitan transport system is internationally recognised for its efficiency and coverage, the Olympics revealed persistent gaps in accessibility, particularly for newly redeveloped districts such as

the Tokyo Bay area. From the author's site visit, public transport to this waterfront zone remains limited, with no direct rail connection. Existing services may not provide the same capacity, speed, or reliability as rail-based options for a major residential and commercial hub. Access relies primarily on new 'green' bus or Tokyo Bus Rapid Transit (BRT) services, linking central city areas like Toranomon with the bay area, introduced under the Zero Emission Tokyo strategy, supplemented by cycle paths and pedestrian-friendly routes. The opening of Loop 2 Kanjo 2 Road will also increase accessibility of the waterfront area (TMG,



Figure 4.10 Automated buses circle the Olympic Village and can drop athletes off at different stops. (Source: IOC)



Figure 4.11 Bus services linking Tokyo's urban areas with the newly developed Harumi Flag residential community. (Source: Author)

2022).

Box1. The needs for the long-term urban transformation during the post-Olympics period in Tokyo

- **Proactive Venue Reuse:** Tokyo's 'build less' approach, prioritising the retrofitting and reuse of existing venues (including those from 1964), demonstrates a fiscally responsible and sustainable model for avoiding 'white elephants' and ensuring post-Games utility.
- **Emerging Financial and Regulatory Challenges in Housing:** High investment demand for Harumi Flag units signals the need to clarify for whom post-Games housing is built and to explore regulatory tools that balance investor interest with social inclusion.
- **City-Wide Connectivity Improvements:** Rather than linking solely to Olympic sites, Tokyo aims to provide a suite of infrastructure upgrades, including extensions of existing rail lines, new bus corridors, and completed road networks, that enhance mobility across the metropolis and serve varied local needs rather than a single Olympic precinct.

# 5. Case Study 2: Lessons Learnt from London Olympics 2012

## 5.1. Overview of the Olympic Games in London

The London 2012 Olympic Park and main venues were located in Stratford, East London. The regeneration of East London and urban extension eastwards in London to increase the capacity of the capital was one of the key aspirations of the London Olympics. The main objective was to transform Stratford, which was previously associated with deprivation and deemed as underinvested, into a vibrant and attractive place to live, work, and visit (GLA, 2012). The Olympic Park itself was also transformed into a new green space for the community. The area has become more attractive and prosperous, and it is now home to a diverse range of people and businesses. The Olympic Park has also become a popular destination for both tourists and locals.

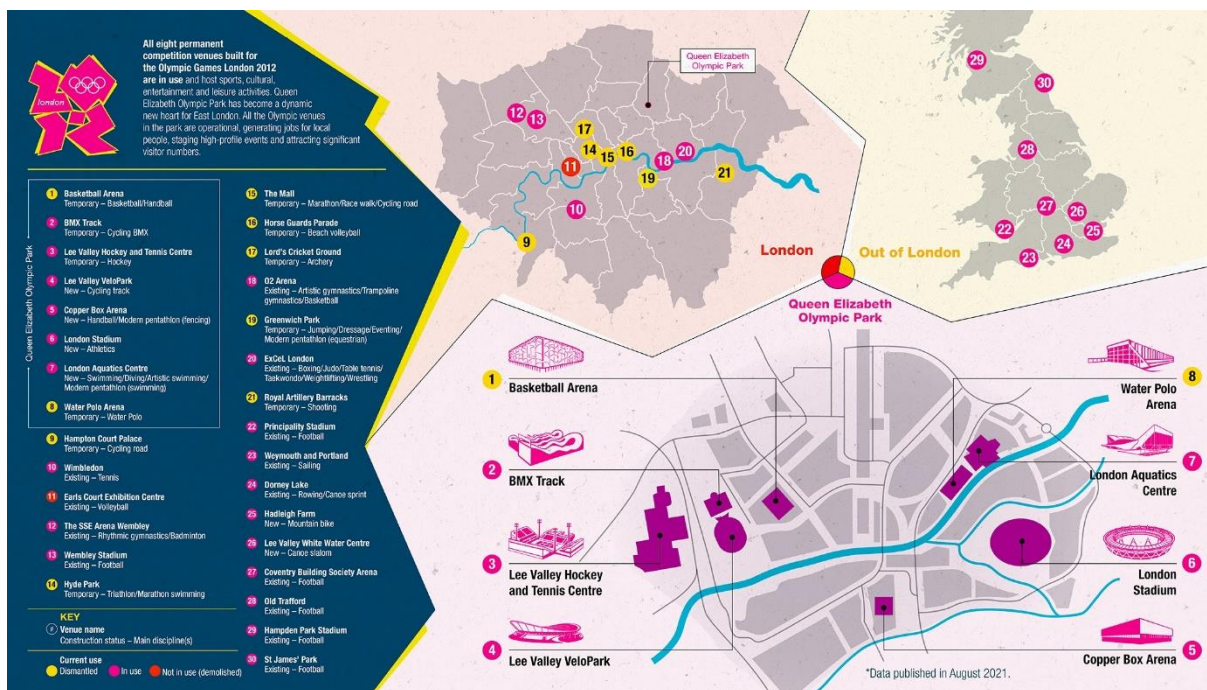


Figure 5.1 Venue locations for the London 2012 Olympics, including Stratford Olympic Park. (Source: IOC)

## 5.2. The Urban Development Goals and Strategies for London Olympics 2012

London's successful bid for the 2012 Games was heavily predicated on a compelling legacy narrative, encapsulated by the iconic slogan 'Inspire a Generation'. A central objective was the 'convergence' vision, aiming to significantly improve the social and economic opportunities in the historically deprived host

boroughs (e.g., Barking and Dagenham, Greenwich, Hackney, Newham, Tower Hamlets, and Waltham Forest) to align with the London average within two decades (GLA, 2017). The Games were explicitly seen not as an end in themselves, but as a means to achieve the legacy of fundamental economic and social change in East London (ibid.).

### **5.3. Legacy planning initiatives implemented in London**

#### **Queen Elizabeth Olympic Park (QEOP) and the Olympic Stadium**

The transformation of the Queen Elizabeth Olympic Park (QEOP) in urban regeneration attempted to address the risks of the ‘white elephant’. A former post-industrial brownfield site, including some contaminated land known as ‘Fridge Mountain’, it underwent extensive clearing and cleaning. This involved removing over 200 buildings, dismantling 52 electricity pylons, and remediating 200 hectares of contaminated land and waterways, converting it into a significant ecological asset and the largest new park created in London in 150 years (Allies and Morrison, 2017; LLDC, 2021). The success of this transformation was largely due to robust spatial planning and the comprehensive masterplan developed by the London Legacy Development Corporation (LLDC), which enabled long-term regeneration, the creation of extensive public green spaces, and effective place-making in East London (Allies and Morrison, 2017; LLDC, 2021).

Furthermore, the political will behind the vision for Olympicopolis, a new cultural and education district within the park, has been instrumental. Now known as East Bank, this initiative attracted world-class cultural and educational institutions, including UCL East, UAL's London College of Fashion, V&A East, and BBC Music Studios, fostering job creation and economic diversification (LLDC, 2024a). The re-use of several key venues, such as the London Aquatics Centre and the Lee Valley VeloPark, as public facilities has been a significant legacy success, translating the aspirations in the masterplan to reality with millions of visitors utilising them post-Games (LLDC, 2021).

The London Stadium was transformed from an Olympic athletics stadium to a multipurpose stadium for various world-class sports events, such as the Premier League football and Major League Baseball (see Figure 5.3). However, the post-event re-use of the main Olympic Stadium became a contentious issue, exemplifying a 'financial white elephant' despite its physical re-use. The deal to secure West Ham United Football Club as the anchor tenant involved a 99-year lease significantly subsidised by public funds, requiring substantial extra capital expenditure for conversion work and a commitment to extensive annual expenses from public sources. This arrangement raised serious questions about transparency, the long-term

value for taxpayers, and whether the public interest was adequately served, highlighting a flawed funding model and complex governance that undermined initial legacy promises, particularly the commitment to retain a world-class athletics track (BBC, 2016; The Guardian, 2016).



