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Reframing Olympic Legacy as Urban Strategy: Comparative Insights from Beijing and Turin with Reflections for Milan 2026

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ABSTRACT

The Olympic Games are no longer episodic celebrations but rather catalysts for urban development over the long term. This research studies how hosting the Olympics presents opportunities through changes to physical urban form, production modes, governance structures, and cultures.

Using the Beijing Olympics of 2008 and 2022, as well as the transition of the City of Turin following the 2006 Winter Olympics, as comparative examples, we seek to understand how the social, political, and economic context influences the Olympic legacy, and how the findings of our research will impact the planning for the Milan-Cortina 2026 Olympics.

This research is designed using an interdisciplinary approach. The Beijing case exemplifies a state-led harmonious approach, leveraging the two Olympic Games to implement a significant amount of work to upgrade physical infrastructure, repair environmental degradation, and develop institutionalized, sustainable learning to benefit from hosting the Olympics over time.

The case of Turin follows a more conservative and careful path to create opportunities for reuse of industrial heritage space, creation of cultural programming, and some limited involvement of the local community. Both approaches demonstrate that hosting the Olympics creates potential for urban change; however, it can also lead to high costs, uneven development, and potential for underutilisation of venues and facilities once the Olympics have taken place.

Based on our findings, we developed a SevenDimensional Legacy Framework (Governance, Spatial, Social, Economic, Cultural, Network, and Ecological) to offer guidance for sustainable Olympic legacies planning for Milan 2026 and beyond. We suggest that this framework should be seen as an alternative to current event-based

models of urban development, providing opportunities for more integrated metropolitan approaches to planning and using Olympic venues and facilities as part of a longer-term investment in the physical legacy of hosting the Olympic Games.

In conclusion, our research highlights that the concept of Olympic legacy should be viewed as a process, created from a space of social contestation in urban areas, rather than as a finite, predefined result of a single event. Our case studies of Beijing and Turin provide valuable lessons for Milan and other future Olympic host cities on how to successfully balance the competing priorities of ambition, sustainability, and cultural continuity in achieving the benefits of hosting the Olympic Games in postindustrial cities.

Keywords: Olympic Legacy, Adaptive Olympic Urbanism, Urban Transformation
Governance Innovation, Spatial Regeneration, Industrial Heritage Reuse, Milan–Cortina

PART 1: INTRODUCTION

-Presentation of the Subject

An essential aspect of the Olympics is its significance beyond sports; it serves as an international gathering place for various nations to come together and develop toward a common mission, altering how their cities develop physically, politically, and culturally through the long-lasting effects of hosting the games.

In recent decades, the use of the Olympic Games has grown as cities utilize the event to evaluate and implement new models of governance, city planning, and sustainability within their communities.

However, while the direct financial impacts and the impact on various governing institutions exist, we have limited knowledge of how differing political systems and socioeconomic statuses will affect the type of long-term legacy that will be created in cities hosting the Olympic Games. This research will examine this issue through a comparison of Beijing, Milan, and Turin, each of which is a city with a unique governing model and

development trajectory, but shares a common history of transformation following a period of industrialization and the aspiration to host the Olympic Games.

-Research goals

The Olympic Movement has been a significant catalyst in the way urban areas are developed and changed over time. The purpose of this dissertation is to show how the Olympic Movement catalyzed urban transformation and the development of sustainable (long-lasting) legacies through innovative governance, spatial (i.e., area) regeneration, and the preservation of cultural identities.

To accomplish this, the author will conduct a comparative analysis of three different cities; one is Beijing (2008/2022) and another is Turin (2006). Finally, the author offers recommendations for the city of Milan in 2026.

The specific objectives of the study are:

1. To examine the various paths taken by cities to create new structures and spatial arrangements in their political and economic environments as a result of the hosting of the Olympic Games.
2. To identify the similarities and differences between the processes of developing Olympic legacies (for example, in the case of China, there are very few chances for the use of 'free and open access' events) compared to the processes of developing Olympic legacies in the case of centralised versus participative governance systems.
3. To provide a theoretical basis (framework) for understanding and addressing the creation of long-term legacies for sustainable urban development using an Adaptive Olympic Urbanism theoretical framework for future Olympic Games.

This framework presents the Olympic Games as more than simply events hosted by cities; in fact, the Olympic Games provide cities with the opportunity to develop urban planning policies and cultural identities that have long-term impacts on their urban areas. The framework emphasizes the importance of evaluating the effect of all three of these aspects of the Olympic Games and their effect on long-term urban development.

-Scientific Background

Results of Chinese research

In 2022, the Beijing Organizing Committee for the Olympic Games (BOCOG) and Beijing Sport University (BSPU) outlined the “Beijing 2022 Winter Olympic and Paralympic Games and Urban Development Legacy Report (2022)” to exhibit the Beijing Winter Olympic Games impact on urban development, including the upgrade of infrastructure, the enhancement of public services, and the improvement of the ecological environment, which reflected the Olympic legacy of the 2008 Summer Olympic Games in urban development.

The article “Exploring the Realization of the Urban Heritage Vision of the Beijing Winter Olympic Games under the Framework of Sustainable Development Strategy” presents the discussion of how the Beijing Winter Olympic Games, under the framework of sustainable development strategy, can realize the reuse of the urban heritage and analyzes the bidding for green and sustainable policies and practice with case by case analysis of the specific practices in relation to the technical level.

Furthermore, the Memorandum of Understanding on Cooperation in Winter Sports between China and Italy expands over a wide range of aspects covering exchange of sporting talents, construction and sustainable use of venues, scientific and technological innovation, organization of events, and education of young people. The themes of sharing experiences and building networks between the Beijing 2022 Winter Olympic Games and Milan-Cortina 2026 Winter Olympic Games proposed in the memorandum and which represents the spirit of cooperation between Olympic host cities, also support the research focus of this paper.

Results of Italian research

In his article "The Legacy of the Turin 2006 Olympic Games through a Long-Term Development Perspective", Valerio della Sala explores the long-term legacies of the 2006 Olympic Winter Games in Turin, Italy, in terms of urban development. According to the article, the Turin Olympic Winter Games were not simply a one-time sporting event but rather a "catalyst" embedded into the long-term development strategy of the city. The article highlights the multidimensional legacies of the Olympic Games for the city through interviews with 14 key individuals. The findings describe the impact of the Olympic Games on the city's image, industrial structure, transportation infrastructure, and social identity. The author indicates that although some venues have been poorly utilized since the Olympic Games, the Games played an important role in the transformation of Turin from an industrial heritage city to a city of culture, leisure, and tourism. However, he also critiques the lack of systematic, informed planning for the Olympic legacy, and argues that potential future Olympic cities should have a "legacy strategy" at the forefront of the bidding process to ensure continued use of post-Olympic facilities, extended social benefits, and sustainable transformation of urban land use.

In Milan-Cortina 2026: alignment with the long-term local development plan, a document from the official Milan-Cortina Organizing Committee, it suggests that the Winter Olympic Games will be in alignment with the 30 year development plan for Milan, as well as the development plan for the Lombardy Region aiming at transforming Milan into Italy's largest cosmopolitan center, a green, livable and resilient city. A green, livable and resilient city. The Games will enhance connectivity between the center and peripheral areas. The Olympic Games aims to support projects including the transformation of former rail yards into urban environmental regeneration areas including housing and community infrastructure. The Plan also aims to invest into smart energy, sustainable urban transport and socioeconomic regeneration, promoting local culture and infrastructure and connectivity through the Games.

In their paper “Managing the Turin Olympic Legacy,” Marta Bottero and Caterina Caprioli analyze how the 2006 Winter Olympics influenced Turin's long-term urban development from the perspectives of governance mechanisms and environmental planning. The authors highlight that the introduction of ****Strategic Environmental Assessment (SEA)**** served as a core initiative for managing Olympic impacts, marking Italy's first systematic integration of environmental, social, and territorial planning dimensions for a major event.

The research demonstrates that Turin's Olympic legacy was not an automatic outcome of the Games themselves. Instead, it resulted from a systematic evaluation process before, during, and after the event, aligning Olympic investments with existing urban regeneration strategies. This alignment facilitated projects such as the Lingotto, Spina 3, and brownfield remediation initiatives. Nevertheless, the authors emphasize that the Olympic legacy remains imperfect, with shortcomings including the underutilization of mountain venues and challenges in sustaining the governance framework post-Games. Bottero and Caprioli contend that future Olympic candidate cities must embed environmental assessments and long-term governance frameworks into their bidding phases to ensure the Games genuinely drive sustainable urban transformation.

-Methodology

The study employs a comparative interdisciplinary methodology in urban studies, architecture, governance, and cultural theory. The study's underlying methodology is a comparative case study of the cities of Beijing and Turin as examined through four overarching thematic dimensions: spatial transformation, governance regimes, sociocultural engagement, and ecological transition. The observations are then integrated into a Seven-Dimensional Framework that offers a conceptual and evaluative approach in evaluating Milan 2026. The primary data sources used included collected policy documents, planning reports, and academic literature in Chinese and Italian contexts, allowing for a cross-cultural lens to be considered in a balanced manner.

-Structure of the Thesis

The thesis is organized into four main parts:

Introduction – This study seeks to investigate the subject matter represented by Olympic Urbanism. Through an academic context, this study will provide the framework of Olympic Urbanism as to how its foundations were established.

Chapter Two will contain an analysis of how Olympic Urbanism in Beijing was established through government-led initiatives focused on the infrastructure upgrades, the relocation of industries (i.e., Shougang), and the restoration of the ecological environment as demonstrated by the experiences of both the Summer Games and the Winter Games.

Chapter Three will contain an examination of the evolution of Turin from a Traditional Industrial town to an Innovative & Creative City by reviewing the successes and failures associated with the redevelopment of urban areas due to the Olympic Games.

Chapter Four presents a Comparative Framework for Observing the Future Urban Sustainable Legacies and Adaptive Governance policies for Milan that were established from the experiences of Beijing and Turin through the Recommendations established from the Seven-Dimensional Framework provided.

-Outline of the Conclusions

The thesis argues that the Olympic Games are not just an event that happens in the city, but an event that occurs in the city, a process of transformation where global ambitions meet local realities.

By analysing the efficiency-driven governance of Beijing to the adaptive, community-oriented legacy of Turin, it becomes clear that successful Olympic transformation relies

on institutional learning and spatial adaptability, not just monumental building.

In light of this, the suggested framework of Adaptive Olympic Urbanism offers not only a theoretical lens but a practical route to practical implications for Milan 2026 and future host cities, noting and evaluating speculation for a route to a balance between ambition, sustainability, and continuity of culture.

PART 2: OLYMPIC LEGACY IN BEIJING – FROM THE SUMMER TO THE WINTER GAMES

1 Urban Context and Olympic Bidding as a Catalyst

-Overview of Beijing's Urban Development

Beijing, as a significant city in northern China in ancient times, has a history of urban development extending back more than 3,000 years. After the Qin and Han dynasties, Beijing became an important military town and, due to its location on the borders, it was an active theatre of war and of defensive construction, including the Great Wall, which was the literal result of constant conflict and border skirmishes (Wang, 2011).

Beijing has been the "Ancient Capital of the Six Dynasties" and served as the capital for six different states in ancient times. "During the Ming Dynasty, it was called Beiping, but in 1403, the capital was moved here and renamed Beijing, which means the capital of the north, thus it became the political center of the nation" .

During the Qing dynasty, Beijing remained the capital, but toward the end of the Qing government's time, Beijing was involved in wars due to the decline of national power. For example, in 1860, during the Second Opium War, the British and French allied armies invaded Beijing, leading the Qing government to sign the "Treaty of Beijing" (Fairbank & Goldman, 2006). In 1900, the Eight Power Allies captured Beijing again, and the Qing government signed the "Treaty of Xijiao", including an indemnity of 450 million taels of silver and allowing foreign troops to stay in the capital, humbling the sovereignty and dignity of Beijing once again.[3] Secondly, the Lugou Bridge Incident broke out in Beijing on July 7, 1937, marking the beginning of the War of Resistance. By the end of July, the Japanese occupied the city of Beijing (Esherick, 1987).

After the establishment of the People's Republic of China in 1949, Beijing emerged again as the national capital. Beijing has continued to develop into a modern cosmopolitan city and a political, cultural, educational, and scientific and technological center (Chang, 1977). Contemporary Beijing, a fusion of history and modernity, has not only preserved its unique central axis symmetrical urban texture and rich historical heritage (to name several, the Forbidden City, the Temple of Heaven, the Great Wall, etc.), but has also become an additional window onto the country and exchanges with the world. As the ancient capital of the Six Dynasties and the heart of the country, Beijing has played an irreplaceable role in the continuation of Chinese civilization and in constructing modernity as a nation.

-Background of the Olympic bid

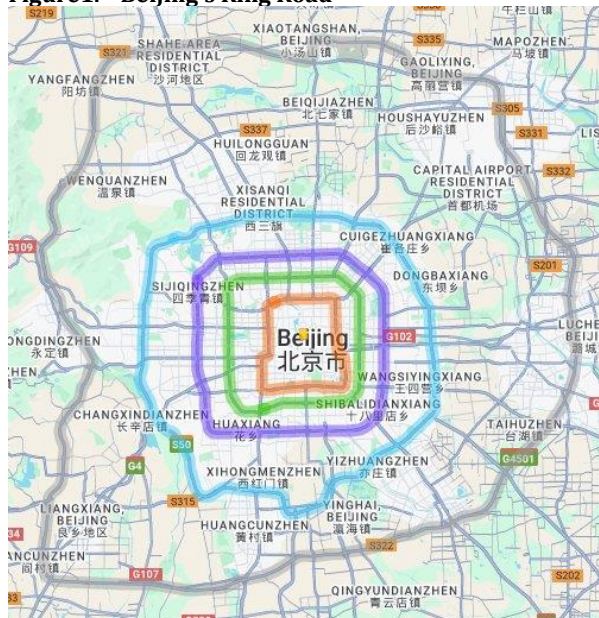
As an example of the 2008 Beijing Summer Olympics, the timeline of the Olympics, from the proposal of the Olympic bid in 1998 to the successful hosting of the Olympic Games in 2008 to the 510 year period (2018) afterward also corresponded with an economic takeoff and industrial restructuring in China, which had significant implications with regards to radical changes for the city of Beijing, and itself served as a wind vane of the development of the city. Further, it has played a differentiated and essential role in the development of the city at that time. To analyze the role of the Olympic Games in the development of the city,

This paper sets out to analyze and explore the difference in the impact of the Olympics on the city at successive time stages. The time of the Olympics is organized into three stages: Pre-Olympic (1998-2008), Olympic (2008), and Post-Olympic (2008-2018). Lastly, some special milestones can be examined and utilized for the city of Beijing: 2001 successful bid of the Olympic Games, 2003 Olympic stadiums/venues built (major construction began), 2008 hosting of the Olympics. These milestones will be utilized as a backdrop and basis for all major cities' events, and decision-making for the city government.

-Urban Challenges Before the 2008 Olympics

The pre-Olympics Beijing was in the phase of the expansion of urbanization, and it was affected by a population explosion, that the city to grow rapidly, expanding from 155 square kilometers (when this nation was founded in 1949) to 491 square kilometers. (Historical review of Beijing's urban development and prospects for the new century, 2001) This growth was hurried, and it was going to generate a lot of urban challenges, generating problems of transportation, environment, and so on.

Figure1. Beijing's Ring Road



(Sources:<https://www.google.com/maps/d/viewer?mid=1gYVQrxqS1rrMsCquxexQXcq8WFE&ll=39.935041671002026%2C116.40259750000001&z=10>)

In the area of transportation, there was a rapid rise in the number of motor vehicles in 2001, and in fact, the volume of motor vehicles in Beijing alone grew from 1.92 million in 1997 to 1.509 million, but road construction was not even close to keeping pace with the rise in motor vehicles (Annual Report, 2001). The completion of the "Five Ring Road"(blue line in the Figure) still did not effectively alleviate congestion, but rather expedited the city's outward expansion of the "pie."

Figure2. Heavy traffic jams caused by the blizzard



(Sources: <http://www.sina.com.cn> 2002年01月11日03:42 photocom/新浪网)

On December 7, 2001, a snowstorm tore through and exposed the last piece of Beijing's traffic cover. The new non-effectiveness snow melting agent severely caused extensive icing of the roads, subsequently impairing the effectiveness of traveling. Also, from flaws in the design of the traffic hub facilities, especially on some of the roads, that simply do not perform the role of directing traffic and have simply become links of traffic jams. On some overpasses, frequent situations emerged where to turn the car to open, straight cars had to open, and one car would grab the other's lane and did not give way to each other. Also, some bridges designed were too steep, resulting in icy road conditions where the vehicles went through and served as an obstruction. And all these issues simultaneously emerged to completely collapse the transportation system of Beijing, but also exposed many other flaws in road design and traffic management shortfalls.

After Beijing successfully bid for the Olympic Games in 2001, the urban expansion took off with an average annual growth rate of 3.5 percent, greatly exceeding the 5 to 8 years construction cycle for each rail line, which caused a worsening contradiction in supply and demand for subway ridership; on the one hand the city built up rapidly expanded areas to about 490 square kilometers, but the subway system only covered about 50 square kilometers of the city center, regions like Hui long guan, Wang jing or concentrated urban development lacked rail transit coverage and forced residents to take less efficient modes

of public transport.

Figure3. Metro in Beijing in 2001



(Sources: https://www.sohu.com/a/140523474_429173)

Additionally, due to the capacity design of Line 1 and Line 2 being somewhat smaller and with some trains more than 20 years old, there are aging equipment issues, service delays sometimes over 40 minutes, morning peak hour full rates over 150%, and an average of 15 failures per month. Poorly lagging development of the metro system reflects outdated war preparedness technical standards jumbled with a planning freeze in the 1990s concerning metro system standards that ultimately created issues meeting the population and urban growth within the construction of new lines in the 21st century (Beijing Institute of Urban Planning and Design, 2001). And now, capacity, aging equipment, and lack of a dense network of lines, all of which make the subway system a significant barrier to Beijing's urban development, must be overcome through faster construction of new lines and technology upgrades.

The environmental pollution issues with the rapid growth of the city have become more pronounced. The typical reasons for worsening air quality are coal burning for heating, industrial exhaust, and emissions produced by motorized vehicles. At times, coal burning in the city would be more than 28 million tons for the year, and during winter heating,

high pollution levels of sulfur dioxide (SO_2) reached $120 \mu\text{g}/\text{m}^3$, which was 2.4 times the national standard. Shougang and more coking and heavy industry buildings in the Fourth Ring Road, soot emissions were nearly 123,000 tons a year, worsening urban pollution (Hao & Ma, 2002). Continued growth of motor vehicles produced new emissions, which increased on average annually by roughly 9 percent, nitrates (NO_x), and respirable particulate matter (PM_{10}) (Wang & Zhang, 2003)

Figure4. People walk across the smog-covered Olympic



(Sources:

<https://www.gettyimages.it/detail/fotografiedicronaca/peoplewalkacrossthesmogcoveredolympicfotografiedicronaca/82171914?adppopup=true>)

Before the Olympic bid, one of Beijing's urban policies was to give an emphasis to “economic priority,” while the industrial space allocation did not take into account environmental carrying capacity. For instance, the heavy industrial area of Shi Jing Shan District is situated upwind of the urban core and contributes to an exacerbation of pollutants occurring within the city. The outcome of pollution is multifold. Firstly, risks for public health are climbing anew, with an increase in coincidental illnesses and a 37 % increase in respiratory disease incidence levels in 2001 over 1995, as asthma in children increased to double the international standard; secondly, dust storms are preceded by haze, and combined pollution occurs frequently. For example, the annual average PM_{10} in 2002 was recorded at as high as $162 \mu\text{g}/\text{m}^3$ in Beijing, approximately four times the WHO standard, while days of haze exceeded 150 (World Bank, China: Air, Land, and Water,

2001).

The pre-Olympic model of urban development, though, enabled economic growth while generating severe environmental dangers; therefore, air quality improvement was one of the core issues of Beijing's sustainability after the Olympic bid. Even then, on the eve of the Olympics, Beijing's air quality remained a major issue for the games to be considered good, creating domestic and international concern about the upcoming games. The above problems indicate that rapidly expanding cities via crude expansion lead to a self-perpetuating chain reaction of relatively consistent congestion within the transportation system and compounding pollution of the air and the environment. The futility or forecasting foresight in industrial layout, the intermingled distribution of pollution sources, at or in proximity to people's living quarters, and lagging, weak means of governance have all contributed to increasing ecological burdens. These issues were not independent; rather, they were a concentrated manifestation of deep-seated structural contradictions within the urban development model of the city, in fact pointing to the need for Beijing to urgently and fundamentally go through a coordinated, systematic transformation. And there was indeed a boost to Beijing's urban transformation, due to the proximity of the Olympic Games.

-The Olympics as a Driver of Urban Transition

Beijing perceived the success of its Olympic bid (2001-2008) as an impetus to embark on an all-round urban transformation.

From a social and humanistic perspective, the preparatory phase for the Beijing Olympic Games rolled out in a way that was strongly aligned with the national idea of “humanistic Olympics.” Through strategies such as extensive publicity, the participation of a nation, volunteer services, and displays of culture, the government intentionally strengthened social cohesion and, incrementally, integrated environmental protection as a way of life for the public. For instance, the Shougang Group gradually relocated its main production

base from Shi Jing Shan District to Cao Fei Dian in Hebei Province, since 2005 (Zang, 2009) not only alleviating the conflict between the industrial pollution and the urban main area upwind, but also explored “regeneration of urban cultural space” in the context of “deindustrialization” through reuse of old industrial bases (e.g. as in Shou Gang transformed the park into the Winter Olympic stadium). (Li, 2015) This constellation of strategies not only responds to the environmental pollution threat to the health of the city, but also

But also presents a model for industrial transformation in the post-Olympics period.

Figure5. The National Sports Center Stadium



(Sources: <https://chatgpt.com/c/6822fcd7bdb880119cb990eb95697963>)

At the national strategic level, the Olympic Games were also entrusted with the significant task of demonstrating the achievements of reform and opening, as well as enhancing the image of the country internationally. The central government incorporated the construction of relevant infrastructure into the 11th Five-Year Plan. The overall upgrading of transportation in the capital was strongly supported both financially and in terms of policy. Among these projects, Metro Line 8 (Olympic Spur), which was completed in 2008, is one of the most illustrative results of Olympic infrastructure construction. (Beijing Subway Construction Management Co, 2009) Metro Line 8 broke away from the technical approach of the previous war preparation oriented subways by adopting large capacity A type trains and an intelligent dispatching system, with its own average daily traffic capacity of smoothly transferring 600,000 passengers each day which greatly decreases

the extreme operational overload of the previously constructed Line 1 and Line 2. (Wang, 2012) More critical, the project also was in alignment to modernize domestic metro construction standards, while providing a complete break away from a “wartime mindset” towards and accepted sense of “people's livelihood priority” . In its own future right, Metro Line 8 would also become a crucial trunk line connecting north and south Beijing.

At the level of urban governance, the Olympics grew to be an important node of transition in changing the management style from “rough expansion” to “fine control” . As a response to the growing traffic congestion and air pollution preceding and foreshadowing the rapid explosion of motor vehicles, Beijing officially implemented the “Tail Number Restriction” policy in 2008, which technically functioned by administrative policy and electrically monitored an increase in the average speed of the main road network by 15% during congestion. (Beijing Municipal Commission of Transport, 2010) There was some skepticism from the public regarding this policy, as it was regarded as having compromised the right of the vehicle owner's travel ability. There is value in saying it deflated traffic pressure for a short period of time, even though it played a positive role in reducing motor vehicle exhaust emissions in any case. More importantly, the synergistic effect of "constraining transportation" in conjunction with the rail transit system is remarkable: in the year 2008 average daily urban travel share by rail transit had grown from 11% in 2001 to 36%, (Zhao, 2011) which greatly worked against the sense of bike pattern of management of cyclical traffic and environment, which was the legacy from the time of the “pieshaped” expansion of the city before the Olympic bid. Adding to the experience, an added component of governance was that during the Olympic experience, there was a temporary shutdown of some recognized highly polluting enterprises to ensure a good air quality, which served to further accumulate valuable monitoring data and governance experience. Some policies toward pushing environmental management away from an emergency type of governance to a regularized institutionalized state of implementation.

Chart1. Beijing's Urban Development and Population

Time Period	Major Events and Urban Development Characteristics	Built-up Area (km ²)	Population (Urban / Permanent Residents)
1949	Founding of the People's Republic of China; initial stage of urbanization	155 km ²	≈ 1.67 million
1978	End of the pre-reform expansion period; foundation for large-scale modernization	491 km ²	≈ 8.71 million
1990	Late stage of rapid urbanization following economic reforms	325.49 km ²	≈ 6.78 million
2001	Successful bid for the 2008 Summer Olympics; beginning of Olympics-driven urban expansion	≈ 840 km ²	≈ 10.76 million
2001–2008	Olympic preparation period; large-scale infrastructure development and accelerated spatial growth	≈ 840 → 1,240 km ²	≈ 10.76 → 14.96 million
2008–2020	Post-Olympic consolidation; transition toward metropolitan-scale development and refined urban governance	1,240 → 3,895 km ²	≈ 14.96 → 20.46 million

(Illustrated by the author)

2 The 2008 Summer Olympics and the Construction of Legacy

-Infrastructure and Transport Enhancements

The swift growth of Beijing's rail transit system was arguably the most important lasting hard legacy of the 2008 Beijing Olympics. Metro Line 8 was constructed for the Olympic venues and has now been fully integrated into the central core transport system in Beijing. Line 8 has become an important commuting corridor along the northern central axis of the city. Between 2001 and 2008, Beijing built more than 200 kilometers of new rail lines that transformed Beijing's transport system from a surface-based system to a multilayered model of mobility based on rail infrastructure. (Zang and Zhao, 2012) After the Games, Line 8 was further extended north and south to better connect the high-density areas of Tianqiao and Qianmen, further illustrating the problematic nature of Olympic infrastructure moving from a temporary event-based application to a permanent urban application.

Alongside physical improvements, we also see lasting policies related to traffic

management. One such example was the “tail number restriction”, which served the purpose of reducing traffic and pollution during the games. After the event, there was an effort to institutionalize this restriction as part of the everyday traffic governance in Beijing. The applications of this type of policy have been effective at not only reducing emissions from vehicles but also improving roadway traffic flow. (Wu, 2012) The infrastructural legacy of the Olympics has demonstrated how large sporting events are able to contribute to the planning of embedded physical infrastructure investment and provide an opportunity for innovations in urban governance, which creates a lasting institutional legacy.

-Industrial Relocation and Environmental Improvements

The 2008 Beijing Olympics prominently featured the initiative of a "Green Olympics." In this undertaking, the management of industrial pollution was one of the most important hard legacies of the Green Olympics. For example, the Shougang Group, which has a long history of operating the Shougang Metallurgical Plant in the Shijingshan District, has been a key source of urban air pollution for decades. In 2005, the Beijing Municipal Government announced a large relocation project around the time of the Olympics. The heavy industries of Shougang were moved to Caofeidian, low in Hebei Province, and the land was zoned for ecological restoration. This work satisfied the environmental agenda but also freed up valuable land for redevelopment in the western part of the city (Wang, Hao & He, 2013).

This relocation was more than a physical change of location; it was a conjoined effort in ecological healing and functional conversion. The previous industrial site was transformed into a key site for the 2022 Winter Olympics, with one of the venues (the Big Air Shougang ski jump) located there, as well as the Organizing Committee and International Media Centre of the games. Moving from a polluted site to an Olympic symbol illustrates how an industrial heritage site can be rescoped and integrated into the area of urban development through an adaptive reuse approach.

In addition, Olympic policies intending to reduce industrial emissions produced significant improvements in air quality. Before and during the Olympics, the annual average PM10 concentration in Beijing decreased by more than 20% from 2001 to 2008 (Health Effects Institute, 2009). For many residents, the environmental legacy of the event is embodied in the clear blue skies that we witnessed while the Olympics took place.

-Governance Innovation and Policy Testing

A "Humanistic Olympics" was one of three guiding principles for the Beijing 2008 Olympic Games. This legacy consisted of more than cultural symbols and venue design, including the strengthening of social governance. Part of Beijing's preparation for the Olympics involved implementing a governmental coordination system of multiple actors to operate the city. The Beijing Organizing Committee for the Olympic Games collaborated with municipal governments and activated multiple sectors (public security, transportation, environmental protection, culture, and community service) towards task-driven governance. This served as a useful experience for the organizational leadership of a future large-scale event in the city (Ren, 2008).

A key element of any governance is volunteerism, and the Olympic experience encouraged volunteering as an aspect of governance. More than 1.7 million volunteers supported the 2008 Games, providing services in hospitality, translations, navigation of the city, and emergency response. Volunteer involvement was significant to civic responsibility and public participation in the city. In addition, following the Olympics, Beijing developed an institution for its volunteer community to support other urban events, including urban marathons, cultural exhibitions, and disaster response activities. This served as a testament to the continuing legacy of the Olympics in its soft governance capacity tied to civic engagement (Zhang, 2012).

In addition to this, the Olympics advanced the creation of participatory mechanisms that continue to exist long past their origination. After the Games, systems were formalized for

public participation in facility construction, policy evaluation for environmental issues, and simulations for emergency responses as part of Beijing's regulatory and administrative systems. These activities now comprise an element of “institutional hard legacy” that is improving responsiveness, legal transparency, and institutional maturity in the governance of the city.

- Lip Use and Post-Games Space Issues

A few world-class venues have been built due to the Beijing Olympics, including the National Stadium (Bird's Nest) and the National Aquatic Center (Water Cube), which hosted every main Olympic event. Unfortunately, some venues specifically faced challenges of underuse (after the games), which were often quoted once again in the context of Olympic legacy management. The Bird's Nest cost in excess of 100 million RMB a year to maintain, but the level of use was restricted to tourism and occasional one-off major events because there were no resident sports clubs and no real subsequent program (Xu, 2024).

With regards to venues themselves, there were also post-Games limitations regarding the functional legacies related to the Olympic bus system and media village spatial dimensions. Many facilities were not transitioned into the more regular daily connection networks of transport in Beijing's bustling traffic atmosphere, which led to waste, inefficiencies, and unutilized space.

Nonetheless, some of the lessons learned would prove most useful for planning the 2022 Winter Olympics, and some of the principles of multifunctionality, flexibility of design, and common use of venues among/at Olympic sporting events were included in a formalized and coordinated way from the outset of design processes. One carefully considered venue transition, for example, was that of the Ice Cube, which was a reinvented version of the Water Cube, which hosted a curling event but still retained its original swimming functionality. These changes indicate a strategic change in Beijing's approach, as the

priority is determined at an early stage of planning in terms of the post-Games use. This represents a larger change from being an infrastructure builder of the Olympic Games to taking on the role of an active curator of Olympic legacies.

3 The 2022 Winter Olympic Games and the Sustainability Turn

-The Evolution of Winter Olympic Bid Concepts: From Infrastructure to Sustainability

The 2022 Beijing Winter Olympic Games differ conceptually from the 2008 Beijing Summer Olympic Games in their bidding approaches, indicating a shift in China's mindset toward bidding and hosting major international sporting events. There are fundamental differences between the Winter Olympic Games and the Summer Olympic Games in terms of sport program types, scale of events, and target audiences. (Mangan & Hong, 2013) The Summer Olympic Games generally have more varied events and thus larger-scale infrastructure development, and more marketisation and global attention; the Winter Olympiads are smaller scale, with more specialised events and target audience, and the market potential is largely limited to climate characteristics for winter sports (Essex & Hong, 2013). The successful staging of the 2008 Summer Olympic Games and Beijing being awarded diverse bids to stage different types of World Championships, World Cups, and other large-scale events since the 2008 Summer Olympic Games provided Beijing with experience in hosting international major events. In addition, the climate in Beijing and the co-hosting city Zhangjiakou is temperate continental, with distinct seasons, which adds to the suitability of Beijing to host ice and snow sports. The interplay of these two factors makes it China's top candidate for the 2022 Winter Olympics.