Figure 5.2 The transformation of Stratford from 'Fridge Mountain' industrial wasteland into the Olympic Park. (Source: fridge mountain: NLA; QEOP in 2017 by the author; QEOP in 2024 by the author)

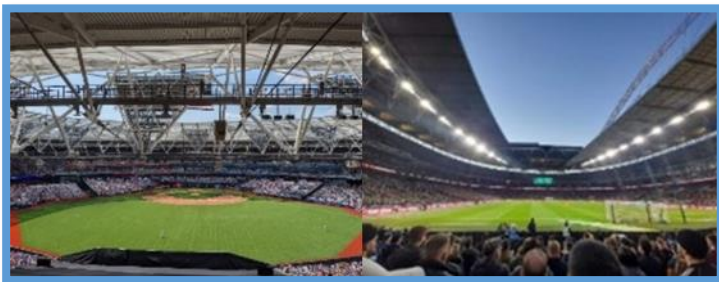


Figure 5.3 London Stadium repurposed for multiple uses, including MLB baseball and West Ham United football (Source: Author)



Figure 5.4 Olympicopolis: a new cultural and higher education district within the QEOP. (Source: Author)

### **London Legacy Development Corporation, East Village and Beyond**

The London Legacy Development Corporation's (LLDC) housing strategy, integral to the masterplan, aimed to deliver a substantial number of new homes, including a significant proportion of affordable housing, within the Olympic Park development (LLDC, 2024b). The former Athletes' Village, now East Village, is fully occupied and forms part of this new residential landscape (LLDC, 2024b). However, a critical reflection reveals a tension between the aspiration for affordability and the reality experienced by local East Londoners. While the masterplan and planning policies supported increased housing supply and wider regeneration, evidence suggests that the housing delivered was not genuinely affordable for many existing residents. Initial targets for the Legacy Communities Scheme were to build up to 6,800 new homes with an affordable housing target of 35%, and a minimum of 20% (GLA, 2014). This was a decrease from initial aspirations of up to 50% (LLDC, 2024b; GLA, 2014).

A substantial portion of the affordable units delivered in East Village were intermediate rents or shared ownership schemes that remained prohibitive for households on median incomes in the legacy boroughs (Corcillo & Watt, 2022). For instance, in the East Village, the 2,818 apartments were split evenly between private rental and affordable housing, with the latter comprising a mix of social rented and intermediate homes (Queen Elizabeth Olympic Park, 2024). This has led to concerns about gentrification and the potential for indirect displacement, where rising property values and living costs effectively priced out lower-income and ethnic minority populations. A study by Corcillo and Watt (2022) revealed that East Village is a majority white neighbourhood with a large professional-managerial population, which is distinct in both class and ethnic terms from the rest of the Newham borough. Furthermore, a study by the University of Portsmouth noted that regeneration efforts resulted in demographic shifts, with the original local community not necessarily being the primary beneficiaries (University of Portsmouth, 2024). Thus, while the wider regeneration and increased housing supply represent an undeniable benefit, the tension between economic uplift and achieving true social equity for the original communities remains a key challenge (Watt, 2013; University of Portsmouth, 2024)



Figure 5.5 Mixed-use and residential opportunities surrounding Queen Elizabeth Olympic Park. (Source: RIBA on X)



Figure 5.6 Residential developments situated alongside the QEOP (Source: Author)

### **Channel Tunnel Rail Link (CTRL), Jubilee Line Extension**

The London 2012 Olympics served as a powerful catalyst for urban transport and connectivity improvements. Major transport projects, such as the CTRL (High Speed 1) station at Stratford and the Jubilee Line Extension, were significantly accelerated and aligned with the Olympic timeline. These investments dramatically improved connectivity across East London, stitching the previously fragmented area into the wider city fabric and addressing long-standing inequalities between west and east London.

However, the author argued in another paper that, considering these major transport projects had already been in the pipeline, urban development ranging from housing to commercial would have taken benefit from the strong transport connectivity regardless of the Olympics (Wong, 2017). For example, according to the CTRL Act 1996 (Legislation, 1996), Stratford International Station would have occurred regardless of the Olympics as it was funded by the Stratford City principally. It was originally dedicated to the regeneration of Stratford for people in the Thames Gateway development connecting with an important express train from the western hub to Kent. A dotted line of Crossrail going through Stratford evidenced in a Crossrail consultation map in 2002 (see Figure 5.7) demonstrates this. Therefore, the Olympics could only be considered to provide the political justification and a firm deadline that fast-tracked these complex infrastructure developments, ensuring their timely delivery. This seemed to act as a crucial leverage mechanism, mobilising resources and political will to realise major rail upgrades and other transport enhancements that contributed significantly to Stratford and East London's long-term connectivity and growth, benefiting residents and businesses far beyond the Olympic period.



Figure 5.7 Consultation Map 2002 showing Stratford Station was in the pipeline of delivery regardless of the successful bid of London Olympics (Source: Crossrail web, 2002)

#### 5.4. Lessons Learnt in London

London's Olympic legacy demonstrates the importance of comprehensive masterplanning, strong governance through the LLDC, and firm political will in delivering large-scale infrastructure, venues, and housing at pace and scale. The Games acted as an undeniable catalyst, accelerating urban regeneration that might otherwise have taken decades. The transformation of the Olympic Park into a vibrant green space with integrated cultural and educational institutions (Olympicopolis) exemplifies successful spatial planning and post-event visioning. However, critical questions persist regarding operating costs and transparency of long-term deals, particularly the heavily subsidised stadium arrangement that continues to raise taxpayer value concerns. Moreover, while the LLDC's masterplan targeted affordable housing, delivery outcomes highlight the persistent challenge of ensuring genuine affordability and preventing gentrification for local East Londoners. Reflecting on the counterfactual, Stratford would likely have

undergone regeneration without the Olympics given its strategic location and existing development trends. Yet the Games undeniably accelerated this process, delivering transformation at significantly greater pace, scale, and with national attention and political backing that would have been difficult to secure otherwise.

Box 2. Key learning points from the London experience of legacy planning

- **Comprehensive Masterplanning:** A robust long-term masterplan for the QEOP successfully guided the transformation of a brownfield site into a vibrant mixed-use area with strong political will support (Olympicopolis).
- **Venue Sustainability vs Fiscal Risks:** Despite successful physical re-use, the London Olympic Stadium illustrates the significant financial challenges of long-term operation and maintenance, particularly when public funds heavily subsidise private tenants, raising questions about transparency and value for money, considered as the ‘financial white elephants’.
- **Gentrification and Housing Affordability:** The dilution of affordable housing commitments and the subsequent gentrification around East London highlight the inherent tension between large-scale urban regeneration and ensuring equitable benefits for existing, lower-income communities.
- **Transport Prioritisation through Olympic Deadlines:** Critical projects such as CTRL and JLE were expedited under Olympic timetables, demonstrating that legacy justification can mobilise funding and political will, thanks to the ‘Olympic’ branding.

## 6. Case Study 3: Lessons Learnt from Rio Olympics 2016

### 6.1. Overview of the Olympic Games in Rio

The Rio Olympic master plan presents the organisation of competitions in four cluster areas around the city. However, the concentration of competitions and the extent of urban interventions vary considerably among them. In the Copacabana zone, where the main tourist district is located, interventions had a minimal impact. Another zone encompasses the stadia of Maracanã, recently revamped for the 2014 FIFA World Cup, and the Olympic Stadium at Engenho de Dentro, built for the 2007 Pan American Games. A novel feature in the history of the Olympics was the organisation of the opening and closing ceremonies at a different stadium than where the athletics track and field competitions were held. In reality, it is in the zones of Deodoro and Barra that substantial processes of urban change have been triggered.