The government's philosophy to organize the Olympics has also changed since the 2008 Summer Olympics. For the 2022 Winter Olympics, the government focused more on “green, sharing, openness, and cleanliness,” signaling a change of value from the 2008 Games, when the event focused on a country's image and comprehensive strength, and then later shifted to sustainable development. (International Olympic Committee, 2022) The deep-seated motivation for this change also corresponded to the adjustment of

national development strategy; as on 2008 Beijing Olympics, state focused on economic takeoff in concentrated showing, as for the state in 2022 Beijing Winter Olympics shows the importance on environmental protection, coordinated regional development, and global cooperation, these correspond also to the strategic demand for high-quality development in the new era for China. (Müller & Gaffney, 2018) The above differences play obviously role in urban development and the international implications, for example: the massive construction of venues for the 2008 Olympic Games presented the development of urban infrastructure upgrading and also the huge waste of urban space; (Müller, & Gaffney, 2018) while the 2022 Winter Olympics is instead of a more sustainable model of urban development with regards to reusing existing facilities, regional development coordination's, and promoting green and low carbon economies, and it has been recognized and positively evaluated widely in the international development community.

2.3.2 Transformation of Organizational and Governance Models in Olympic Preparation

Beijing, as the world's first "dual Olympic city," transitioning from the Summer to the Winter Olympic Games, has sustained and profound urban transition from 2008 through 2022. Taking advantage of the sustainability legacy of the Games, Beijing has transitioned its "Green Beijing" product from an idea into a realized part of urban development.

Unlike other post-Olympic cities, after 2008, large host cities do not stop their infrastructure and urban governance, but rather incorporate strategic action plans from the Olympic preparatory period into a medium- and long-term urban design. For example, there has continued to be an accelerated pace of rail transit construction: as early as 2015, hundreds of kilometers of new rail have been added, so that by 2022, there will be more than 700 kilometers of total rail transit mileage with increases in the share of public transport (Beijing Municipal Ecology and Environment Bureau, 2008- 2022).

Beijing has also made noteworthy accomplishments with its ecological environment, as blue skies and clean air are no longer relegated to the Olympic Games, but are the product

of regular management. Since 2013, Beijing has added management with a required Clean Air Action Plan and continued the Blue Skies Battle. In 2021, the annual average concentration of PM_{2.5} in Beijing reduced to 33 micrograms per cubic meter, a drop of almost 60% since 2013. In 2021, the average annual concentration of PM_{2.5} in Beijing fell to 33 micrograms per cubic meter, a decline of almost 60% since 2013; the annual number of good air quality days reached 288, nearly 79% of the total, and the city achieved good air quality throughout an entire year for the first time in history. To this end, Beijing has initiated a series of measures, such as eliminating "coal" in the plains, imposing stricter environmental protection standards on motor vehicles, and promoting new energy vehicles, all of which have effectively eased the frequent occurrence of heavily polluted weather in the winter and spring seasons (Beijing Municipal Ecology and Environment Bureau, 2008 – 2022).

With respect to water resource management, Beijing has strengthened the construction of water-saving societies and protected watersheds, while vigorously promoting recycled water use and the ecological restoration of rivers and lakes. In 2021, the water storage capacity in the Miyun Reservoir reached an all-time high, and the city's wastewater treatment rate was elevated to above 95 percent. Similarly, urban greening in Beijing is also steadily advancing, with the urban forest cover ratio rising from 36% in 2008 to 44.6% in 2021, and many new urban pocket parks and ecological green spaces built to realize the goal of livability, defined as "you can see the view when you open the window and greenery when you go out."

From the perspective of economic and social development, the structure of Beijing's industries have continually been optimized, as the fraction of tertiary industries have continued to rise from 2008 to 2022 with new "high precision" industries like those focused on technological innovation and cultural and creativity accounting for a significant leg of the economic growth, while also leading the country in energy and resource efficiency, thereby laying a foundation for high-quality urban development (Zhang, 2010).

In summary, between the years 2008 – 2022, Beijing's environmental governance, transportation system, industrial structure, and urban space have yielded remarkable results in implementing sustainable development. This not only has provided instrumental Eco infrastructure for the 2022 Winter Olympics, but improved the quality of the city overall and its international image.

-Green Olympics and Sustainable Practices

The main idea of the Beijing Winter Olympics in 2022 will be "green Olympic Games", carrying out the concept of sustainable development in the construction of the venue site, energy use, and transportation, and many measures will be the first in the history of the Olympic Games.

The reuse of venues and the greenness of construction have welcomed scrutiny during the Winter Olympics. Beijing has made full use of the Olympic legacy of the 2008 Olympic Games, and of the 13 venues required for the Winter Olympics, 11 were reused directly or renovated in situ in existing venues, and only 2 new venues were built. Among them, the only newly built venue is the National Speed Skating Center "Ice Ribbon". (Beijing Municipal Ecology and Environment Bureau, 2008 – 2022). The National Aquatics Center "Water Cube", for example, was transformed from a former aquatic arena into a curling arena "Ice Cube". Former Summer Olympics venues, including Wukesong Stadium, Capital Stadium, National Stadium, and numerous other venues, have also been transformed into venues to undertake the ice project, achieving "a hall for multiple purposes" and significantly reducing resource consumption and environmental burden. (China Daily,n.d) The new venues also reflect the green concept, among them the "Ice Ribbon", including a large number of environmentally friendly materials and new technologies, including a carbon dioxide direct cooling ice-making system to be a highlight. The top environmentally friendly refrigeration technology in the world achieves nearly zero carbon emissions and controls the temperature difference between the ice surface within 0.5 °C on both ice surfaces. This serves to not only conserve the quality of the

game, but looks to also reduce carbon emissions directly by approximately 900 tons. Also, the CO₂ refrigerant has zero ozone-depleting potential, has a greenhouse effect potential of just 1, while the conventional system with the use of Freon has a greenhouse potential that exceeds 3,800 times more than the CO₂ system, which greatly illustrates the technological accomplishment of having great advancements in environmental protection. This technology was widely used in the Capital Stadium, Wukesong, and other ice venues, not only to make the "fastest ice", but also is hoped to serve as a sustainable program to global ice sports venues (Energy Foundation, n.d.).

Secondly, the widespread use of clean energy has made the Beijing Winter Olympics the first event where green energy supply has been achieved for all venues in Olympic history. To achieve this, Beijing and Zhangjiakou cooperated to construct the Zhangbei Renewable Energy Flexible DC Grid Project, which provides approximately 1.4 billion kilowatt hours (kWh) of wind and photovoltaic power to Beijing on an annual basis since its commission in 2019. During the event, all 26 venues used approximately 400 million degrees of green energy, and it would reduce standard coal use to 128,000 tons, while reducing carbon emissions, which would be roughly 320,000 tons (Sina Finance, n.d.)

Regarding transportation, the conference comprehensively promoted green travel. During the Winter Olympics, more than 1,000 hydrogen fuel and pure electric powered vehicles were put into use, including around 800 hydrogen fuel passenger cars and buses to eliminate traditional fossil fuel transportation, while achieving measures to reduce carbon significantly (People's Daily Online, n.d.). Furthermore, the implementation of the Beijing Zhangjiakou high-speed rail made it possible to travel between Beijing and the Zhangjiakou competition area in one hour, and the Winter Olympics train included 5G ultrahigh definition live broadcasting technology, achieving a pure train of intelligent transportation.

In terms of carbon neutrality, the Beijing Winter Olympics developed a systematic carbon management plan and comprehensively provided green power, low-carbon venue construction, and supported green transportation measures to actively reduce emissions. Furthermore, by planting trees and having a corporate carbon offset mechanism, which addresses any direct or indirect emissions by achieving the goal of a "carbon neutral". The IOC highly praised Beijing for its combined efforts and stated that it set a new benchmark for green transformation of future Olympic Games, which follows from every event in the history of the Olympic Games (S&P Global, 2019).

4 Olympic Legacy of the Beijing 2022 Winter Games: Continuity of Tangible Legacy and Innovation in Intangible Legacy

-From 2008 to 2022 and beyond the Winter Olympics

When we talk about reusing the Olympic legacy, Beijing marks its specificity. Beijing is the only city that hosted the Summer and Winter Olympics and, thus, has inherited the 2008 Summer Olympic legacy and blended into urban development, "City of Two Olympics" as a new cultural symbol of Beijing, as part of developing the sport of ice and snow to publicize the Olympics and the commitment of people (Beijing, 2022).

The use of the Olympic legacy is broken down into two sections. One is the use of the Summer Olympic legacy to affect renovations and upgrades, including the addition of new technologies, which has resulted in a functional transformation of the venues and turns out to be cost-effective and allowing savings in event costs and construction time as compared to new stadiums altogether. The other is the reactivation of existing spaces. Some of these spaces have served other purposes in the past, some of which are not fully economically activated or have been abandoned. The renovations during the Games are intended to have Olympic properties and given the Winter Olympics as a lead into develop the areas that are originally abandoned well as expand the popularity of the area that provides a platform for creating a base for positive development for the area after the Winter Olympics.

-Case study: National Swimming Center

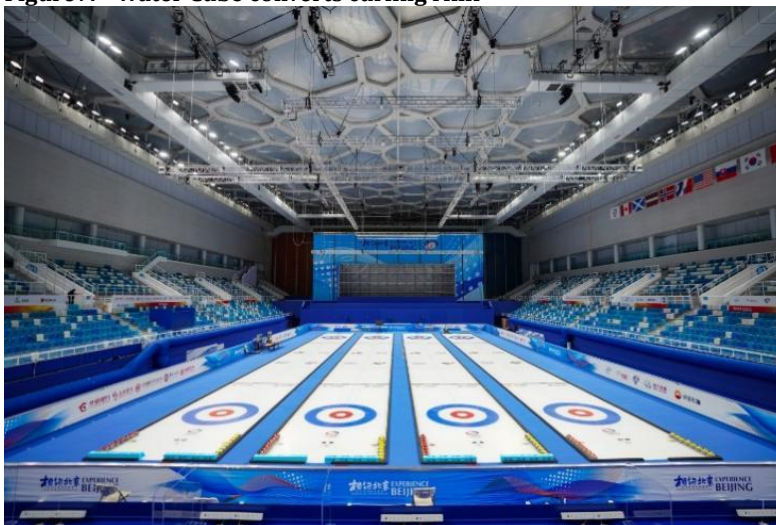
Figure6. The Ice Cube



(Sources:

<https://dromedar.zoznam.sk/gl/810377/3057421/VodnakockaLadovastuhaajtratvtvaredrakaCinaukazalanadherneolympijskesportoviska>)

Figure7. Water Cube converts curling rink



(Sources: <https://finance.sina.com.cn/jjxw/20211113/dociktzqtyu7102021.shtml>)

The National Aquatics Center, known as the "Water Cube," was built for the 2008 Summer Olympic cycle, specifically for swimming and diving events. For more than ten years, the Water Cube has provided the public with a place for swimming, sports, and tours in addition to hosting a variety of large-scale swimming events. As part of the objective of a Green Olympics, management came up with an idea to turn the Water Cube into the "Ice Cube" that could be utilized for Winter Olympic competitions in curling, and in the future,

allow for free changes between water and ice.

At the technical level, in the future realization of water-to-ice to ice conversion of the venue, technicians at the bottom of the original pool will lay a removable support structure and lay refrigeration tubes in a horizontal distribution manner, while maintaining refrigerant temperatures of 9 degrees Celsius to 32 degrees Celsius. The icemaking process must be performed in layers, and ambient temperature must be strictly controlled to avoid air bubbles and impurities from entering and affecting the strength of the ice. Finally, heat force coupled technology is employed as well as feedback control with temperature sensors and strain gauges, and future ice repair operations when deemed necessary (Li, 2023).

Figure8. Top Natural Ventilation Core



(Sources: Kang, Y., Liu, R., Wu, J., Wang, J., Wang, D., & Yang, Y. (2022). Study on the carbon reduction potential of the curling venue of the National Aquatics Center. *Building Science*, 38(4), 236–242.
<https://doi.org/10.13614/j.cnki.111962/tu.2022.04.30>)

To enhance spectator comfort and reduce the influence of temperature on the ice surface, the technicians also altered the HVAC system of the building. The designers had previously performed passive ventilation to the fullest extent possible when the building was remodeled as a swim center, utilizing the ETFE membrane air pillow system. This hybrid system was used to thermally heat the air pillows using sunlight in winter, while passive

ventilation used the hollow structure of the air pillows in the summer to create a thermal cooling effect in spaces during the summer and warmth in the winter. In the course of these various measures taken in facility improvement, to further improve the carbon reduction benefits of means of operation and maintenance systems, to improve cavity ventilation usage rates (to increase systems efficiency), and to reduce exhaust energy consumption due to mechanical ventilation systems, the technicians increased pressures of the ventilation in the roof in the form of a core cylinder / (central) plenum and cumulative inefficiency (due to height of ventilation) along with the natural exhaust provided by the wall of the core cylinder to address mechanical high energy consumption (Kang, 2022).

To further assist the passive and natural ventilation improvements, the “Ice Cube” also introduced smart grouping systems, allowing for self-organized controls, and enabled building units to include building energy-saving optimization and appropriate facilities for efficient use in task management (Jiang, 2021). The successful transformation of the National Aquatics Centre, from the “Water Cube” to the “Ice Cube” , showcases not only the value of the sustainable use of sport venues and infrastructures in the post-Olympic /event period, but has also provided a case study and model for constructing multifunctional, low-carbon, and intelligent venues. These various measures respond to the Green Olympics concept and build on the technical pathways and practical experiences associated with multi-scenario composite usage of large public buildings.

-Case study: Shougang Industrial Park

As part of the preparations for the 2008 Beijing Summer Olympics, in 2005, the Beijing municipality initiated a comprehensive relocation plan for the Shougang industrial complex by gradually shutting down the steel production facilities in the Shijingshan district. An important part of China's national industry and manufacturing for many decades, Shougang had played an important historical role in supporting the industrial economy of Beijing. However, the complex's urban location was not consistent with the

shifts towards sustainable development that were emerging at the time. As part of its Olympic preparations, Beijing moved to relocate Shougang entirely, relieving some of the urban environmental burdens, and released approximately 8 km² of developable urban land. Following the closure of the plant, ecological remediation began to deal with soil and groundwater contamination and address the usefulness of any remaining industrial structures (Yeerkenbieke, Chen & He, 2023). This brownfield, which had been highly polluted and closed off, slowly developed into a vibrant open urban ecology through remediation and landscaping. This is perhaps where the planning authority put into action its "brown to green" strategy of mixing industrial relics like blast furnaces and cooling towers into the landscape, creating a new model of an industrial heritage park (Bo, 2019).

In 2015, Beijing was successful in winning the right to host the Winter Olympic Games in 2022, making it the first city in history to host both Summer and Winter Olympics. Beijing continued to advance Shougang Park due to this, as the Olympic Organizing Committee was formed and opened its headquarters at the park in 2016. In this way, the Olympic Organizing Committee started to regenerate the site quickly by utilizing the park and its resources. They creatively reused many of the industrial buildings and facilities to provide venues for winter sports, training facilities, and administrative offices for the Olympic Games. An excellent example of this innovative design is the construction of the ski jump called "Snow Flying" within former cooling towers that were once used for industrial purposes. This ski jump is an excellent example of merging historical features with the current sports infrastructure. It became one of the most photographed locations during the Olympic Games, and it quickly became a landmark throughout the Olympics. The Olympic Games also required major updates to transport, utilities, and energy systems to meet the International Sports Federations' accreditation standards. Therefore, local authorities streamlined the approval processes for projects related to the historical preservation of the industrial park. As a result, there were significant time and inefficiencies in meeting certification requirements (Zhou & Feng, 2012).