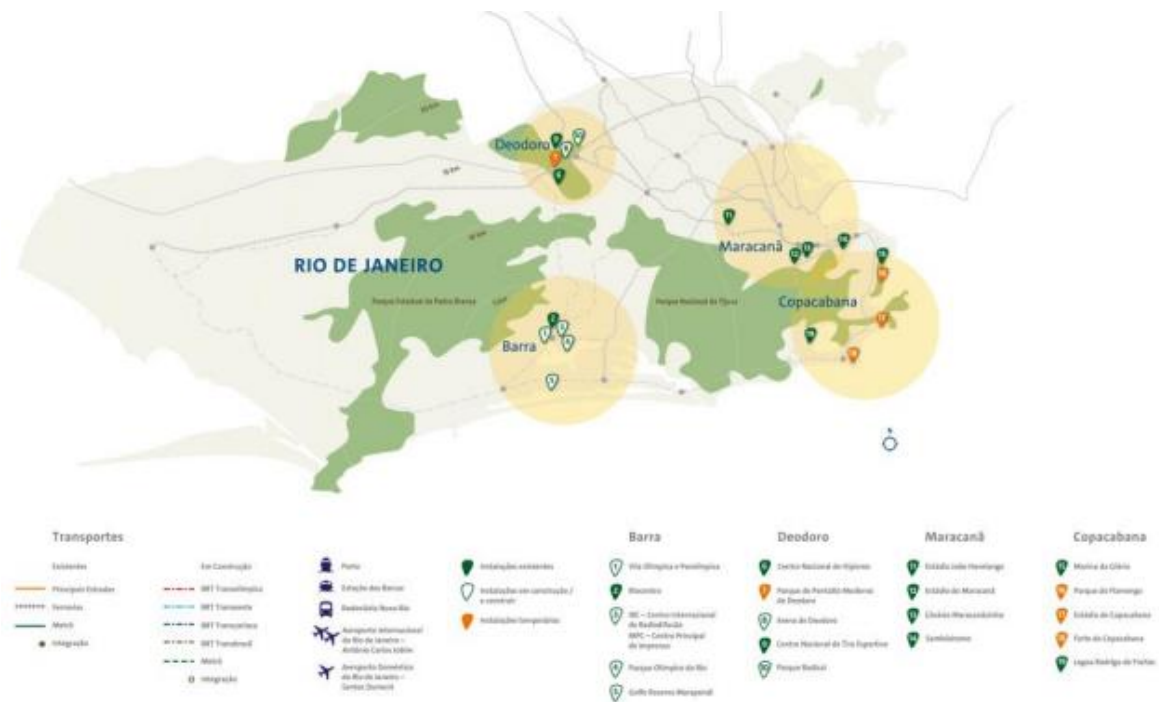


Figure 6.1 Venue locations for the Rio 2016 Olympics (inc. Barra region in the West of Rio) (Source: IOC)

## 6.2. The Urban Development Goals and Strategies for Rio Olympics 2016

The Olympic master plan for the Rio 2016 Games presented the organisation of competitions in four cluster areas around the city, with varying concentrations of competitions and urban interventions among them. While interventions in the Copacabana zone (a main tourist district) had minimal impact, substantial urban changes were primarily triggered in the Barra zone, which became the focus of much public policy and private investment. Rio aimed to replicate the ‘Olympic urban regeneration formula,’ with its bidding process emphasising the promotion of the city and Brazil as a safe place for investments, suggesting the building of various infrastructural works beyond those directly related to the Games. The management and sustainability plan for the 2016 Games recognised that all planning aimed to create positive, enduring transformations, maximising social, economic, sports, and environmental benefits.

### 6.3. Legacy planning initiatives implemented in Rio

#### Barra Olympics Park and the Underutilised Venues

The Barra Olympic Park in Rio was divided into two key zones: a western area with temporary, modular venues, such as the Future Arena (for handball) and the Olympic Aquatics Stadium, and an eastern sector with permanent infrastructure like the Carioca Arenas and the Tennis Centre. The temporary facilities were designed for dismantling and reuse, for example, converting into public schools and community swimming pools. While the ‘legacy mode’ aligned with sustainable design principles and sought to mitigate the risk of ‘white elephant’ facilities, the execution fell short. The Future Arena was eventually converted into four municipal schools, but only after significant delays, while the planned redistribution of the Aquatics Stadium’s pools was only partially realised, leaving some assets underutilised (Silva and Pereira, 2022). Permanent venues faced similar challenges in transitioning from Games mode to Legacy mode. Despite being purpose-built, the Carioca Arenas and the Tennis Centre have remained largely inactive, their long-term programming and operational models underdeveloped. The private developer’s role in managing both temporary and permanent zones suffered from weak integration with public-sector legacy objectives, resulting in fragmented stewardship once the event concluded. Observations from the author’s site visit in 2022 suggested that several facilities displayed signs of inadequate maintenance, with landscaping left unmanaged, façade deterioration evident, and multiple structures standing closed. In some areas, partial demolition work had commenced but was left incomplete, producing a landscape of interrupted construction and spatial neglect. These conditions not only diminish the park’s functionality but also undermine its symbolic value as a regeneration catalyst for Barra da Tijuca.



Figure 6.2 The Olympic Aquatics Stadium, the main stadium within Barra Olympic Park in Rio de Janeiro. (Source: Author)



Figure 6.3 Poorly maintained facilities around Parque Olímpico do Rio de Janeiro. (Source: Author)

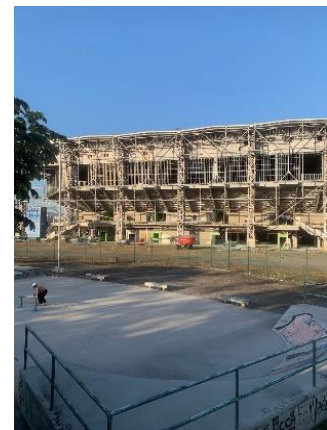


Figure 6.4 Several stadiums left underutilised or empty, awaiting demolition without interim uses (Source: Author)

## **Market-led Private Residential Developments and Gated Communities in Ilha Pura**

To deliver the legacy mode, the Athletes' Village, renamed Ilha Pura (Pure Island), was handed over to a private partnership between Carvalho Hosken and Odebrecht. It was promoted as a modern, high-end gated community of 3,604 apartments across 31 towers (The Guardian, 2016; Dezeen, 2016), with green building certification and resort-style facilities. However, sales were slow. By mid-2016, a year after sales opened, only 230 of the 3,604 apartments had been sold (Baker Institute, 2016), well below forecasts and a much lower figure than one-third. Planned prices were up to 1.5 million Brazilian reals (The Guardian, 2016), which made the apartments far too expensive for most local residents. The national recession and an oversupply of luxury housing made it even harder to sell. The public-private partnership model was meant to reduce the financial burden on the state, but in practice it faced major problems. The developer overestimated demand, kept prices high despite the weak market, and struggled to adjust its sales strategy after the Games. The design of a private gated community also brought wider concerns. While it offered security and exclusive facilities to residents, it created a physical and social divide from nearby lower-income areas, adding to long-standing segregation in Barra da Tijuca. Instead of becoming a mixed and vibrant neighbourhood, Ilha Pura turned into a partly empty and isolated luxury enclave with little connection to surrounding areas. This may show how Olympic housing projects can fall short when they focus on high-end real estate rather than meeting the broader housing needs of the city.



*Figure 6.5 New residential developments adjacent to Rio's Olympic Park. (Source: Author)*



*Figure 6.6 Gated communities and residential areas within the Barra region. (Source: Author)*

## **Bus Rapid Transit and Metro Extension**

The Rio 2016 Olympics led to the development of new urban transport infrastructure, including several Bus Rapid Transit (BRT) corridors and a significant metro extension (Metro Line 4). These improvements aimed to enhance connectivity to various Olympic regions, including Barra da Tijuca, relieve congestion, and unlock growth opportunities in the long term. The BRT system, totalling 125 kilometres, links Barra to the West End and to a new metro station (IOC News, 2017). The creation of a High Performance Transport Ring with the introduction of BRT set a successful case for other large cities in the global South, as Bogotá Mayor Enrique Peñalosa (2017) argued that it presents the only viable transport solution in terms of scale and cost for these cities. In addition, the construction of Metro Line 4 was the most expensive transportation project led by the Rio Olympics, which covered 16 kilometres with six new stations and reached Barra da Tijuca (IOC News, 2017). Despite these successes, the transport legacy in Rio is not without its challenges. For example, as some of the upgrading works of the new stations and metro extension transferred to a private operator, there were some financial challenges to fund the refurbishment of the stations and to reduce the number of carriages. However, based on the author's site visits, both the BRT system and Metro Line 4 provided reasonably efficient access between Barra and central Rio, saving travel time especially during peak hour congestion.