Following the conclusion of the Winter Olympics in 2022, Shougang Park has transitioned into using its Olympic legacy to further enhance and promote the development of sustainable recreation for the general public. During the Winter Olympics, many of the facilities built for the Olympics provided public-oriented opportunities for both urban-scale public fitness and cultural exhibitions in addition to providing commercial venues for Conventions, creative offices, Hotels, etc. The facility provided new potential for public involvement in the ephemeral legacy left by the Olympic Games; in turn, the development of Shougang Park will greatly reduce the possibility of vacancy following the Paris Games (Cui, 2023; Zhou & Feng, 2012). For example, the ski jump called "Snow Flying" transitioned quickly into being an urban park providing public access as a form of urban recreation, while many of the historic structures were repurposed or adapted to support future uses. For example, an industrial blast furnace was transformed into an esports and entertainment venue, creating cultural, economic, and social capital (Bo, 2019).

When considering the legacy of the Olympic Games as a whole, it became clear that Shougang Park underwent a successful transformation from an aging steel industrial base to a fully operational Olympic-themed urban park in a systematic manner. In doing so, the development of the park improved the ecological environment surrounding the park while creating new opportunities to develop many of the emerging industries, such as sports, digital technology, and cultural innovations currently taking place in China; at the same time, the transformation and development of the park created substantial economic opportunity. As a result, the development preserved and further reinforced the memories of Industrial Heritage and the history of Beijing (Cui, 2023; Zhou & Feng, 2012). When assessing the legacy of Shougang Park, it is possible that Shougang Park as a whole could serve as an integrated blueprint and exemplary project for the rental of industrial heritage as a means of creating and sustaining urban forms and urban legacies.

-Winter Olympics during an epidemic

As a result of COVID-19, the 2022 Winter Olympics in Beijing were the first and only Winter Olympics to occur in a closed-loop system. Due to the unique timing and approach to epidemic prevention, a new Olympic operation model was created in conjunction with the existing urban infrastructure.

Figure9. Winter Olympics in the midst of an epidemic



(Sources: https://www.upmedia.mg/news_info.php?Type=3&SerialNo=136785)

The Winter Olympics took place simultaneously in Beijing, Yanqing, and Zhangjiakou. Individuals associated with the Olympics were limited to a predetermined service system of travel, as the individuals travelled from the airport and high-speed rail stations to the hotels, venues, and media centers, a special vehicle, exclusive route milestones, to establish a “point line surface” closed loop operation system.

Within the closed loop, Olympic-related individuals were entirely isolated from other individuals, while the original flow route crossover points, such as "The Cube" and other independent sports venues originally within the city, were also included in the closed loop system to mitigate the possibility of cross-infection of the public with Olympic-related individuals.

In addition to Olympic-related facilities, hotels, volunteer lodges, medical zones, and athlete residences were all aggregated into closed-loop functional units that would have independent catering, independent testing, and independent material supplies. This posed an unprecedented service design challenge for a closed operation in a high-density,

multiservice, overlapping environment (Time, 2022).

The Winter Olympics Closed Loop is essentially an institutional laboratory within the city, a microcosm of the country's entire fight against the pandemic, along with the protection of public services. This is an “interim urban operating system” formed by technological means, discipline-related regulatory restrictions, and spatial closure. The intelligent realization of the institution was made possible due to development in the city itself and the existence of roads, transportation, and infrastructure. As previously stated, during and after the Summer Olympic cycle, Beijing put immense effort into advancing its urban transportation system and connecting with the surrounding cities, like the development of a highspeed railroad connecting Beijing to Zhangjiakou, which, at the time of writing, had become an important part of the linkage between Beijing and the Zhangjiakou Winter Olympic region (Gao & Liu, 2023).

That being said, we must recognize that the Olympic Games' closed-off environment shuts down channels of communication between the Olympic Games participants and the outer world, and in some ways restricts the athlete's freedoms and rights to move about the city and experience it. At the same time, the control of the number of spectators for the competition, and in some cases, competitions were played in empty stadiums, not only negatively affected athletes' motivations during competition but also deprived spectators of their freedom to watch the event. The Olympics have never been mainly about sports, but a means to expose the city's cultural values, yet the Olympic closure of the surrounding environment limits the exposure of the city's cultural values, which is not beneficial for exposing and promoting the city. We do not know if this specific Winter Olympics was considered a success, we do not know how the 2022 Winter Olympics will be remembered for future generations, but we know that no one wants to go through another major global public health event again. It cannot be denied that there are lessons for urban public health governance and international events. 2022 is paving the way as a guide for future governance practice to address the conditions presented when a major public health

event or international event occurs.

-Institutional Transformation of Green Olympic Practices

The Beijing 2022 Winter Olympics have been heralded as one of the most sustainable Games in Olympic history. Beyond the incorporation of green between multiple lines includes venue energy systems, transportation, and even carbon management policies. Compared to the 2008 Summer Olympics—which highlighted environmental sustainability largely through industrial restructuring—the 2022 Winter Olympics were committed to encouraging and utilizing new green technologies and state-mandated standards. For example, all venues for the Olympics were fully powered by renewable energy, meaning it was Olympic history's first large-scale, fully integrated, sporting event achieving carbon neutrality (IOC, 2022).

As acknowledged, the Olympics' technological innovation (for example, “Ice Ribbon” or National Speed Skating Oval) employed CO₂ transcritical direct cooling systems for cooling. The system reduced energy consumption by more than 30 percent (in comparison to the old Freon-based refrigeration systems) with little to no greenhouse gas emissions at all. Following the Olympic Games, this smart technology, trade, and practice system expansion continued in national ice sports practices and venues throughout China, and as such, visible opportunities were created demonstrating processes for diffusion of green innovation from the Olympic venues into urban form and fabric (EF China, 2022).

Green responses were designed into practices for transportation and construction as well. In the Zhangjiakou competition zone, electric and clean energy buses and rail systems supported low-emission operations, while panels and buildings constructed from prefabricated materials and low-carbon materials limited environmental costs associated with construction. For the first time, measures for carbon tracking, offset, and evaluation were designed into Olympic planning. After the Olympic Games were finished, even prior to achieving carbon neutrality, such measures informed related regional policy initiatives for sustainable development in the city of Beijing and in Hebei Province.

Thus, Beijing 2022 functions through dual constructs (in the Olympics Governance) not only to showcase green technologies but also to act as an incubator for forms of environmental governance, converting soft legacies of the “Green Olympics” into responsive policies and justifiable portable technical standards to achieve long-term institutionalized sustainability.

-Institutionalization of Social and Cultural Legacy

Beijing is unique as the only city in the world that has hosted both the Summer and Winter Olympic Games (i.e., in 2008 and 2022) in order to reaffirm and build upon its soft legacy system. Like in 2008, the 2022 Winter Olympics encouraged public engagement with the spirit of the Olympic Games. In the areas of social mobilization (to convene) in large-scale groups and volunteer service, the 2022 Winter Games recovered and instrumentalized a large volunteer network of civic engagement actions through public engagement and participation. To underpin it, the digital space was reasonably introduced in the “Volunteer Beijing” app to provide a dual governance upgrade in recruitment and service delivery.

More than 20,000 registered volunteers were working for the Games that provided a range of services, including translation, traffic direction, and epidemic control across the three areas of the Games: Yanqing, Zhangjiakou, and Downtown Beijing; the results in terms of professionalism and volunteer system function exceeded the standards established by other prior international events. More importantly, the civic engagement and volunteer system was retained after the event and made available across a range of civic engagement events such as marathons, exhibitions, and community festivals. The engagement model was institutionalized within Beijing’s community governance system to form an engagement pathway between event-based mobilization and everyday civic participation (Zhang, 2023).

Through a cultural lens, Beijing leveraged its status as a “Double Olympic City” to establish a lasting urban identity. Projects such as the Double Olympic Museum and Olympic Culture Month have contributed to raising awareness and educational content on Olympism. In addition, Olympic education is part of the curriculum in many schools. This has helped embed the ideals of the Winter Games, known as “green, sharing, openness, and integrity” into the younger generation’s values, and reinforced intergenerational cultural legacy transmission of values (Zhang, 2023).

These developments show that the 2022 Winter Olympics created engagement beyond an international sports event, yet it was a civically larger exercise within the identification of cultural cultivation. The social capital and the building of collective identity through civic engagement now remain at the core of a city's persistent soft legacies.

5 Integrated Legacy Governance and Strategic Lessons of Beijing

-2008 Summer Olympics Legacy

Chart2. 2008 Legacy chart

2008 Beijing Summer Olympics Legacy		
Legacy Type	Legacy Content	Affected Area
Tangible Legacy	Olympic venues such as the Bird's Nest and Water Cube	Venue reuse for the 2022 Winter Olympics (e.g., Water Cube to Ice Cube)
Tangible Legacy	Infrastructure including Metro Line 8, BRT, and Airport Expressway	Urban transit upgrades and Winter Olympic transportation services
Tangible Legacy	Relocation and decommissioning of Shougang industrial zone	Shougang Park transformed into a ski jump venue and organizing committee site
Intangible Legacy	Initial establishment of volunteer service system	Laid the foundation for the institutionalized 2022 volunteer system
Intangible Legacy	"People-oriented Olympics" concept and civic participation mechanisms	Fostered public cultural identity and sustained city promotion
Intangible Legacy	Traffic management policies such as license plate restrictions	Became part of regular urban traffic governance, improving air quality

(Illustrated by the author)

The legacies of the 2008 Beijing Summer Olympics, both tangible and intangible, were largely deliberate investments focused on three primary areas: infrastructure construction, the enhancement of the environment, and the promotion of Olympic culture. While there is no direct evidence that the venues and city amenities built for the 2008

Olympics were planned with the 2022 Winter Olympics in mind, their legacies helped Beijing win the bids to host the 2022 Winter Games. More than that, the enduring legacies of the 2008 Games continue to enhance the city's functional capacity and quality of environment, indirectly improving the conditions of residents and positively impacting public health.

-2022 Winter Olympic Legacy

Chart3. 2022 Winter Legacy chart

2022 Beijing Winter Olympics Legacy		
Legacy Type	Legacy Content	Affected Area
Tangible Legacy	Redevelopment of Shougang Park as a post-Olympic site	Continued industrial heritage transformation, fostering integrated cultural, tech, and winter sports zones
Tangible Legacy	New green venues such as the Ice Ribbon	Set standards for green construction and carbon neutrality, scaled nationwide
Tangible Legacy	Clean-energy buses and low-carbon buildings in Zhangjiakou	Enhanced infrastructure in Winter Olympic zones, aligned with regional sustainability
Intangible Legacy	Digital volunteer platforms (e.g., 'Volunteer Beijing' App)	Established standardized volunteer systems applied in civic events
Intangible Legacy	Closed-loop management and pandemic emergency systems	Institutionalized emergency response, strengthening urban governance
Intangible Legacy	Olympic education in curricula and Double Olympic cultural branding	Intergenerational value transmission and long-term city identity formation

(Illustrated by the author)

The 2022 Beijing Winter Olympics has established itself as a strong influence in urban development. As a result of the connection created by the development of infrastructure/redevelopment of areas through megaevent legacies, and the Shougang Industrial Park being created as part of the legacy from the Beijing 2008 Summer Olympics and the transformation to multipurpose (cultural, sport and ecological) zone as a result of the Winter Olympics, provides an excellent example of an Olympic legacy being repurposed.

The Winter Olympics provided a leading-edge construction/governance model unique to the Olympic model, which established the capacity to successfully host the Games and has determined a transferable city management/performance standard. In addition, the Winter Olympics have brought renewed importance to the intangible elements of Olympic

legacy such as Olympic values, institutional capacity, civic culture and these elements continue to drive urban development through innovations in policy, education engagement, and gaining support from the population through place attachment and civic pride and thus helping to build a greater sense of soft power for the city and supporting its long-term vitality.

-A Seven-Dimensional Methodology for Olympic Legacy Utilization: Lessons from Beijing 2008 and 2022

Chart4. Legacy Classification Table

Dimension	Beijing 2008 Strategy	Beijing 2022 Strategy
1. Legacy Typology	Focused on tangible legacies such as iconic venues and metro systems, with limited emphasis on institutional or cultural continuity.	Integrated tangible and intangible legacies, focusing on governance models, sustainable systems, and cultural continuity.
2. Venue Strategy	Emphasis on constructing new landmark venues (e.g., Bird's Nest, Water Cube) with limited post-Games usage planning.	Emphasized adaptive reuse of 2008 venues and industrial sites (e.g., Ice Cube, Shougang Big Air) for multifunctional use.
3. Infrastructure Integration	Massive investment in urban transport infrastructure, particularly metro expansion and road network upgrades.	Strengthened intercity connectivity through high-speed rail and ecological infrastructure in extended regions.
4. Environmental Governance	Promoted industrial relocation (e.g., Shougang) and basic air pollution control as part of 'Green Olympics' strategy.	Adopted green technologies (e.g., CO ₂ cooling), achieved carbon neutrality, and implemented long-term ecological policies.
5. Social Mobilization	Established volunteer systems with extensive public engagement during the event, but limited long-term institutionalization.	Digitized and institutionalized volunteer programs (e.g., Volunteer Beijing app), embedding participation in civic systems.
6. Governance Transformation	Developed basic coordination and event operation mechanisms with minimal post-Games conversion to governance tools.	Converted temporary Olympic systems into standard city governance platforms and replicable emergency mechanisms.
7. Development Reorientation	Focused on showcasing national image and modernity, aligning Olympic investment with global visibility goals.	Shifted focus to governance capacity-building, regional cooperation, and sustainable urban development outcomes.

(Illustrated by the author)

Beijing is the only city in history to successfully host both the Summer and Winter Olympic Games, and it has developed a comprehensive and responsive policy for the utilization of the Olympic legacy. An examination of the legacy trajectories from the 2008 and 2022 Games will inform seven significant dimensions that can form a methodological framework and also provide potential guidance for other cities hosting the Olympic Games wishing to pursue sustainable post-Olympic legacies.

1 Legacy Typology

Cities need to determine and reconcile tangible legacies (such as venues and infrastructure) and intangible legacies (like institutional practices and cultural narratives). In comparison to the construction of landmarks and infrastructure for the Non-Olympic Games in Beijing in 2008, it is notable that the 2022 Winter Olympics took a much more integrated development model to employ innovations in system-level governance while also enabling cultural continuity. This represents a shift, suggesting that host cities will need to anticipate housing, not only spatial legacies, but more so, institutional legacies, in the early phases of Olympic planning.

2 Venue Strategy

The 2008 Olympics was focused on the development of iconic new venues like the Bird's Nest and Water Cube, while the 2022 Olympics emphasized the adaptive reuse of these venues, e.g., the Water Cube became the Ice Cube, and also activated vacant industrial lands like Shougang. Future Olympic planning should start from the beginning with a specific focus on the design of multipurpose, convertible, and post-Games usable venues.

3 Infrastructure Integration

The 2008 Olympics brought about an unprecedented development of urban infrastructure through the Olympics and its challenge in developing social infrastructure, such as the rapid growth of public transport networks, including a very rapid expansion of the metro. The 2022 Olympic Games also used this approach, enhancing the connectivity of regional transportation networks and including the creation of a high-speed train to link Beijing and Zhangjiakou. This demonstrates how the Olympics can create incentives for investment to improve regional public transport and encourage the integration of urban and rural areas, while potentially meeting the need for spatial equity for development that has disconnected or isolated patterns of development to receive large amounts of public and private investment.

4 Environmental Governance

Beijing's Olympic legacy has progressed from environmentally sustainable control and cleaning up industrial pollution during the hosting of the 2008 Summer Olympics to using the Winter Games of 2022 to position Beijing as a leader in innovation through developing low-impact, high-energy efficiency strategies related to the Games, including systems for creating ice using CO₂ and carbon neutrality for venues. The Olympics have the potential to act as a catalyst for the transformation of cities and to create opportunities for policy innovation and for integrating ecological sustainability into long-term urban planning by urban stakeholders.

5 Social Mobilization

The development of large volunteer programs for both Games was one of the similarities in the process of Olympic planning. In 2022, Olympic planning moved towards creating

more formalized means of participation via digital platforms and a broader range of citizens being involved in governance decisions through decentralized, community-based governance strategies. This has transitioned from being focused solely on the events to being engaged with citizens civically. It illustrates the development and retention of social capital through Olympic experiences, which create governance models that allow citizens to participate.

6 Governance Change

The organizing committees for the Beijing Winter Olympics were established to develop long-term governance models that have the potential to be replicated elsewhere due to the development of the emergency management and web-based volunteering systems. These systems will provide urban managers with replicable frameworks for how they can succeed through the Olympic experience in their future efforts to develop urban environments and change the way opportunities are realized in hosting other Olympic games.

7 Development Change

The emphasis of the Games in 2008 was creating a brand for China and improving the Beijing international brand, whereas the focus for the Games in 2022 was on the capacity building of urban governance and interregional collaboration. The transition from the 2008 Games to the 2022 Games by Olympic planners and managers is to better reflect on urban development in their planning perspective than they do now.

Conclusion

Beijing, being the only city to have hosted both the Summer and Winter Olympic Games, has a uniquely comprehensive plan for both creating and developing an Olympic legacy. The focus for the construction of legacy in the 2008 Summer Games was to make a long-term change for the city. The 2008 Games saw a focus on the development of the infrastructure in Beijing and a positive change in the global image of the city, transitioning from a city with high levels of pollution caused by urban expansion to a city with the ability to develop a more sustainable urban plan. To develop a more sustainable urban

transportation system and structural control of pollution, two important accomplishments were the construction of Metro Line 8, which is a linear subway system that connects to the new Xing Cheng area, and the relocation of the Shougang steel plant out of the area. Through these two important initiatives, the physical legacy types that can be adapted continue to enhance urban transportation and control of pollutants.

The 2022 Winter Olympic Games built on the physical/utility legacy but also adapted the idea of a "Green Olympics." Olympic legacy extensions progressed well beyond not only the ongoing adaptive reuse and mixed-use means of the Water Cube adaptation to the Ice Cube, but the transition involved the implementation of low-carbon technologies in ice sports. More notably, the idea of green principles embedded itself into the ongoing governance systems, energy systems, and citizen mobilization structures of governance systems, creating upscale measures of environmental management and social mobilization capacity. To provide one last example, the redevelopment of the Shougang Industrial Park—from an Olympic architectural project—indicates a broader urban renewal process ongoing in the Olympic legacy beyond only a single leg of construction.

States explored and addressed each aspect of legacy—from both Olympic cycles—Beijing has developed the ability to officially address a seven-dimensional model within two pillars of legacy governance. They are a) complicated the construction of legacy types/uses, b) strategically planned venues, c) integrated infrastructure, d) included environmental management feedback systems, e) mobilized (set community and civic engagement to formative), f) transformed governance mechanisms, and g) transformed development. Together they represent a model that is practical and can be transferred to provide Beijing with a governance mechanism to move past the construction of things Olympic Games, to a managed long-term Evergreen Olympic legacy for the future hosting cities, in developing their games and legacy plan focused on an organization management model at the front end of the date of the Olympic bid application.

In conclusion, Beijing's Olympic legacy represents a multidimensional evolution—from a

physical legacy towards an institutional legacy, from short-lived events to long-lived collaborative strategies, and from a state-led approach to multiple collaborating and acting stakeholders. Beijing's Olympic legacy can be integrated into urban planning processes, environmental management, social equity, and cultural development, so that not only Beijing countries sustainability in developing what is possible beyond and after the Olympics, as a city provides a replicable model of effective management of both spatial and institutional legacies of global cities after a megaevent.

PART 3: Turin, support from the 2006 Winter Olympics

1 Background of Turin

-Overview of the historical evolution of Turin

Turin is located in the Piedmont region of northwestern Italy, at the foot of the Alps in a geographic location of important strategic significance, and it has a long and complex history marked by a rich cultural heritage rooted deep in time. The city began its urban life as a Roman settlement named Julia Augusta Taurinorum, which laid the foundation for the further development of the city (Wilson, 2005).

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Over the course of the Middle Ages, Turin slowly emerged as an important political and economic center. During the Renaissance era, the city became the administrative capital of the Duchy of Savoy, further enhancing its prominence. In 1563, the official relocation of the ducal capital to Turin further cemented the city within the region.

The unification of Italy and the resulting growth of Turin as a prominent city can be traced back to the unification movement. The city was the first capital of the newly formed Kingdom of Italy from 1861 to 1865, when it was replaced by Florence; however, its economic and cultural significance to Italy remained unchanged during this period (Bagnoli & Cavanna). Rapid Industrialization in the late 19th and early 20th Century created new opportunities in the area of manufacturing and, by definition, enabled it to become the manufacturing capital for Italy. Of Historical importance, Fiat was founded in Turin in 1899, making this the most significant event in the history of the city. This is an example of how the establishment of Fiat significantly aided the progress of Turin into being a key element of the industrial economy of Italy.

As with other cities around the globe, in the 20th century, Turin faced Economic difficulties resulting from the global economic restructuring of industry and the resultant deindustrialization. Therefore, in response to the Economic difficulties, Turin underwent a fundamental transformation from the traditional industries of the past to develop a more advanced technology-oriented economy. In addition, the emergence of Creative and/or Artistic industries and Tourists, combined with the preservation of Industrial Architectural Heritage, has helped Turin achieve status as a top Cultural Destination for both Italy and Europe (Snowden, Smith & Ferrari).

-Transforming from an industrial capital to a center of culture and leisure

Turin implemented a modern-day urban development strategy during the 1990s to transition from an industrially based economy to a culture, leisure, and tourism-based economy. One of the strategies for achieving this end was Adaptive Reuse, which meant taking an existing structure and renovating it for a new use, as seen in the case of the Lingotto Building. Originally designed as a Fiat automobile manufacturing plant, the Lingotto was transformed into a multifunctional business and conference center that has subsequently aided in the rehabilitation and revitalization of the city of Turin (Ghirardo 2002). In its transformation from heavy industry to a multi-use facility, the Lingotto

continues to preserve both its architectural and historical significance while generating significant levels of new social and economic activity within the City of Turin. As a result of these factors, the Lingotto has become a major draw for tourists and business travelers coming to Turin and has fostered significant development for numerous local retail and service-oriented businesses.

Figure10. Cinema Museum of Turin



(Sources:<https://italics.art/zhans/tip/%E9%83%BD%E7%81%B5%E5%9B%BD%E5%AE%B6%E7%94%B5%E5%BD%B1%E5%8D%9A%E7%89%A9%E9%A6%86/>)

In addition to building the cultural infrastructure with new additions like the Egyptian Museum, National Film Museum, and Museum of Modern art, Turin's additions to its cultural infrastructure raised the city's overall ranking on a global level for cultural activity and increased the ability of Turin to be part of the world cultural network (Russo & van der Borg, 2010). Additionally, large-scale international cultural events (i.e., book fairs, international film festivals, etc.) helped boost the city's cultural profile and established a strong position for Turin in the global cultural landscape.

Figure11. Egyptian Museum of Turin



(Sources:https://cn.tripadvisor.com/AttractionProductReview187855d12472668Turin_Egyptian_Museum_Entry_Ticket_Including_Special_ExhibitsTurin_Province_of_Tu.html)

In addition to cultural investments, an important part of the city's agenda has involved significant interventions in urban public spaces. Through the creation of new parks and green spaces, environmental quality and the quality of life for residents improved. These improvements marked a significant improvement in the image of the city, citizen satisfaction, and living in the city was reinvigorated, and the overall life in the city contributed to the city's aspiration to engage in sustainable socio-economic development.

Through this multidimensional approach, Turin moved successfully from a nonindustrial economy to a diverse urban cultural model. Ultimately, the city has enhanced its competitive position within the European urban system, demonstrating compelling examples of a city undergoing postindustrial transition based on cultural identity.

2 Winter Olympic Legacy Planning and Management Overview of the Turin urban development

-Winter Olympic Legacy Planning and Management

Many people view the 2006 Winter Olympics in Turin as the genesis of Urban Regeneration and Economic Transformation. During the bidding and preparations, Turin's city government and the various stakeholder groups established a "Post-Olympic Development Vision" where they anticipated using Olympic investment to drive the development of the city over the longer term (Della Sala, 2022). Out of this Vision, the city adopted a planning framework consisting of three primary goals: Economic Diversification, Infrastructure Modernization, and increasing the International Reputation of Turin.

Unlike many host cities that focus their resources solely on the games themselves, Turin has focused on creating long-term sustainable venues and the required associated Infrastructure for hosting the Games. Most of the new construction and refurbishment of buildings that were built specifically for the 2006 Winter Olympics included flexible-use Space, allowing them to be repurposed in the future as a Public Amenity, a Community Centre, or a Commercial Property. This type of planning is designed to eliminate the

emergence of an underused "white elephant" and ensure that there is a strong base for continued Urban Development.

Moreover, The Vision also offered a means of Social Inclusion and Spatial Equity, by employing the use of Olympic-related resources toward the redevelopment of communities located outside of the central area of Turin and drawing attention to those areas that have historically lacked the opportunity for growth and development; all aimed toward creating a Community of Connectedness and Stimulating Development. Research conducted has shown that using this method of planning, which intentionally seeks to promote a collaborative, future-oriented framework, will provide an incredible opportunity to advance Urban Governance and achieve long-term Sustainability (Essex). Turin's Experience has shown that the Long-Term Value of the Olympic Legacy is not limited to Capital Investment in Physical Infrastructure, but encompasses the Opportunity presented by the event to create greater Structural Change within the City. The inclusion of Long-term planning and the promotion of Social Equity into the Olympic Plan enabled Turin to serve as a Model of Postindustrial Urban Regeneration Based on Inclusive and Sustainable Development.

-Institutional development and institutional experience in heritage management

To ensure the sustainable management and effective realization of the Olympic legacy, the City of Turin established an "Olympic Legacy Committee" that was municipally led, immediately following the 2006 Winter Games. The purpose of the Olympic Legacy Committee was to coordinate the various operational functions and the repurposed venue and legacy assets (Della Sala & Dansero, 2022). The Committee was comprised of individuals from public authorities (City Departments, etc.), civil society, private sector, and academic institutions, as a cross-sectoral, multistakeholder governance approach that adds to policy coherence, delivery of policy, professionalization of legacy governance, and long-term sustainability.

In terms of governance, Turin actively adopted a public-private partnership (PPP) model in its quest to attract private investment to operate legacy venues and facilities post Olympics, and/or undertake redevelopment of some facilities. Many of the legacy venues were negotiated to transition under the administration of private sector operators through a competitive bidding process, or processes CPR, that promoted greater management efficiency, service delivery quality, whilst also offering assurances of the maintenance of public interest provision. At the same time, the City developed a dedicated municipal fund (subsidy) as a financial model to underwrite the operating costs and guarantee the community and social purpose of nonprofits to continue their legacy operation.

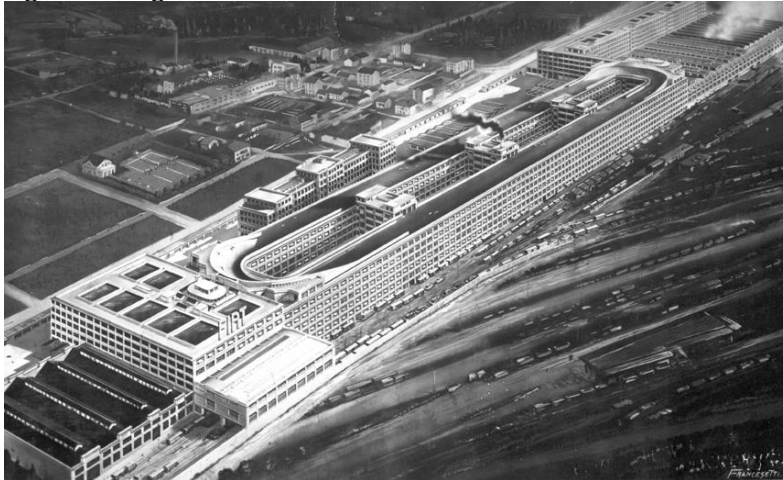
Turin also established a sequence of institutional guidelines and legal frameworks of reference to clarify procedures for functional change, oversight, and evaluations of performance. These policy instruments introduced both legal certainty and strategic direction around the continued management of Olympic infrastructure to contribute to a long-term management approach that could also become a model approach for other host cities (Gold & Gold, 2011).

Turin's experience emphasizes the importance of long-term governance through a comprehensive and institutionalized approach to Olympic legacy governance. The case demonstrates that sustainable use of post-Games assets is possible, but the likelihood of doing so has more in common with institutional capacity related to cross-sector collaboration, policy alignment, and adaptive capacity to manage post-Game legacy than simply planning for the reuse of infrastructure.

3 Sustainable reuse of Olympic venues

-Lingotto Conference Center: a model for adaptive reuse

Figure12. Lingotto



(Sources: https://en.wikipedia.org/wiki/Lingotto#/media/File:Fiat_Lingotto_veduta1928.jpg)

Lingotto Fiere, once one of the largest production sites for Fiat, was built early in the 20th century as a symbol of industrial modernization in Italy, but it declined with the loss of traditional manufacturing over time. By the late 20th century, Lingotto had become a place for urban renewal and was chosen as a pilot project for Olympic legacy work. As a result of the 2006 Winter Olympic Games in Turin, Lingotto was transformed for use as the media center, exhibition center, and logistics support by the Olympic organization. Following the Games, the building was successfully redeveloped as a mixed-use facility offering conference and exhibition, cultural events, and commercial/community entertainment. Lingotto is now a major player in the City of Turin's global and urban economic regeneration strategy (Ghirardo, 2002).

Lingotto serves as an example of adaptive reuse or preservation where the predominant qualities of the original industrial building have been retained and adapted for contemporary functions. The successful redevelopment of Lingotto is an illustration of how to find a balance between the need for sustainable urban land use and preserving cultural identity, as well as economic well-being (Bullen & Love, 2011). Lingotto demonstrates first and foremost how forward-thinking planning and multimodal programming of space can sustain legacy and is a model for future host cities that want to

apply the principles of legacy planning within larger urban development contexts.

-Turin Olympic Park: from sports venue to urban public space

Figure13. Turin Olympic Park



(Sources:

https://torino.corriere.it/cronaca/21_ottobre_12/borgofiladelfiachiusurelettasalviniattesiapiazzagalimbertiquiabbiampersoidentidad0bb724a2b9311ecb679785d816402d6.shtml)

The Olympic Park (Parco Olimpico), with sites like the Palavela, the Olympic Ice Hockey Stadium, and the Olympic Village, was the main venue of the 2006 Winter Olympic Games in Turin. After the Olympics, the Park was redeveloped to provide a mixed urban park with a variety of sporting, leisure, and cultural functions. With facility upgrades, functional adaptation, and environmental improvements, it successfully transitioned from an event-centric site to a public space for everyday use, contributing to the city's stock of quality open spaces (Smith, 2009).