*Figure 6.7 The BRT system spurring growth in Rio's western districts, including Barra. (Source: Author)*



*Figure 6.8 Segregated BRT lanes to reduce congestion during peak travel hours. (Source: Author)*

### **6.4. Lessons Learnt in Rio**

Rio 2016 represents a critical case where Brazil showed an awareness of legacy challenges, having hosted previous mega-events like the 2014 FIFA World Cup, and there was some form of post-Games strategy in place. Yet actual delivery of long-term benefits fell significantly short, particularly regarding physical assets and venue maintenance. Many venues were left underused or poorly maintained, with operating costs

remaining unclear, indicating that legacy objectives were not sustained beyond the event (Al Jazeera, 2021). While the Rio Olympics delivered a successful two-week event, its long-term legacy remains fragmented and contested. This reveals a substantial gap between planning and execution, where inadequate institutional coordination, weak public-sector oversight, and insufficient accountability limited long-term impact. Pervasive corruption scandals and privatised development models that prioritised profit over public benefit further exacerbated social inequalities and undermined the Games' potential for inclusive urban development (Rocha and Moura, 2019; Gaffney, 2016; Spalding, 2016). Rio's experience thus provides crucial lessons on the imperative for stronger public-sector oversight, clear and enforceable legacy planning, and urban development models that genuinely prioritise social equity to prevent mega-event infrastructure from becoming 'white elephants' and to ensure a truly sustainable and inclusive urban legacy.

Box 3. Key learning points from the Rio experience of legacy planning

- **Masterplan Execution Gap and Failure in Venue Legacy Planning:** Despite intentions, venues at Barra Olympic Park largely became 'white elephants' due to a severe lack of long-term planning, maintenance, and a failure to integrate them into viable post-Games uses, resulting in significant financial burdens and underutilised assets.
- **Housing Affordability and Gated Communities:** Ilha Pura is marred by private housing and gated developments that primarily benefited the wealthy, demonstrating a concern about private market driving forces and leading to severe social fragmentation and inequality.
- **Urban Connectivity as Lasting Legacy:** Rio's transport upgrades, including Metro Line 4 and BRT corridors, show how mega-events can drive long-term improvements in mobility, reduce congestion, and unlock growth for the wider Barra development.

## 7. Comparative Analysis and Discussion

The comparative analysis of London 2012, Rio 2016, and Tokyo 2021 reveals both commonalities and divergences in their strategic legacy planning and outcomes, particularly in relation to the Sustainable Development Goals (SDGs).

### 7.1. How important and why was legacy as part of the sustainable urban development of Tokyo Olympics?

#### Urban Development Goals and Strategies

The lessons drawn from London 2012 and Rio 2016 are indispensable for guiding Tokyo's sustainable urban development, offering both cautionary examples and best-practice models. By analysing where predecessor Games succeeded and faltered, Tokyo can refine its own legacy strategies to ensure that venues, housing and transport serve the city well beyond the closing ceremony.

#### Long-term Venue Use and Spatial Planning

London's transformation of the QEOP into a thriving mixed-use district illustrates how comprehensive masterplanning can turn Olympic sites into enduring urban assets. Tokyo should emulate this integrated spatial approach by embedding clear post-Games uses into initial designs and securing robust governance structures to oversee long-term operations. However, London's experience with the Olympic Stadium—where heavy public subsidies for private tenants created a lasting financial burden—emphasises the need for Tokyo to develop transparent, self-sustaining operational models rather than relying on ad hoc funding. From Rio, Tokyo can learn that success does not guarantee a holistic legacy. The Hockey Centre's conversion to community sports use demonstrates how individual facilities can be repurposed effectively. Yet the abandonment of key venues such as the diving pool and kayak slalom course highlights the risks of inadequate maintenance planning and weak institutional oversight. Tokyo and future Games must therefore institutionalise clear accountability mechanisms and routine maintenance funding to prevent facilities from deteriorating once the international spotlight fades.

#### Housing Affordability and Inclusivity

Housing legacy in both London and Rio underscores a persistent tension between ambition and affordability. London's initial affordable-housing pledges were undermined by market pressures and gentrification, while Rio's new developments in Ilha Pura largely served wealthier residents, exacerbating social inequality.

Tokyo's Harumi Flag development already adopts a mixed-household strategy and provides schools and parks to foster community cohesion, but the high entry prices risk replicating exclusionary patterns. To avoid this, Tokyo and future Games should introduce targeted subsidies or quota systems for lower-income buyers and monitor speculative activity to ensure that the neighbourhood remains accessible to diverse social groups.

### **Urban Connectivity and Infrastructure Improvements**

Transport improvements in London were delivered through skilful use of Olympic deadlines to accelerate projects such as Crossrail and the CTRL station, demonstrating how the Games can unlock political will and financing. Rio's extensive BRT corridors and Metro Line 4 offer a complementary lesson in cost-effective, scalable public transport solutions. Tokyo's focus on hydrogen-powered buses and clean-energy neighbourhoods under its Zero Emission Tokyo strategy exemplifies how it can showcase environmental innovation. Nonetheless, Tokyo and future Games should also consider whether there are genuine gaps in connectivity, particularly heavy-rail links to the Bay Area that merit accelerated infrastructure investment rather than relying solely on technological demonstration projects.

## **7.2. Emerged Themes and Patterns**

These themes and patterns do not attempt to generalise the complex pictures of lessons learnt but are rather seen as context-specific observations rooted in the distinct challenges faced by London, Rio, and Tokyo. Future host cities may consider adapting these lessons to their own socio-economic and governance environments, ensuring that legacy strategies are tailored to local needs and challenges (see Appendix B for the data of comparative analysis).

#### **Box 4. High-Level Key Themes and Patterns of Lessons Learnt from the Case Studies:**

##### **Worked well**

- It became a trend to adopt a 'build less' strategy with adaptive reuse of existing venues, reducing new construction needs.
- It was not uncommon to prepare comprehensive masterplans and legacy strategy that guided shifts from Olympic mode to long-term legacy mode of urban development.
- It was almost standard practice that athlete villages were converted into mixed-use residential neighbourhoods with supporting amenities.

- Transport infrastructure projects were accelerated by Olympic deadlines, catalysing essential city-wide connectivity.

#### Did not work well

- Masterplans, though established, often suffered from execution gaps that hindered cohesive delivery.
- Weak legacy definitions and metrics enabled 'legacy washing' and limited accountability.
- Venue retention alone did not prevent 'white elephant' outcomes and sometimes imposed financial burdens on taxpayers without clear social returns.
- Inadequate long-term maintenance resulted, resulting in abandoned or underutilised venues.
- Market-driven housing conversions by private developers prioritised investment over social value, resulting in gated enclaves.
- Uneven distribution of transport benefits, often favouring already privileged areas.

### **7.3. Discussion**

London 2012, Rio 2016, and Tokyo 2021 collectively reveal three interconnected imperatives for embedding sustainability into Olympic legacies: strategic venue governance, socially inclusive housing delivery, and accelerated transport infrastructure. Yet these technical dimensions operate within a contested terrain where 'legacy' itself lacks agreed definition and measurement frameworks remain opaque.