The case shows that when Olympic venues have been designed for dual-purpose flexibility (for the event and for community needs), the post-Game functions and community relevance are greatly improved. One of the challenges of Olympic legacy planning is the post-event use of sports facilities when they are not being used for the Olympic events. Turin's Olympic Park is a successful application of the 'soft legacy' approach, developed by actors focused on social engagement, participatory governance, and the

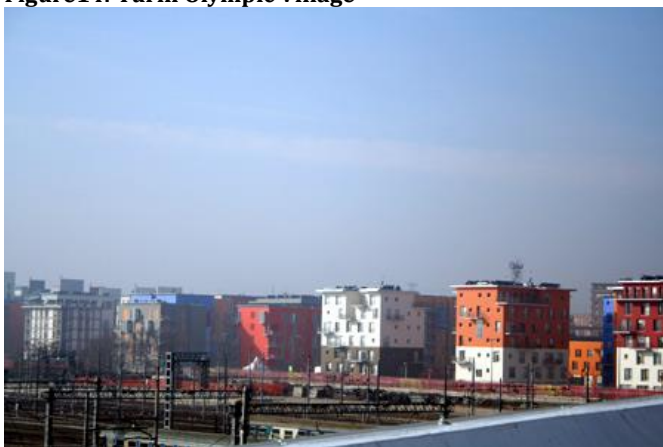
development of cultural continuity rather than strictly the physical embeddedness of infrastructure (Leopkey & Parent, 2012).

Currently, the park is assimilated as part of the city's municipal parks, with the daily management supported through public funds and local community organizations. Today, it serves as a critical site for recreation, public events, and social inclusion, illustrating how Olympic infrastructure can be made part of a sustainable civic asset through planning and community-led reuse.

-Linking Olympic Architecture with Urban Space: The Role of Architecture in the City

When planning for the 2006 Winter Olympic Games, Turin took the opportunity to create a linkage between the events and planning for urban development, connecting the events as infrastructure to urban development objectives into the future. The objective was to integrate Olympic buildings into the spatial 'veins' of the city, bringing a rationale of coherence in use between temporary functions for the events and the greater understanding of urban identity. A concrete example is the Olympic Village, located in a former industrial area of southern Lingotto. It was initially developed as an area of temporary accommodation for athletes, but ultimately developed into a private residential zone, embedded in high-density housing, open green space, and community services (de Pieri & Fassino, 2006).

Figure14. Turin Olympic Village



(Sources: <https://sports.sina.com.cn/o/p/20060209/22272033738.shtml>)

The conscious expression of symbolic and cultural elements found in the architectural language at the Olympic venues also contributed to the changing cultural atmosphere of Turin. Even venues further from the urban center, such as the ski jumping hill and the bobsleigh track, were designed with the intention of merging into the ecosystem of nature, further supporting the dual image of the city: metropolitan space/perlapine space. In these instances, architecture was more than an object of function, but a vehicle for urban memory, social identity, and a heightened spatial experience (Gospodini, 2004).

This integrated plan allowed for architects to be engaged collaboratively with urban planners, and significantly evolved the notion behind an architectural design away from architecture as an object, to architecture as an embedded process into the larger urban framework. By conceptualizing the urban planning framework with “acritical legacy” adjacent to it, the experience of Turin is an example of how Olympic infrastructure has the potential to create long-term social and spatial value from what otherwise could be considered as physical legacies, an urban change over the long term.

-Facility reuse strategies for temporary venues; sustainability and urban need.

When planning for the 2006 Winter Olympics, Turin was undoubtedly sensitive about their plan to integrate the architectural design of venues with the larger urban context, but also to establish Olympic infrastructure as a tool for urban change in the longer-term development of the city. By integrating landmark buildings into the urban experience of the city, this plan is evident. A prime example is the Olympic Village, which was constructed on an existing site of a former industrial area just south of Lingotto. It served as a temporary residential use for athletes, which has now created a permanent residential district that includes high-density residential development, green space, and social services (de Peri & Fassino, 2006).

Along the same lines, the architectural design of Olympic Venues did consider how to include symbolic and cultural elements, reinforcing the venue's contribution to the

identity of Turin. Even outside of the city, the ski jumping hill and the bobsleigh track reinforced the iconography of Turin as the architectural and natural landscape provides a series of opportunities for a consciousness of ‘being’ in the land. In this context, architecture began to be more than a design imperative for the short-term, but also began to provide a medium for urban memory, collective identity, and increased quality of the spatial experience (Gospodini, 2004).

The integrated plan allowed for the opportunity for architects to engage in collaborative approaches with urban planners and effectively developed the way for a framework of architecture and the plan of urban planning to develop from an understanding of architecture as an object for function, to architecture as an embedded process of the urban plan. By moving to tie consideration of a constructed place plan utilizing “architectural legacy” from sustainable metrics to urban planning, an understanding of the community space, identity, and local memory was conceptualized.

4 Social Impacts and Economic Change Toward the Olympic Legacy: Olympic Bid Policy

-Reflections on Missed Opportunities: A Case of Lost Legacy and Memories of Underused Facilities

While the alternative lessons in strategic planning and venue reuse and long-term venue management, the 2006 Winter Olympics also contributed to the social implications of providing legacy venues producing very low or, in some cases, no use as underused legacy facilities. From several variations of the most prominent examples, as per the Pragelato ski jumping hill, and the Cesana Pariola bobsleigh track, both venues required a considerable investment as both a past and current wearing of bodies, to secure representation in access, control, and maintenance.

Figure15. The Pragelato Ski Jumping Hill is in an unused state



(Sources: <https://www.skisprungschanzen.com/EN/Ski+Jumps/ITAItaly/Pragelato/0334Stadio+del+Trampolino/>)

After the Games had concluded, the majority of these facilities were left to rot or were not used at all. Among the reasons for this circumstance are the lack of a plan for ongoing use of the facilities, the lack of demand for continuing use by the community, and the expense of keeping the venues operational (della Sala & Dansero, 2022).

"Lost legacies" are common to Turin and have been an endemic problem for Olympic host cities. A good example was in 2004 in the Athens Olympics, where venues were abandoned once the games concluded due to no second-use plans in place—often referred to as a textbook "white elephant" example of sport designated for an Olympic Games type occasion (Papanikolaou, 2013). Moreover, it is apparent that there is a clear lesson learned, that Olympic infrastructure sustainability does not assure venue use after the Olympic time success, rather a lifecycle management approach is established relatively early in the planning stage.

What the experience for Turin specifically suggests is that spending away resources and financial risk requires Olympic infrastructure to be interrelated to the city, wherever possible, to its long-term development plan, which is to be utilized by the specific local demand for post-Games to have the legacies kept operational. This suggests important lessons for future host cities, which is that long-term sustainability post Olympics needs

to be considered in the same line of sight management planning for "success" as part of the complex Olympic legacy.

-Economic restructuring and promotion of new industries

The 2006 Winter Olympics are considered a benchmark for economic restructuring in Turin. With the city on a steady downward trajectory regarding its traditional manufacturing base, it accepted the Olympic opportunity to reposition the city on the economic map. The condition of the Olympic infrastructure investment, urban regeneration, and investment, and global exposure increased opportunities for maximizing new local economic sectors. In turn, Turin began to change its future by moving beyond its historical reliance on the auto industry, especially Fiat, and saw the growth of tourism, cultural and creative industries, the exhibition economy, and high-tech services. (de Pieri & Fassino, 2006).

Studies support this transition's evidence; the number of trips to Torino increased dramatically before and after the games through an increase in the number of Concurrent International Conferences and Trade Shows (Russo & Van Der Borg, 2010). These trends were also responsible for expanding service industries (hospitality, transport, and retail) as well as increased interest in international and domestic investment in these sectors. Post Olympic, loculi began a similar type of transition through collaborative activities with Local Universities, Research Institutes, Technology Companies, and others. This combination of resources has produced an active Innovation Ecosystem that is focused around "Politecnico di Torino," which has become a leading "Technology Science Park" startup incubator and research organization (Bellini & Pasquinelli, 2016).

While megaevents like the Olympics do not guarantee long-term economic growth, studies show that megaevents can serve as powerful catalysts for structural transformation. Torino illustrates one successful model of Soft-Landing Economic Restructuring, providing a strong case for other Industrial Cities that want to leverage

megaprojects to stimulate and prepare for economic revitalization through continued, collaborative planning and partnerships.

-City Image, Tourism and Cultural Identity in Re-Invention

From an economic standpoint, the Turin Winter Olympics changed the economy of Turin in 2006 and also allowed the City of Turin to reinvent itself into a Cultural Identity as well as a City Image. The international media provided extensive coverage of the Games; through marketing, the Games were promoted and distributed to multiple countries. Therefore, once again, when people thought about Turin, it was on the world stage. People no longer had to think about the “grey city,” which was the Industrial image of Turin that was most prevalent during the 19th century. The new image created was of a livelier Winter Sports City (Hall, 2006).

During and after the Winter Olympics Games, significant investments were made into creating an Image Revival Strategy that included updating the Visual Identity of Turin, repackaging the tourism-focused brand of Turin, and curating many events. The Opening and Closing ceremonies of the Games provided memorable events that combined the works of Contemporary Italian Artists with Cultural and Historic components of the City of Turin, and all three combinations were effective in instilling a renewed sense of pride, identity, and cultural consciousness among residents of Turin (Richards & Wilson, 2006). After the Olympic Games, the City of Turin continued to take advantage of the success of the Winter Olympics by planning International Film Festivals and Concerts, and Winter Tourism Events, and was, thereby, continuing to facilitate the development of Turin as a Centre for Cultural Tourism.

Additionally, the Public Use of the Olympic Venues has led to the development of a Sense of Pride and Connectivity for Residents to a Shared Urban Space. For example, the Metropolitan City converted the Olympic Village into a Residential District that included Neighborhood Services, and ultimately, the Neighborhood Services continue to reinforce

the development of the residents' connection to the City of Turin by reinforcing Local Identity. While the rebranding of cities is a form of communication, it is not merely that, but rather a complex series of interconnected processes surrounding urban governance and spatial reordering, which require continued commitment and action to succeed (Kavaratzis & Ashworth, 2005).

The commitment and methodology used by Turin illustrate the importance of megaevents in helping to shape civic pride and urban identity through the promotion of a strategic planning approach that aims to identify future reuses that work in conjunction with community members. The Integrated Community Approach to Olympic Legacies is a good example of how to create social capital through partnerships with schools and community service organizations (Section III).

In order to provide a comprehensive and effective Olympic Games experience, organizations must recruit and train a significant number of volunteers, and provide these volunteers with numerous opportunities to engage with the community, gain new skills, build confidence, and create social capital through their participation. For instance, the 2006 Turin Winter Olympics utilized a large-scale volunteer program that engaged over 20,000 volunteers from the local community. The volunteers offered valuable resources during the Olympic Games, and received training in areas such as foreign language development, emergency response/aid, and intercultural communication skills (Misener & Mason, 2006).

In addition to Olympism, the Olympic legacy offers another opportunity to build community capacity and empower residents. Many former Olympic venues have already become training and development facilities for young athletes, as well as community centers and training sites for adults. Establishing meaningful partnerships between the community and schools via the establishment of Olympic Education Days provides much-needed additional opportunities for youth engagement in developing their sport and

community responsibility by creating Olympic Value Awareness to improve civic responsibility.

The incorporation of both hard (infrastructure) and soft (social/cultural) legacy strategies will increase the adaptability of urban society and foster a sense of civic belongingness between community members. It has been shown that the social impacts of the Olympic Games, particularly those related to inclusion, participation, and community development, will tend to last longer and have a greater impact than the short-term economic impact, which may be useful for a limited period of time. It is therefore essential that host communities implement participatory practices, guarantee equal access to public places, promote inclusion, and advocate for social equity (Preuss, 2007). The experience of Turin can provide potential future host cities with an example of balancing a "hard"/infrastructural legacy and a "soft"/social/cultural Olympic legacy and developing an inclusive and sustainable Olympic legacy strategy.

5 Environment and technological innovation as a result of the Winter Olympic Presentation and implementation of sustainability policies

-Application of green technologies, sustainability practice

The 2006 Turin Winter Olympics were unique in Olympic history, and for the first time, sustainable development was a major theme of the games. Turin built on the environmental initiatives from the 2000 Sydney Olympics by incorporating environmental measures into its organizational agenda with the intent to reduce environmental impacts through a broad range of measures. In terms of venue construction, energy-efficient materials and green building technologies were prioritized by the city, including ground source heat pumps, solar panels, and rainwater collection systems, making Turin a model for future green Olympic Games (Holden, MacKenzie & VanWynsberghe, 2008).

The new Olympic Green Transportation Plan helped reduce both air pollution and congestion in the transport sector. The Olympic Green Transportation Plan included a

public transport program, as well as the establishment of an Olympic bus service with designated Olympic bus lanes and low-emission vehicles (Della Sala 2022). AQI data indicate that the AQI for air quality in Turin improved during the Games compared to AQI data from the same time frame in the previous year; thus, the Green Transportation Plan contributed to improvements in air quality long after the close of the Olympic Games.

Many aspects of the Green Infrastructure developed during the Torino 2006 Olympic Games, such as clean energy and urban public transportation systems, continue to be part of Torino's Urban Infrastructure and positively influence future environmental quality.

The Torino 2006 Olympic Games took a proactive approach to waste management by implementing comprehensive waste separation and recycling systems, composting organic waste at nearly every venue, and also establishing criteria to certify "green" providers of services associated with the event. This allowed for both enhanced environmental performance of the overall event, as well as increased awareness and cultural shift toward a more sustainable community. Through the creation of a community consciousness surrounding waste management and environmental stewardship, the Games provided a unique opportunity to embed these environmental values within the urban culture of Torino.

-Environmental impact assessment: achievements and failures

Although the 2006 Olympic Winter Games in Turin made great strides in realizing the theme and principles of a Green Olympics, challenges were evident in the process of implementation. For example, not all of the temporary venues fully integrated renewable or recyclable materials into the design, and the rate of resource recovery following the Games was lower than anticipated. Furthermore, the construction of venues in suburban areas, particularly related to venues in sensitive alpine landscapes, triggered niche ecological damages, which were reflected by the long timeframe of environmental restoration, and criticized by environmental advocacy organizations (Collins, Flynn & Munday, 2007).

Evaluation reports also noted that Turin did not create a systematic Environmental Impact Assessment (EIA) tracking system. The absence of systematic, longitudinal data collection restricted the ability to assess the carbon footprint and ecological impact of Olympic facilities fully through their respective life cycles. Consequently, many of the Games' initial sustainability assertions could not be empirically substantiated, thus limiting the possibilities for evidence-based learning and policy enhancement.

In comparison to more recent events, e.g., London 2012 or Tokyo 2020, Turin dedicated relatively minimal resources to publicizing the Olympics' green performance results and was not able to create a formalized environmental knowledge legacy. This was a reflection of the early stage of the development of institutional mechanisms for the environmental governance of megaevents at the time. It also raises larger questions about the capacity of urban governance, particularly in relation to a long-term consideration of environmental management and governance, and transparency.

Nonetheless, Turin's early work was an incredibly important first step in sustainable Olympic planning, as it provided very important lessons. It demonstrated that even medium-sized cities with tight budgets can engage in event development that aligns with environmental stewardship, with scientific planning and community engagement. These lessons demonstrated a transition from being intentional, discrete improvements to contextualizing them more broadly into a system change and thus reflect another integral part of a wider evolution within the Olympic movement to more sustainable urbanism.

6 The Turin experience: key recommendations for future Olympic cities.

-Early development of a clear Olympic legacy strategy

Turin's experience does highlight one final consideration around Early Development of a Clear Olympic Legacy Strategy Linking Sustainable Development Goals to Process and Planning in the bidding process for the Games, incorporating a clear and actionable Olympic legacy strategy, rather than developing it reactively post Olympics. The cities that

have realized value from their Olympic event from an urban regeneration perspective have tended to clearly embed Olympic legacy goals early in the design and planning process and develop new and often innovative policies or institutions to support governance post Games utilization of these goals.

Employing this forward-thinking set of actions helps coordinate the Olympic infrastructure with long-term urban goals, which minimizes the likelihood of having facilities or resources that are not being utilized (della Sala & Dansero, 2022).

For such actions to be sustainable, legacy plans must articulate long-term objectives, establish clear follow-up pathways, create substantial evaluation platforms, and ensure adequate financial guarantees. London 2012 is a noteworthy example of this practice; the Olympic Legacy Plan was based on four main pillars of sport, housing, transport, and community development direction, and was jointly governed by local authorities and the British Olympic Association (Smith, 2014). This approach allows for accountability and ongoing organizational delivery.

Turin had a committed vision for its legacy development agenda, but it did not have continuity of institutional arrangements and the needed tools for long-term evaluations. This hobbled its ability to realize follow-up, post-Games aims, and is a lesson for future Olympic hosts. In this example, it is illustrated that to properly manage Olympic legacies, there must be an early development of a strategic vision and durable governance mechanisms to enact those visions and to evaluate progress over time.

-Integration of Olympic facilities into long-term urban planning

A sustainable Olympic legacy strategy should not simply include the idea of "reuse" of facilities but rather the positive transformation of the city's overall functional and spatial structure. Several future legacy projects the City of Turin has recently decided on, such as Lingotto and the Olympic Park, are viable in the long term in large part because they fit

within the City's urban development plan, provide regional use, and allow for operational models (de Pieri and Fassino, 2006). Future cities hosting the Olympics should seek to integrate event infrastructure into urban master planning and land use plans, thinking about future potential user groups and uses from the initial planning. In anticipation of diverse use after the Games, such as schools, community centers, commercial spaces, or arts venues, planners can create smoother transitions to functional flexibility and adaptive reuse of Olympic venues. Using supportive mixed-use design principles can further reinforce relevance and use over time.

Recent examples illustrate the practicality of this kind of planning. In Tokyo, the post-2020 Olympic Village has been successfully converted to a neighborhood of residential housing. Similarly, the Paris 2024 Olympic Village media center will be reused as an innovation campus to promote startups as part of Paris's economic and spatial ambitions (Müller et al., 2021). Again, these narrow examples show that embedding legacy planning into the planning process can help ensure sustainable and inclusive reuse of Olympic infrastructure beyond the Games.

-Facilitate sustainable use through event marketing and public-private partnership

Utilization of venues after the Olympic Games, other than being empty, means they are to be active, useful, and available to potential and future users. In the case of Turin, there are some venues and facilities still in use today as corporate event facilities which maximize utilization by utilizing the venues for exhibition, competitive sport, congress, and festival events. An example of this is the PalaVela, where its original purpose was as an ice-skating facility. Today, this venue has been repurposed to host concerts and other live shows, which has produced additional revenue (Russo & Van Der Borg, 2010).

For the continued success and viability of venues post-Olympic, there will be a need for continued input and assistance from government authorities to promote and support public-private partnerships and other types of collaborative contractual arrangements.

This includes, but is not limited to, public-private partnerships (PPP) and social impact investing (SII), which may allow some of the operational, maintenance, and management responsibilities to be transferred to qualified third parties in such a manner as to ensure that these entities can perform the functions as outlined in the contracts. Through improved operational efficiency and cost-effectiveness, the potential for innovative programming methods and opportunities that arise from utilizing the expertise of qualified third-party entities will be created for the use of these facilities.

In addition, the transition to such models will require that all involved parties implement transparent regulatory frameworks and monitor performance in order to demonstrate how the implementation of public access and social value protections, and accountability to the community, was achieved sustainably and equitably (Preuss, 2015). In the experience of Turin, there is a need to combine a flexible management structure with adequate oversight in order to provide an appropriate balance between measuring public good and providing operational sustainability.

-A focus on improving community participation and social inclusion

While the Olympic Movement creates a wide-ranging global impact on all people around the world, it does create a place-based impact on the local host cities and communities. An example of how a community-based approach (community participation, through community consultation, public input) can help to strengthen the legitimacy of a decision-making and governing process in regard to a legacy for the Olympic Games can be found in Torino. The importance of better understanding how the social dimensions of a legacy can motivate future hosts to leave behind spaces that support education for disadvantaged youth, support the engagement of disadvantaged persons and all people in their cities, and lead to expanded job opportunities is an important goal for cities that wish to create future environmental opportunities.

An excellent example of how these ideas can be implemented in a successful manner is with the London 2012 Inspire Program, which was part of the London 2012 Olympic Games. The Inspire Program created a unique combination of volunteers on one platform, along with multiple types of education programs, ultimately allowing over 1 million program participants to gain access to social networks and job skills training. The Inspire Program highlights the importance of creating inclusive spaces as both a moral obligation and a strategic imperative for the Olympic Movement and its legacy. As pointed out by Girginov and Hills (2009), the combination of inclusive programming along with volunteerism creates a sustainable legacy for the Olympic Games and the cities that host the event.

The cities that host the Olympics in the future must look at what is known as social legacy to build their future urban development model through focus on participatory governance, which will allow for inclusive programming that allows citizens to identify optimum conditions, and give policy incentives to develop priority issues of concern. Through this work, cities can demonstrate their intentions to make the Olympic Legacy higher profile through educating and providing a model for the urban governance processes of future host cities that adhere to the Olympic Values, as well as providing a model for their citizens on what type of citizenship can be accomplished through Olympic Values.

7 Integrated Legacy Governance and Strategic Lessons of Beijing

-A Seven-Dimensional Methodology for Olympic Legacy Utilization: Lessons from Turin 2006

Chart5. Seven-Dimensional Methodology of Turin

Dimension	Turin 2006 Legacy	Impact on the City
Venue Infrastructure	Construction of Olympic Village, Oval Lingotto, and Palavela. Post-Games reuse for exhibitions, sports, and cultural events.	Revitalized former industrial areas and enhanced city capacity to host large events.
Urban Regeneration	Urban renewal in Lingotto and Spina 3 areas, converting industrial zones into mixed-use neighborhoods.	Improved urban image, housing conditions, and growth of the creative economy.
Transport Improvement	Expansion of Metro Line 1 and related networks to improve connectivity across the city.	Boosted transport efficiency and long-term public transit integration.
Social Participation	Large-scale volunteer system with over 20,000 participants, later institutionalized for city events.	Strengthened civic engagement and sense of community responsibility.
Cultural Recognition	Promotion of Olympic values through schools and media to enhance public engagement and pride.	Enhanced city branding and international profile through cultural diplomacy.
Policy Innovation	Experimentation with corporate venue management and collaborative governance models.	Increased efficiency and financial sustainability in post-Olympic operations.
Legacy Strategy Learning	Turin experience contributed to global understanding of sustainable legacy planning.	Served as a legacy model for later Olympic cities like London and Milan.

(Illustrated by the author)

1. Legacy Typology

Turin's Olympic heritage exemplifies a systematic interplay between tangible means, sports facilities, and public goods, and nonmaterial dimensions, institutional mistakes, and civic memories that are more or less enduring in memory. While the physical redevelopment of previously industrial areas was important to change, the experience of governing the Games through diverse levels of coordination between public authorities and private actors was equally significant, is what we see here. Comments suggest that cities should understand Olympic legacy from the beginning as an abstraction extending beyond simply spatial outputs to implications for governing capacity.

2. Venues

For the 2006 Winter Olympics, Turin constructed large facilities, including the Olympic Village and Palavela, although some suffered from underuse after the Games. In any event, the establishment of corporate style management strategies for venues like Oval Lingotto and facilitating multiuse of venues extended their useful life and social relevance. Future Olympic hosts should focus on ensuring venues remain useful and relevant by instituting adaptive reuse strategies and involving key stakeholders early in the planning process.

3. Integration of Infrastructure and Olympics

Turin has taken advantage of the Olympics in order to start an Urban Regeneration Project that includes significant investments in the areas of Lingotto and Spina 3. The investments made for the Olympic Games included a great deal of infrastructure investment, which served to integrate the development of infrastructure with Urban Regeneration, and was made with the intention of extending beyond just the Olympic Games. This integrated approach to development represents a long-term strategy in which developments related to the Olympic Games were incorporated into existing long-term Urban Regeneration Strategies so that long after the traffic created by the Olympic Games has concluded, there will still be urban benefits created by this integration.

4. Environmental Governance

Despite the fact that environmental sustainability was not the primary focus underpinning the 2006 Games, Turin proceeded to pursue brownfield cleanup and the

establishment of green public spaces as part of its approach to Olympic infrastructure. These actions illustrate how the Games can be a mechanism for advocating for ecological restoration, and they are especially pertinent in postindustrial contexts.

5. Social Mobilization

The 2006 Winter Olympic Games in Turin were the first to involve over 20,000 volunteers; however, it was also an introduction to a model of civic engagement that would eventually be incorporated into and remain a part of local government operations.

Through this civic engagement process associated with the Games, it became possible to enhance the development of value systems based upon public service and civic responsibility through Olympic Mobilization.

6. Governance Transformation

The Olympic Games served as an incubator for cooperative governance in Turin by bringing together public agencies, private businesses, and civic organizations in order to create a framework for working collaboratively. The Olympic experience also increased the city's capacity to manage its administration and provided agents of accountability for other mega events through the creation of governance models that can be replicated.

7. Development Reorientation

The 2006 Winter Olympics allowed Turin to change its image from a traditional industrial city to a city characterized by a focus on culture, technology, and tourism. The hosting of the Games provided opportunities to rehabilitate and reevaluate many of the city's previously neglected public spaces, improved access to major tourist attractions such as the Duomo di Torino, and increased the level of international and global interest in the city. The transformation of Turin's image provides an opportunity for further development towards the realization of urban regeneration and revitalization initiatives by facilitating the repositioning of the city within its regional and global context.

Conclusion

While the 2006 Games in Turin were much smaller in scale than of the Beijing Games, the Winter Games produced their own unique legacy, with consequences most visible in

urban renewal and governance innovation. According to Bottero & Caprioli's study in *The Management of the Post-Olympic Legacy in Turin*, the authors note that Turin's legacy formation was significantly driven by the "Strategic Environmental Assessment (SEA)," marking Italy's first systematic introduction of SEA tools in Olympic preparation and legacy management. The research emphasizes that governance tools and institutional innovation—rather than merely venue construction—are key drivers of sustainable Olympic legacies. (Bottero & Caprioli, 2025)

The tangible legacy is represented by the postindustrial transformation of buildings and public spaces, and improvements in urban infrastructure. Major projects like the redevelopment and reincarnation of the Lingotto and Spina 3 districts in the southern part of the city exemplified the transformation of previously underutilized public spaces. The transfer and encroachment of corporate operating models to public external contexts, and multifunctional usage operational models, especially represented by the Oval Lingotto also assisted in avoiding the production of "white elephant" venues, and improved functionality of post-Olympic venues.

More importantly, the intangible legacy found through the Olympic framework is represented through the progress of urban governance reform. The Games assisted in the development of collaborative management frameworks for optimization of public institutions, private enterprises, and civil society while developing long-term institutional learning. The mobilization of over 20,000 volunteers before and during the Olympics ultimately led to the process of formalizing mobilization into municipal organizational civic participation programs. Civic participation was built into an aspect of local governance and thereby fortified social capital.

This aligns with the conclusions drawn by Dansero, Mela, and Rossignolo in their study *Turin 2006's Legacy after Eight Years*. The research argues that the core role of the Turin Olympics was not to "create entirely new development pathways," but rather to 'catalyze'

and “compress the timeline” of existing urban regeneration plans. In particular, the post-industrial transformation along the city’s rail spine and in the Lingotto district had already commenced, with the Olympics merely significantly accelerating the progress of these projects. (Dansero, Mela, and Rossignolo 2015)

While Turin was not able to achieve the sustainability and environmental quotas set by successive Olympic Games, its respective environmental initiatives associated with brownfield remediation and green space provision demonstrated an incremental trajectory to ecological restoration after the status quo of postindustrial landscapes. This also echoes the findings of Dansero, Mela, and Rossignolo: the authors point out that the territorialization process brought about by the Olympics yielded highly uneven outcomes—the “re-territorialization” of urban core areas was relatively successful, while the widespread underutilization of mountain venues and the difficulty in repurposing ski jumps and bobsled tracks reveal the structural limitations of Olympic legacies at the regional scale. (Dansero, Mela, and Rossignolo 2015)

Most distinctly, the Olympics acted as a strategic moment of inflection and renewal of Turin’s urban identity and purpose from a past state of an industrial city to an active and engaged citizenry focused on knowledge, culture, and tourism. As a consequence, the international prominence of world-renowned Turin enhanced its long-term development resilience.

PART 4: Implications for the Milan-Cortina Winter Olympics

1 Overview of the Milan-Cortina Winter Olympics

-Introduction

On June 24, 2019, the 2026 Winter Olympic Games in Milan Cortina were awarded to the Italian city at the 134th International Olympic Committee (IOC) Session held in Lausanne, Switzerland. The bid was submitted jointly by the cities of Milan and Cortina, and received

substantial support from the Italian National Olympic Committee (CONI), as well as the Italy government. This will be Italy's third time hosting the Winter Olympics, including Cortina in 1956 and Turin in 2006. The bid was consistent with the IOC's Agenda 2020 and New Norms, as it will focus on sustainability, cost containment, and the reuse of existing venues (IOC, 2019).

The 2026 Winter Olympics will take a multimodal regional approach, which is different than the traditional singular city models. The 2026 Winter Olympic Games will take place over a regional area that will include parts of Lombardy and Veneto regions, and Trentino and Alto Adige. The main competition venues are located in the following areas: Milan has ice sports, Cortina has alpine skiing and sliding, and the Val di Fiemme has Nordic events, while snowboarding, freestyle skiing, and alpine events will happen in Livigno and Bormio. The Olympic Games will take place from February 6-22, 2026, and the Paralympic Games will take place March 6-15, 2026. The goals of this regional model are to use preexisted winter sports infrastructure and venues, limit the need for new construction, and create interregional cooperation (Milano Cortina 2026, 2020; IOC, 2021).

-Analysis of the logic behind the bid and the future opportunities for hosting the 2026 Winter Olympics

The bid for the Milan Cortina 2026 Winter Olympics extends from the unique geographical and infrastructural strengths of Northern Italy, connecting the metropolitan area of Milan with the alpine history and features of Cortina d'Ampezzo, and adheres closely to the IOC's vision of a sustainable and cost-effective Games. In the proposal, it was stated that nearly 93% of competition venues would be made up of existing or temporary facilities, which would minimize new building and responsible spending (Comitato Olimpico Nazionale Italiano, 2019). Milan, as an international global city, provides an advanced transport, accommodation, and ice sport facility network, and Cortina provides an established location for snow sports in the Dolomites. The juxtaposition of the urban and winter scene expressed and indicated Italy's commitment to regional balance.

By focusing on reusing existing venues, the organizers demonstrated correctly that they met Olympic needs without large expansion, which confirmed their commitment to the IOC agenda of sustainability (Mountain Wilderness Italia, 2025). Furthermore, while the Games will have a sports element, they are expected to support the economic recovery of Northern Italy and the revival of tourism—especially in the post-pandemic period—by generating benefits to regional transport, hospitality, and culture, and enhancing Italy's international brand and social cohesion.

However, there are serious issues, including exceeding the budget allowances, construction delays, declining snowfall due to climate change, and the complexity of event management due to multiple venues combined with multiple regions (Lundquist S.p.A., 2025). There are ongoing issues of the environment and post-Olympic legacy: controlling "white elephants", and reusing Olympic facilities as urban assets will ultimately determine the long-term success of the Games (Queen Margaret University, 2023).

In the end, the promise and risk of Milan – Cortina 2026 Winter Olympics are not without merit. Controlling the budget, sustainable management of the environment, and legacy planning into urban regeneration all generate the opportunity to create a precedent for future sustainable megaevent activity. On the other hand, poor delivery could reproduce the historical pattern of unaffordable costs and unusable legacies (ArXiv, 2020).

2 Milan's Urban Development

-Milan's Urban Development Overview

Milan, capital of the Lombardy region in northern Italy, has experienced thousands of years of urban change that has created a city of layered spatial and cultural significance. It began as a Roman trade and military outpost and became an important political and religious center during the Middle Ages, under the Sforza family, which helped build on its historical prominence. The city's urban form continued to develop into the Renaissance

and Baroque periods by the creation of urbanized symbols of architecture, including the Duomo di Milano and Santa Maria delle Grazie, which are now recognized as UNESCO World Heritage Sites (Lanzani, 2018; De Cesari, 2017).