First, host cities are rightly moving towards a 'build less' model, favouring the adaptive reuse of existing venues over costly new stadiums. London's stadium precinct demonstrates how deliberate conversion planning can generate lasting community value. Yet physical transformation alone proves insufficient. Both London and Rio experienced private operators assuming management through concession agreements that systematically transferred unforeseen costs to governments and taxpayers. This pattern exposes a critical governance failure: legacy agreements negotiated retrospectively invariably favour private interests over public accountability. Tokyo and future hosts must therefore establish binding partnership contracts during initial planning, not after construction, that explicitly assign conversion costs, guarantee community access programming, and mandate transparent revenue-sharing. Early contractual clarity offers the only viable path to avoiding the financial and reputational damage of 'white elephants'.

Second, converting athletes' villages into residential neighbourhoods has become standard practice, yet outcomes diverge sharply. London's East Village, designed for mixed tenure and affordability, ultimately triggered market-led gentrification that displaced lower-income communities across Stratford. Rio's Ilha Pura pursued similar diversity rhetoric but materialised as gated enclaves accessible only to wealthy buyers, directly contradicting the Games' social equity commitments. Tokyo's Harumi Flag development incorporates varied unit types, yet elevated price points threaten to reproduce these exclusionary patterns. The fundamental challenge transcends housing typology: it centres on the complex interplay between market dynamics and social objectives. Achieving genuinely inclusive outcomes requires more than design diversity, and it demands context-specific regulatory interventions. Future host cities must interrogate not merely what housing is built, but how affordability is structurally embedded through price controls, tenure protections, and allocation mechanisms that actively resist speculative investment and prioritise local community access.

Third, transport infrastructure: upgrades consistently emerge as tangible Olympic benefits. It is not because Games invent new projects, but because Olympic deadlines mobilise political will and unlock funding for long-planned interventions. London's Crossrail acceleration and Rio's BRT expansion each demonstrate how event timetables can compress delivery timeframes that would otherwise extend across decades. Tokyo's mature rail network may not require new lines, yet the Olympic platform enables trialling hydrogen buses, demand-responsive systems, and completing stalled connections to the Bay Zone. The critical evaluative lens should focus on whether transport investments generate lasting mobility improvements and enhance spatial equity, not whether they carry 'Olympic' branding. Legacy assessment must therefore resist performative attribution and instead examine substantive accessibility gains across income groups and urban districts.

These three strands converge on a fundamental strategic deficit: the absence of universally accepted definitions and measurement frameworks for 'legacy'. This conceptual ambiguity enables 'legacy washing'—the selective amplification of positive outcomes while systematically obscuring unmet commitments (Boykoff, 2021). Without independent, disaggregated metrics, communities lack mechanisms to hold organisers accountable or assess alignment with SDG 11's commitments to inclusive, resilient urbanism. The persistent gap between aspirational pledges and complex realities pervades London, Rio, and Tokyo alike: economic projections routinely overestimate returns; equity objectives collide with market imperatives. Meaningful legacy assessment demands post-Games evaluation across both tangible indicators, including venue utilisation, housing affordability, transport accessibility, and intangible social dimensions including community engagement levels, justice perceptions, and displacement protections.

Ultimately, the Olympics possess catalytic potential when underpinned by fixed deadlines, robust governance, and authentic community participation. Yet realising this potential requires embedding operational contracts, social safeguards, and transparent accountability mechanisms from project inception—not as retrospective additions. Only by integrating technical delivery lessons—venue adaptation, housing inclusivity, infrastructure acceleration—with rigorous legacy definitions and independently verified measurement can Tokyo and future hosts transcend the two-week spectacle to deliver equitable, enduring urban transformation.

## 8. Conclusion and Recommendations for Tokyo and Future Hosts

The analysis of London 2012, Rio 2016, and Tokyo 2021 reveals a consistent gap between the aspirational promises of mega-event legacies and their complex, often contradictory, realities. While mega-events can indeed act as catalysts for urban transformation and infrastructure development, their ability to deliver genuinely sustainable and equitable outcomes, particularly in alignment with the Sustainable Development Goals (SDGs), is frequently compromised. The prevalence of ‘white elephants’ (whether physical or financial burdens), the persistent issue of displacement and gentrification, and the overestimation of economic benefits are recurring challenges that undermine the holistic vision of sustainable urban development. A fundamental tension exists between the rapid, top-down nature of mega-event planning and the inclusive, participatory principles central to SDG 11.

### 8.1. Recommendations

To foster more equitable, resilient, and sustainable legacies for future mega-events, the following recommendations are proposed, focusing exclusively on SDG 11: Sustainable Cities and Communities:

#### **Enhance Inclusive and Sustainable Urban Planning and Management (links to SDG 11.3):**

- **SDG 11.3:** *Enhance inclusive and sustainable urbanisation and capacity for participatory, integrated, and sustainable human settlement planning and management in all countries.*
- **Actionable Recommendation:** Implement comprehensive, long-term urban masterplans that integrate mega-event development with existing city-wide strategies, ensuring genuine community participation from the outset. This involves moving beyond top-down directives and/or private

market forces to incorporate bottom-up needs and aspirations, particularly in areas directly impacted by the development.

- **Reasons and Lessons Learnt from the Case Studies:** London's success in spatial planning for Queen Elizabeth Olympic Park demonstrates the potential of integrated masterplanning that creates coherent, vibrant mixed-use environments. The incorporation of Olympicopolis, mixing cultural institutions, higher education facilities, art spaces, and innovation hubs alongside residential and recreational areas, transformed a fragmented brownfield site into a functioning urban quarter that supports diverse activities and employment opportunities. In contrast, Rio's fragmented approach, where venues and the meanwhile uses of the temporary facilities lacked integration with broader urban planning frameworks, resulted in disconnected communities and developments that failed to contribute meaningfully to spatial development. Tokyo's emphasis on creating mixed-use neighbourhoods with schools, parks, and community facilities in developments like Harumi Flag shows learning from these experiences, yet the challenge remains to ensure such developments are genuinely integrated into the daily lives of citizens.

#### **Promote Sustainable Venue Use and Spatial Integration (links to SDG 11.7):**

- **SDG 11.7:** *Provide universal access to safe, inclusive and accessible green and public spaces, particularly for women and children, older persons, and persons with disabilities.*
- **Actionable Recommendation:** Avoid 'white elephants' by prioritising the reuse and retrofitting of existing venues, and designing new facilities with clear, viable, and funded post-event uses that serve community needs. Ensure spatial integration of venues within the urban fabric to maximise public access and long-term utility.
- **Lessons Learnt from the Case Studies:** Rio's numerous abandoned venues exemplify the failure of poorly implemented legacy strategies, despite intentions for disassembly and reuse. London's Olympic Stadium, while physically reused, became a financial burden due to a flawed funding model, underscoring the need for well-considered financial sustainability for retained assets. Tokyo's proactive approach of retrofitting many venues and designing its main stadium for public sports events and community participation reflects a more sustainable and fiscally responsible model for venue legacy, though the financial position to fund the operation and maintenance of the facilities remains unclear.

### **Ensure Universal Access to Safe, Inclusive, and Affordable Housing (links to SDG 11.1):**

- **SDG 11.1:** *Ensure access for all to adequate, safe and affordable housing and basic services, and upgrade slums.*
- **Actionable Recommendation:** Establish and set out clear but realistic targets for genuinely affordable and inclusive housing within mega-event development zones. This requires clear definitions of housing types and affordability that align with local income levels, robust mechanisms to prevent displacement, and equitable allocation policies to ensure diverse populations benefit.
- **Lessons Learnt from the Case Studies:** London's significant reduction in affordable housing targets and the subsequent gentrification of East Village underscore the vulnerability of housing legacies to market forces and the need for stronger regulatory frameworks. The development of housing in Rio's Ilha Pura primarily for wealthy residents represents a profound concern for social equity, demonstrating the severe consequences of prioritising private gain over housing rights. Tokyo and future hosts must address concerns about the eligibility and affordability of its Olympic Village apartments to ensure they contribute to genuinely inclusive housing for all citizens, learning from the pitfalls of London and Rio to achieve the promised 'genuine inclusiveness'.

### **Develop Resilient and Sustainable Infrastructure and Transport Systems (links to SDG 11.a, 11.2):**

- **SDG 11.2:** Provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, with particular attention to vulnerable groups including women, children, persons with disabilities, and older persons.
- **Actionable Recommendation:** Leverage mega-events as a catalyst for strategic, long-term investments in resilient urban infrastructure and multi-modal transport systems that serve the entire city, not just Olympic-specific zones. Implement robust funding models and guarantee mechanisms to ensure timely delivery and equitable access. Use the Olympics as a catalyst to drive and attract funding for sustainable technologies and retrofitting existing transport and road infrastructure.
- **Lessons Learnt from the Case Studies:** London's success in using the Olympics to catalyse and accelerate the timely delivery of significant rail and road infrastructure, improving connectivity in East London, provides a model for leveraging mega-events for broader urban transport upgrades. Rio's transport legacies, while expanding the BRT and metro, often concentrated benefits in privileged areas, highlighting the need for equitable distribution and sustained follow-up. Tokyo's commitment to hydrogen-powered neighbourhoods and clean buses is a positive step towards

sustainable infrastructure, and the wider metro line upgrades and ring road improvements will enhance the city-wide connectivity and efficiency.

By integrating these lessons learned and adopting a truly holistic, equity-focused approach to legacy planning, future host cities can move beyond mere aspiration and deliver mega-events that genuinely contribute to the achievement of SDG 11, fostering inclusive, safe, resilient, and sustainable urban environments for all.

## **8.2. Conclusion**

This comparative analysis of London 2012, Rio 2016, and Tokyo 2021 demonstrates that mega-events can catalyse sustained urban transformation when anchored by coherent, integrated masterplanning. The research traced convergent patterns across spatial planning, venue adaptation, and transport acceleration, revealing that context-specific frameworks, those synthesising cultural, educational, and innovation institutions with green and recreational infrastructure, possess capacity to generate vibrant mixed-use districts that function effectively beyond the Games period. Critically, however, the analysis establishes that technical infrastructure delivery constitutes a necessary but insufficient condition: lasting social benefit requires transparent governance architectures and enforceable accountability mechanisms.

Rather than treating SDGs as compliance checklists, this research interrogated the foundational questions of legacy planning: the why, the what, and the how. It challenged the why through Tokyo's experience: COVID-19's elimination of spectator tourism exposed the fragility of short-term economic justifications, recentring legacy as the primary pathway toward inclusive, sustainable urban development aligned with SDG 11's global ambitions. The what emerged through systematic identification of Tokyo's post-Olympic transformation needs: adaptive venue governance preventing 'white elephant' outcomes; inclusive housing frameworks resisting speculative dynamics; and transparent institutional structures securing community benefit. The how revealed a critical gap: despite rhetorical commitment to SDG localisation, effective mechanisms for translating global targets into city-specific strategies may remain underdeveloped. London's QEOP masterplan exemplifies integrated spatial design's potential; Tokyo's 'build less' philosophy demonstrates fiscal responsibility through adaptive reuse; yet Rio's trajectory underscores how fragmented governance and exclusionary development undermine participatory planning principles. These divergent outcomes suggest that achieving meaningful legacy requires deliberate localisation processes that embed global sustainability commitments within host cities' specific socio-economic contexts and governance capacities.

Finally, this research opens multiple avenues for deeper scholarly investigation. Future work should examine governance innovations that sustain long-term venue operations; assess social equity impacts of Olympic housing conversions across diverse urban contexts; and analyse the spatial distribution of transport infrastructure benefits to determine whether connectivity gains systematically favour privileged districts or genuinely enhance metropolitan-wide accessibility. The persistence of legacy delivery challenges across all three cases. Despite varying governance systems, economic contexts, and planning capacities, it suggests that fundamental innovations in community engagement models, public-private partnership structures, and financial accountability frameworks remain essential areas for continued theoretical development and practical experimentation. Such advances may enable the transformation of Olympic narratives from ephemeral spectacle into robust engines of inclusive, sustainable urban development that deliver tangible, equitable outcomes for host city populations.

## 9. Appendix

### Appendix A. Key Site Visits and/or Informal Conversations

This list includes (but is not limited to) key site visits, exhibitions, and conferences that informed some informal but informative conversations for the research project.

Date	Event
October 2021	Tokyo 1964: Designing Tomorrow Exhibition
June 2022	Site Visit in Rio: Barra da Tijuca Olympic Park & residential redevelopment in Ilha Pura
September 2022	UCL at Here East' in the Queen Elizabeth Olympic Park for the launch of our conference - 'State of the Legacy
November 2022	London Planning Summit, focusing on the London Olympic legacy planning and regeneration impact in East London
November 2022	Olympic Park: When Britain Built Something Big by Dave Hill Book Launch
January 2023	Site Visit in Tokyo: National Stadium Heritage Zone and Tokyo Bay Olympic Village redevelopment, Harumi Flag
June 2023	Explore the Olympic Park and Beyond. Walking Tour and Book Event
May 2024	Olympic Urbanism: Past, present and future
May 2024	London College of Fashion, Queen Elizabeth Olympic Park Tour?
May 2025	HKIP International Planning Conference 2025 - Restoring Cultural Landscape in the Heart of Tokyo: Future of Kanda District, Nihonbashi Bridge and Nihonbashi River

## Appendix B. Comparative Analysis

	London 2012	Rio 2016	Tokyo 2020/2021
Research Focus Boundary	Stratford and East Village	Barra da Tijuca and Ilha Pura	Heritage Zone and Bay Zone
Venues and Olympics Park (inc. both inside and outside the research boundary)	Total:34 Existing: 19 (56%) Temporary: 12 (35%) New Permanent: 3 (9%)	Total: 33 Existing: 18 (55%) Temporary: 9 (27%) New Permanent: 6 (18%)	Total: 43 Existing: 25 (58%) Temporary: 10 (23%) New Permanent: 8 (19%)
Olympics Village and Housing	East Village 2,818  Wider Stratford between 30,000 and 40,000 new homes (inc. Chobham Manor 828 Sweetwater 650 East Wick 870)	3,602 units in 32 17-stsory buildings, for 18,000 athletes	Harumi Waterfront Redevelopment about 5,600 residential units
Urban Connectivity	Channel Tunnel Rail Link (CTRL) and Crossrail. DLR extension	Bus Rapid Transit (BRT) corridors  Metro extension (Metro Line 4)	Ring Road extension

## 10. References

- Al Jazeera (2021) 'Five years on: Revisiting Rio 2016 Olympics' unkept promises', Al Jazeera, 19 September. Available at: <https://www.aljazeera.com/sports/2021/9/19/five-years-on-revisiting-rio-2016-olympics-unkept-promises> (Accessed: 16 August 2025).
- Allies and Morrison (2017) London's Olympic Legacy. Available at: <https://www.alliesandmorrison.com/projects/londons-olympic-legacy> (Accessed: 16 August 2025).
- Arthur, W. B 1994 *Increasing Returns and Path Dependence in the Economy*. USA: The University of Michigan Press.
- Baade, R.A. and Matheson, V.A. (2021). 'Rescuing the Olympic Games from Their Own Success'. IMF F&D. Available at: <https://www.imf.org/external/pubs/ft/fandd/2021/07/rescuing-the-tokyo-olympics-baade-matheson.htm> (Accessed: 16 August 2025).
- Bach, T. (2021). 'IOC President's Message'. Olympic.org. Available at: <https://www.olympics.com/ioc/news/ioc-president-s-message-at-the-tokyo-2020-closing-ceremony> (Accessed: 16 August 2025).
- Baker Institute (2016) The Empty Homes of Rio's 2016 Olympics. Available at: <https://www.bakerinstitute.org/research/empty-homes-rios-2016-olympics> (Accessed: 16 August 2025).
- BBC (2016) 'West Ham Olympic Stadium deal: How the numbers stack up', BBC Sport, 22 March. Available at: <https://www.bbc.co.uk/sport/football/35876403> (Accessed: 16 August 2025).
- Bowen, G.A. (2009) 'Document Analysis as a Qualitative Research Method', *Qualitative Research Journal*, 9(2), pp. 27–40.
- Boykoff, J., 2021. Lying through their legacy-speak: Olympic organisers and the myth of lasting benefits. *Red Pepper Magazine*. [online] 21 July. Available at: <https://www.redpepper.org.uk/culture-media/sport/lying-through-their-legacy-speak/> [Accessed 18 August 2025].
- Cashman, R. (2006) 'The Sydney 2000 Olympic Games', in Andranovich, G., Burbank, M.J. and Heying, C.H. (eds) *Olympic Cities: The Legacy of the Games*. Oxford: Elsevier, pp. 111–134.
- Corcillo, D. and Watt, P. (2022) 'The ideological limits of social mixing: An analysis of place production and residential experiences in London's Olympic Village regeneration', *Urban Studies*, 59(12), pp. 2486-2505.
- Davies, J., et al. (2020) 'Mega-events, Urban Transformation and Displacement: A Longitudinal Study of Planning and Development for the 2012 Games from 2005-2019', *Urban Studies*, 57(13), pp. 2687–2705.
- Dezeen (2016) Rio 2016 Athletes Village remains unfinished ahead of Olympic Games. Available at: <https://www.dezeen.com/2016/07/27/rio-2016-athletes-village-unfinished-olympic-paralympic-games/> (Accessed: 16 August 2025).

East Japan Railway Company. (2024). JR East Haneda Airport Access Line Project Overview. [online]. Tokyo: East Japan Railway Company.

Flyvbjerg, B., Bruzelius, N. and Rothengatter, W. (2003) *Megaprojects and Risk: An Anatomy of Ambition*. Cambridge: Cambridge University Press.

Gaffney, C. (2010) 'Mega-events and socio-spatial dynamics in Rio de Janeiro, 1919–2016', *Journal of Latin American Geography*, 9(1), pp. 7–29.

Gaffney, C. (2016) *The 2016 Olympics and the Production of Space in Rio de Janeiro*, *Socio-cultural and Environmental Impacts of Mega-events*. New York: Routledge.

Gold, J.R. and Gold, M.M. (2013) *Olympic cities: City agendas, planning, and the world's games, 1896–2016*. 3rd edn. London: Routledge.

Goldstone, D. (2017) *The Olympic Games and the Problems of Legacy: The London Stadium Story*. Available at: [https://www.researchgate.net/publication/350715219\\_The\\_Olympic\\_Games\\_and\\_the\\_Problems\\_of\\_Legacy\\_The\\_London\\_Stadium\\_Story](https://www.researchgate.net/publication/350715219_The_Olympic_Games_and_the_Problems_of_Legacy_The_London_Stadium_Story) (Accessed: 5 July 2025).

Government of Japan. (2020) *Tokyo Will Create a Legacy of Sustainability*. Available at: <https://www.japan.go.jp/tomodachi/2020/winter2020/legacy.html> (Accessed: 5 July 2025).

Gratton, C. and Preuss, H. (2008) 'The Economics of Mega Sporting Events', in *The SAGE Handbook of Sports Management*. London: SAGE Publications, pp. 555-568.

Greater London Authority (2014) *Number of homes to be built on the former Olympic site*. Available at: <https://www.london.gov.uk/who-we-are/what-london-assembly-does/questions-mayor/find-an-answer/number-homes-be-built-former-olympic-site> (Accessed: 16 August 2025).

Greater London Authority (2017) *Relighting the torch: securing the Olympic legacy*. Available at: [https://www.london.gov.uk/sites/default/files/convergence\\_short\\_report\\_final.pdf](https://www.london.gov.uk/sites/default/files/convergence_short_report_final.pdf) (Accessed: 16 August 2025).

Greater London Authority. (2012) *Convergence: The London 2012 Legacy Story*. Available at: [https://www.london.gov.uk/sites/default/files/convergence\\_short\\_report\\_final.pdf](https://www.london.gov.uk/sites/default/files/convergence_short_report_final.pdf) (Accessed: 5 July 2025).

Grix, J. and Houlihan, B. (2014) *Leveraging Legacies from Sports Mega-Events: Concepts and Case Studies*. London: Routledge.

Henderson, K. A. and Hinch, T. D. (2012) 'The Vancouver 2010 Winter Olympic Games: an event legacy of sustainability and community development', *Journal of Policy Research in Tourism, Leisure and Events*, 4(2), pp. 136-154.

Horne, J. and Whannel, G. (2012) *Understanding the Olympics*. London: Routledge.

IMechE (2020) 'Sustainability in stadium design: Tokyo Olympics and Paralympics 2021', IMechE News, 21 September. Available at: <https://www.imeche.org/news/news-article/sustainability-in-stadium-design-tokyo-olympics-and-paralympics-2021> (Accessed: 16 August 2025).

IMF (2021). 'Tokyo 2020: The Games in the Time of COVID-19'. IMF News, 23 July. Available at: <https://www.imf.org/en/News/Articles/2021/07/23/na072321-tokyo-2020-the-games-in-the-time-of-covid-19> (Accessed: 16 August 2025).

International Olympic Committee (2015) Olympic Agenda 2020: 20+20 Recommendations. Lausanne: International Olympic Committee. Available at: <https://olympics.com/ioc/olympic-agenda-2020>

International Olympic Committee (2020) IOC report on the Tokyo 2020 Olympic Games. Available at: [https://www.getty.edu/foundation/pdfs/kim/yoyogi\\_stadium\\_japan\\_kenzotange\\_cmp.pdf](https://www.getty.edu/foundation/pdfs/kim/yoyogi_stadium_japan_kenzotange_cmp.pdf) (Accessed: 16 August 2025).

International Olympic Committee (IOC) (2016) IOC Sustainability Strategy. Available at: <http://large.stanford.edu/courses/2016/ph240/liautaud2/docs/ioc-sustainability-strategy.pdf> (Accessed: 16 August 2025).

International Olympic Committee (IOC) (2022). Olympic Games: Tokyo 2020 Post-Games Legacy Report. Lausanne: IOC.

International Olympic Committee, (2001). Olympic charter. International Olympic Committee.

International Olympic Committee (IOC), 2023. IOC and UN-Habitat team up to promote sport for urban development. [online] Available at: [olympics.com](https://olympics.com) [Accessed 18 August 2025].

IOC News (2017) Olympic Games transport Rio to a new level. Available at: <https://www.olympics.com/ioc/news/olympic-games-transport-rio-to-a-new-level> (Accessed: 16 August 2025).

Kassens-Noor, E. (2016) Mega-Event Cities: Urban Legacies of Global Sports Events. London: Routledge.

Lees, L., Shin, H.B. and Lopez, E. (2016) Global Gentrifications: Uneven Development and Displacement. Bristol: Policy Press.

Lochmiller, C.R. (2021) 'Conducting Thematic Analysis with Qualitative Data', *The Qualitative Report*, 26(6), pp. 2029–2044.

London Aquatics Centre (2025) Legacy. Available at: <https://londonaquaticscentre.org/about/legacy/> (Accessed: 16 August 2025).

London Legacy Development Corporation (LLDC) (2021) Queen Elizabeth Olympic Park Annual Report and Accounts 2020-21. London: Greater London Authority.

London Legacy Development Corporation (LLDC) (2024a) East Bank. Available at: <https://www.queenelizabetholympicpark.co.uk/east-bank> (Accessed: 16 August 2025).

London Legacy Development Corporation (LLDC) (2024b) Housing Delivery Plan 2020-2025 (2024 Update). Available at: <https://lldc-meetings.london.gov.uk/documents/s70012/Item%2012a%20-%20PUBLIC%20-%20Appendix%201%20->

%20Housing%20Delivery%20Plan%202020-2025%202024%20Update%20FINAL%20Updated.pdf (Accessed: 16 August 2025).

Metropolitan Expressway Company Limited. (2020). Completion of Major Tokyo Expressway Projects. [online]. Tokyo: Metropolitan Expressway Company Limited.

Mitsui Fudosan (2023). 'Officially Named Mitsui Shopping Park LaLa Terrace HARUMI FLAG'. Mitsui Fudosan News Releases, 6 April. Available at:  
[https://www.mitsui-fudosan.co.jp/english/corporate/news/2023/0406\\_03/download/20230406\\_03.pdf](https://www.mitsui-fudosan.co.jp/english/corporate/news/2023/0406_03/download/20230406_03.pdf) (Accessed: 16 August 2025).

Mori Memorial Foundation. (2016). Global Power City Index 2016. [online]. Tokyo: Institute for Urban Strategies, The Mori Memorial Foundation. Available at: <https://mori-m-foundation.or.jp/english/ius2/gpci2/2016.shtml> (Accessed: 16 August 2025).

Müller, M. (2015) 'What makes an event a mega-event? Definitions and sizes', *Leisure Studies*, 34(6), pp. 627–642.

NHK World (2023). 'Harumi Flag oversubscription highlights Tokyo housing demand'. *NHK World News*, 5 September. Available at: <https://www3.nhk.or.jp/nhkworld/en/news> (Accessed: 15 August 2025).

Peñalosa, E. (2017) The single project that we implemented that most contributed to improve quality of life and gave citizens confidence in a better future. A statement cited in University of Pretoria (n.d.) THE EQUITY IMPACTS OF BUS RAPID TRANSIT: A REVIEW OF THE EVIDENCE, AND IMPLICATIONS FOR SUSTAINABLE TRANSPORT. Available at: <https://repository.up.ac.za/bitstreams/1d44fdef-e1e0-4d0f-8a82-8e6fda119592/download> (Accessed: 16 August 2025).

Planet Ark. (2021). 'How the Tokyo Olympics are embracing the circular economy'. Planet Ark. Available at: <https://planetark.com/newsroom/news/how-the-tokyo-olympics-are-embracing-the-circular-economy> (Accessed: 16 August 2025).

Portella, A. (2021) 'Overcoming Inequalities: A Critical Analysis of the Rio 2016 Olympic Games and the Eviction of Vila Autódromo from a Disaster Perspective', *Journal of Urban Affairs*, 43(1), pp. 100–118.

Poynter, G. and Viehoff, V. (2019) *Mega-Event Cities: Urban Legacies of Global Sports Events*. London: Routledge.

Preuss, H. (2007) *The Economics of Staging the Olympics: A Comparison of the Games 1972-2008*. Cheltenham: Edward Elgar.

Preuss, H. (2019) *Event legacy and sustainability*. London: Routledge.

Queen Elizabeth Olympic Park (2024) *Rising to the housing challenge*. Available at: <https://www.queenelizabetholympicpark.co.uk/our-stories/rising-housing-challenge> (Accessed: 16 August 2025).

Rocha, C.M. and Moura, L. (2019) 'Disasters by Design: Analyzing the Rio 2016 Olympic Games and the Eviction of Vila Autódromo from a Disaster Perspective', *Journal of Urban Affairs*, 41(1), pp. 1–18.

- Rocha, C.M. and Mourão, L. (2019) 'The Legacy of the Olympic Games: A Review', *Journal of Sport Management*, 33(3), pp. 219–232.
- Roche, M. (2000) *Mega-Events and Modernity: Olympics, Expos, and the Rise of Global Culture*. London: Routledge.
- Santos, B. (2024) *White Elephants or Landmarks? The Legacy of Global Sports Infrastructure*. Available at: <https://www.weareinnovation.global/white-elephants-or-landmarks-the-legacy-of-global-sports-infrastructure/> (Accessed: 5 July 2025).
- Scheu, A., Preuss, H. and Könecke, T. (2021) 'The Legacy of the Olympic Games: A Review', *Journal of Sport Management*, 35(1), pp. 1–18.
- Silva, A. and Pereira, B. (2022) *The Great Promise: Assessing the Olympic Legacy of Rio 2016*. São Paulo: Urban Research Institute.
- Smith, A. (2012) *Events and urban regeneration: The strategic use of events to revitalise cities*. London: Routledge.
- Smith, J. (2015). 'Zaha Hadid's Tokyo stadium plans scrapped amid cost and heritage concerns'. *The Guardian*, 15 July. Available at: <https://www.theguardian.com/sport/2015/jul/15/zaha-hadid-tokyo-stadium-scrapped> (Accessed: 15 August 2025).
- Spalding, A.B. (2016) '2016 Olympic Games: What Rio doesn't want the world to see', Ford Foundation, 4 August. Available at: <https://www.fordfoundation.org/news-and-stories/stories/2016-olympic-games-what-rio-doesnt-want-the-world-to-see/> (Accessed: 16 August 2025).
- Suzuki, M. and Yamamoto, K. (2021). 'Public sentiment and economic justification during pandemic Olympics'. *Asian Journal of Sport Management*, 15(4), pp. 467–483.
- Tanaka, H. (2018). 'Kengo Kuma's National Stadium: balancing tradition and modernity'. *Architectural Review*, 142(3), pp. 45–51.
- The Guardian (2016) 'How West Ham struck the deal of the century with Olympic Stadium move', *The Guardian*, 14 April. Available at: <https://www.theguardian.com/football/2016/apr/14/west-ham-deal-century-olympic-stadium> (Accessed: 16 August 2025).
- The Guardian (2016) Rio 2016: more than half of Athletes Village buildings still to pass safety tests. Available at: <https://www.theguardian.com/sport/2016/jul/25/rio-2016-olympic-officials-athletes-village-unfinished> (Accessed: 16 August 2025).
- Tokyo Metro. (2024). *Message from the President*. [online]. Tokyo: Tokyo Metro. Available at: [https://www.tokyometro.jp/lang\\_en/corporate/profile/message/index.html](https://www.tokyometro.jp/lang_en/corporate/profile/message/index.html) (Accessed: 16 August 2025).
- Tokyo Metropolitan Government (2021). *Tokyo 2020 Legacy Action Plan*. Tokyo: TMG Press. Available at: <https://www.2020games.metro.tokyo.lg.jp/eng/taikaijyunbi/torikumi/legacy/index.html> (Accessed: 16 August 2025).

- Tokyo Metropolitan Government (2022). Tokyo 2020 Olympic Village Post-Games Redevelopment Plan. Tokyo: TMG Press.
- Toohey, K. (2008) 'The Sydney Olympics: Striving for legacies – overcoming short-term disappointments and long-term deficiencies', *The International Journal of the History of Sport*, 25(14), pp. 1953–1971.
- Toohey, K. and Veal, A. J. (2000) *The Olympic Games: A Social Science Perspective*. Wallingford: CABI Publishing.
- Tseng, Y.N., 2012. Mega urban transport projects as a catalyst for sustainable urban regeneration and the role of mega events, UCL
- UN. (2015) *Transforming Our World: The 2030 Agenda for Sustainable Development*. New York: United Nations.
- UN-Habitat. (2016) *New Urban Agenda*. Quito: United Nations.
- University of Portsmouth (2024) Study reveals mixed legacy of the 2012 London Olympics on promised urban regeneration. Available at: <https://www.port.ac.uk/news-events-and-blogs/news/study-reveals-mixed-legacy-of-the-2012-london-olympics-on-promised-urban-regeneration> (Accessed: 16 August 2025).
- Watt, P. (2013) 'It's not for us': Regeneration, the 2012 Olympics and the gentrification of East London', *City*, 18(1), pp. 36-52.
- Wong, O., (2017). *Mega-event and the Regeneration Paradox: The Case of the London Olympics 2012 and the Regeneration in Stratford*.
- Yamada, K. (2021). 'NTT Docomo wins licence to operate Tokyo National Stadium'. *Japan Times*, 22 March, p. 4.
- Yasuda, A. (2022). 'COVID-19 and the Tokyo 2020 Olympic Games: challenges: Olympic postponement and urban planning implications'. *Urban Studies Japan*, 28(2), pp. 234–251.
- Yin, R.K. (2018) *Case Study Research and Applications: Design and Methods*. 6th edn. Los Angeles: SAGE Publications.