In the nineteenth century, Milan became one of the leading industrial and financial centers in Italy as a result of the Industrial Revolution. The development of an extensive rail and industrial infrastructure system throughout the city via rail was responsible for this massive urban expansion. The late twentieth century represented yet another transitional phase for Milan; in conjunction with the decline of Fordism, Milan developed towards a postindustrial city model. Deindustrialized areas, such as the Bovisa and Porta Genova, were reconfigured into creative districts (alternative artistic districts), residential developments, and multiuse urban areas (Cremaschi & D'Ovidio, 2019). The combination of these creative districts and the development of other forms of housing added a new level of cultural assets, creating a new cultural layer where the artefacts of industrialization can be classified as part of Milan's tangible cultural heritage.

In addition, as one of the four major fashion capitals of the world, Milan has significant intangible cultural heritage associated with fashion. Major events organized specifically for international audiences, like Milan Fashion Week and Salone del Mobile, provide economic benefit to the city, while at the same time adding to Milan's International identity — an integral part of Italy's cultural soft power (Bertuzzi, 2021). In Milan, cultural heritage is not just preserved; it is reactivated and reimagined. This “living heritage” illustrates Milan's capacity to merge historical culture with contemporary innovation (De Cesari, 2017).

Figure16. Duomo



(Sources: Photographed by the author)

With this extensive history of multiple cultural layers and the capacity to adapt to changing times, Milan has a recognized and distinct spatial, institutional, and symbolic position that lends itself well to the hosting of the 2026 Winter Olympic Games. From venue selection and marketing to cultural relationships with host cities, the city can incorporate its hybrid legacy into its Olympic narrative while supporting collective memory, establishing itself as a center of global cultural significance.

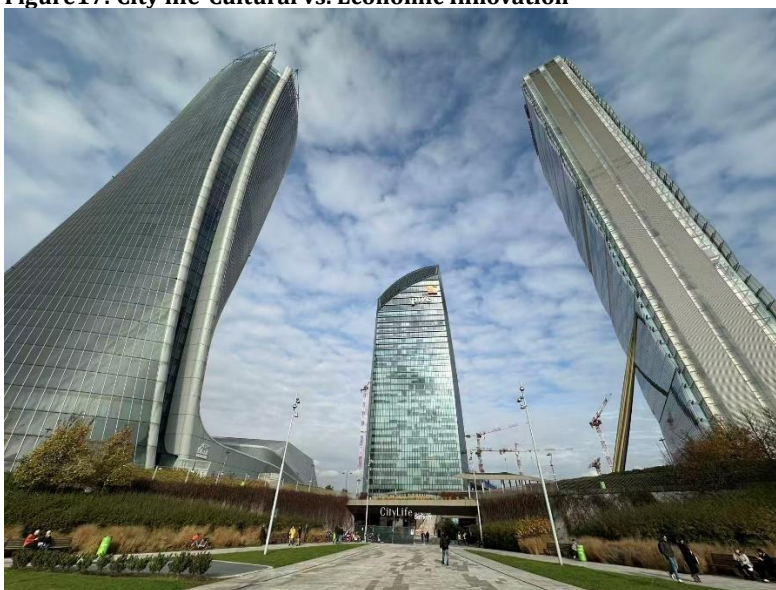
-The tensions between preserving cultural heritage and enabling economic innovation

Having been built up over several hundred years with multiple layers of Urbanism and continuously developing, Milan, as a city, is constantly pulled in two directions. The city faces the challenge of balancing the need to protect its Cultural Heritage and Current Urban Innovations. As the pressures of Urbanizing Infrastructure and the demands of improving Economically it contrasts and conflicts with the history of the buildings, industrial relics and symbolic spaces within the Urban Environment as an example of this Contradiction, the redesign of the Porta Romana railway yard is now the location or Construction site of the 2026 Winter Olympic Village demonstrates the tension between preserving our Industrial Memory and allowing a Total Transformation of the

surrounding area. Another example: the revitalization of the City of Bovisa will again bring us back to the issue of Moving Forward with the historical Identity of Milan, yet consuming the Flexibility of Milan's Governance has, in effect, taken Heritage from being an impediment to The New and has become the basis or Foundation of Innovation for the Development of the City. The City of Milan has recognized this agenda through Adaptive Reuse of Fabbrica del Vapore, a 19th-century Tram Depot that has now become a thriving Cultural Venue. With Participatory Planning Methodology with all stakeholders involved (Including City Officials, Developers, Heritage Professionals, and Members of the City), a consensus can be reached that better balances Heritage and Contemporary Use and need.

Milan has further embedded this concept into Tools such as the Piano di Governo del Territorio (PGT) by integrating Cultural Values into Zoning and Land use Planning to be able to achieve a delicate balance between New & Old and all the Generations. Milan has effectively enacted the concept that Heritage is not just for Protection; Heritage can be completely reimagined to meet the Contemporary Needs of Society. All of this is going to become far more critical as we begin to think beyond just the Olympic Games and begin to view Sustainability and Reuse of Facilities to support Urban Vitality (Cremaschi & D'Ovidio, 2019; Bertuzzi, 2021).

Figure17. City life-Cultural vs. Economic Innovation



(Sources: Photographed by the author)

-The Dilemmas of Cities Before the Winter Olympics

Even if Milan is world-renowned for finance, design, and cultural innovation, the city has not lost its battle with triggered deep social issues that have arisen from past changes in urban and regional policies, as well as the current shocking government policies. Thus, with the city's current bid to host the 2026 Winter Olympic Games, we need to critically approach the discussion of how to create future legacies that foster both equitable and sustainable communities to provide the potential for increased long-term value for the citizens of Milan.

Figure18. Porta Romana



(Sources: Photographed by the author)

1. Housing Inequality and Socio-Spatial Exclusion

The housing crisis in Milan originates within the process of the city's postindustrial restructuring and urban regeneration driven by market activity starting in the late 20th century. What once served as working-class neighborhoods, Navigli, Isola, and Lambrate have become rapidly gentrified neighborhoods through speculative real estate practices to the extent that the longstanding residents were displaced to the periphery and urban sociocracies segregation has been felt along with hollowing out neighborhoods in the center. There has been a rapid response to wealthier residents and luxury housing being built in areas such as Porta Romana and Bovisa, which represent a larger trend towards urban polarization in the City of Milan (Cremaschi & D'Ovidio, 2019).

2. Fragmented Urban Morphology and Ecological Disconnection

The form of the city and metropolitan region has a cohesive morphology combining historic rail infrastructure located in formerly deindustrialized areas, toward radial growth that has produced a metropolitan urban fabric that is disconnected. Recent residential growth in the periphery has produced high-density enclaves with dense brownfield land and disconnected alternate green space. The subsequent fragmentation affords civic disconnection, decreased ecological resilience, and a confluence of urban neglect and/or vulnerability for residents of the periphery to access vital public services in their community (Lanzani, 2018; Bertuzzi, 2021).

3. Transportation Inequities and Infrastructure Imbalance

Although Milan plays a nationally significant role as a transit hub, the intraurban mobility of these transit routes is disproportionately accessible and spatially inequitable. Land use and public transit infrastructure remain concentrated in wealthier central districts, while more remote and distant periphery areas, such as Bicocca and Chiaravalle, in particular, have limited spatial connectivity to the physical urban form. The spatial inequity of land use and public transit limits residents' access to important employment and educational service sectors, compounding inequity across geographical space. Moreover, the reliance of public transport riders and limitations of intermodal transport options have inhibited opportunities for the City of Milan's goal of Urban Low Carbon Mobility (Zucconi, 2020).

4. Youth Outmigration and Civic Disengagement

Because of the high cost of housing and lack of employment opportunities, large numbers of young adults are leaving Milan. Young adults are leaving this urban space with its many universities and cultural institutions, as it offers opportunities for civic engagement because of the city's lack of affordable housing options and lack of inclusive civic structures. Young adults and underrepresented groups find it difficult to participate fully in various forms of civic engagement due to these barriers to access. Because of the top-down and technocratic nature of governance processes, many immigrants and working-class communities are excluded from participating in this process. This exclusion of many groups from civic engagement diminishes the social fabric of Milan and raises concerns

about its long-term democratic inclusiveness and vitality (Cremaschi & D'Ovidio, 2019).

3 Comparison of Milan to Beijing

-Comparison of Similarities

Overview:

Both cities of Beijing and Milan are situated in two completely different cultural and political contexts, yet they share a very clear similarity in their respective paths through the Olympics that have provided them the opportunity to undergo an Urban Transformation to further enhance Sustainable Urban Development. The Olympic Games have created the opportunity for each city to increase the pace of modernizing their respective infrastructure, refresh their urban images, and create the opportunity to spatially plan for Industrial Restructuring. Both cities' Olympic legacies also represent their mutual commitment to seeking out alternative models for green development, adaptively reusing Heritage Architecture, and creating opportunities for Public Participation, thus transforming the perception of the Olympics from being purely a sporting event to a long-term resource for Urban Governance Innovation.

1. Urban Context/Reasons for Case Comparison

Although the locations of Beijing and Milan are far apart in terms of geography, political systems, and governance forms, both cities are core metropolises of their respective countries, while also facing remarkably similar structural challenges in urban development, namely, reconciling the respective balances of cultivating historical and cultural heritage with contemporary urban transformation. This tension in competing desires is especially felt in moments in time, such as preparing to host a global megaevent, such as the Olympic Games, where cities are obligated to position components of indigenous spatial renewal (or lack thereof), cultural heritage reuse, and capacity to mobilize the city's residents for the event.¹ As the host city for the past Winter Olympics, Beijing affords a rich legacy of experience related to the integration of current infrastructure, the regeneration of heritage, and institutional innovation that is of great referential value (Bertuzzi, 2021; Cremaschi & D'Ovidio, 2019). In direct comparison to

Beijing, Milan is preparing to host the 2026 Winter Olympics, exhibits comparable spatial and national strategic significance, cultural complexity, and demand for urban regeneration.

2. Shared Foundations in Cultural Heritage Systems

Both cities have multilayered cultural heritage systems, consisting of ancient buildings and postindustrial spaces. In Beijing, the Forbidden City, the Temple of Heaven, and the Shougang Industrial Park jointly embody a mixed legacy of urban memory spanning from the imperial city to the present industrial era. Milan similarly juxtaposes Gothic churches with Renaissance buildings, and postindustrial sites such as Fabbrica del Vapore and Porta Genova. This "cultural stratification" situated in the urban milieu means both cities need to deal with the conflicting concern of cultural continuity and functional transformation (Lanzani, 2018; Bertuzzi, 2021).

3. Converging Logics of Industrial Heritage Activation and Spatial Regeneration

The Shougang Industrial Heritage System is a well-known example in Beijing for its transformation from a steelmaking industrial site, which previously significantly contributed to the air pollution, to now being home to the Olympic Big Air "Shougang" project, clusters of digital industries, and public cultural spaces. The framework for preservation, embedding, and reactivation of Shougang demonstrates the realization of the potential of industrial heritage for a sustainable urban regeneration on a much denser scale. Milan's Fabbrica del Vapore project also took an approach of preserving industrial buildings and utilizing these spaces for exhibitions, incubation of youth, and community programming (Cremaschi, D'Ovidio, 2019). The Village at Porta Romana, the site of Milan's Olympic Village, should benefit from drawing inspiration from Beijing, in innovative post-use planning of Olympic venues and incorporating heritage within the original design, in order to enhance the interconnection between Olympic development and urban regeneration.

4. Shared commitment to multicycle venue uses and "light intervention" frameworks

The management model for Beijing's Water Cube was a case study of adaptive reuse and

the resultant multicycle venue update approach that was employed. This updated multicycle model involved minimal intervention on the existing structural integrity of the building as it was converted from a swimming venue for the 2008 Olympics to a curling venue for the 2022 Olympics. This adaptive reuse approach provides additional evidence for an urban-based sustainable development model focused on hybrid use potential. This same approach to venue evolution can be said to hold for the proposed venue upgrades in Bormio and Livigno. Thus, both municipalities demonstrate a commitment to minimizing the impact of physical intervention as well as providing a platform for the continued use of existing structures, whilst generating value through the lifecycle of these venues in conjunction with the surrounding urban fabric, ultimately reducing the risk of "white elephant" type projects (Zucconi, 2020).

5. Institutional legacy and governance mechanism salience

Another significant legacy of Beijing's Olympics is the establishment of so-called "intangible institutional benefits". Through the establishment of digital governance systems, emergency response systems, and user-generated volunteer programs throughout the course of the Olympic Games have now formalized into a structure that provides for the continued use of the above systems for Urban and Community Administration (post Games) — thus characterizing the Olympics as an accelerator for Urban Governance. Furthermore, this is clearly demonstrated in recent Milan initiatives involving extensive Multidisciplinary stakeholder negotiation and bottom-up participation methods that were initiated and fostered through youth engagement both in the past, present, and those that are imminent for the future. Milan's current Territorial Governance Plan (PGT) continues to encourage civic consultation through the evolution of institutional mechanisms for Modernization and Urban Development, and has resulted from the preparatory phase leading up to the upcoming Olympic Games (Bertuzzi, 2021).

To conclude, through the holistic understanding of Beijing's experience of transforming sites, repurposing venues, and incorporating institutional legacies, it can be seen to align strategically with existing Urban Development Policies in Milan, providing a model for

reuse of venues and a framework for the reprogramming of Urban Heritage. Beijing is a successful dual Olympic City, having hosted both Olympic Summer and Winter Games, thus establishing a resource in venue reuse and further developing a Methodological Framework for reprogramming Urban Heritage. The above specificity relates to the nonreplicable nature of projects, i.e., how to localize the Spatial Governance Logic and Cultural Activation Mechanisms that underpin such projects to best utilize their successes within Milan's own Urban Environment.

-Differences between the two cities

Overview:

While Beijing and Milan share similar urban transformation objectives, the obstacles that each face related to the built environment and development are very different in terms of political and Institutional Frameworks as well as their Urban Development trajectory and spatial configuration.

1. Diverging Political and Institutional Frameworks

Although both cities face similar structural issues, their political and administrative frameworks are markedly different. Beijing, as the capital of a highly centralized state, had a top-down hierarchy of Government that facilitated the coordination of top-down planning during its preparations for the Olympics. The ability to acquire land on a large scale, to have rapid institutional reform, as well as the involvement of state-owned enterprises, have all greatly benefited (Chang 2022; Zhang & Liu 2022), Beijing. In contrast, Milan operates under the multilayered European Governance structure whereby there is a need for negotiation between multiple levels of Government, municipal, regional, and national, as well as the engagement of civil society (Della Sala 2023). As a result of the pluralistic nature of Milan, the time frame to regenerate, transparency, and consensus building associated with this pluralistic institutional environment is vastly different than that of Beijing, therefore making it very difficult to replicate the rapid implementation/facilitation processes employed by Beijing.

2. Differences in Urban Development Trajectories and Spatial Configurations

Milan's Urban Form has undergone a transformation postindustrial where there is a more diffused geographic population and therefore a significant amount of Urban Decay while that of Beijing has experienced an increase in Population and due to this has progressed from an Agricultural Urban Development model to that of a high Density "Concentric Development" model with concentric developments such as Shougang (Zhang & Liu 2022). To illustrate, while Beijing will be able to repurpose a significant amount of contiguous land, in the context of the Olympic Games, the transformation of Milan will require the regeneration of varying degrees of fine-grained, site-specific interventions located within a denser Urban context vs. the complete redevelopment of large swaths of contiguous industrial lands.

3. Differences in Civic Participation and Sustainability Models

Beijing's planning for the Olympic Games was primarily state-centered; public participation was constrained, and the public role was largely symbolic. While national pride and volunteerism were mobilized, these functions operated within an explicit top-down governance system (Chang, 2022). On the other hand, Milan promotes participatory planning, and construction processes allow for civil society involvement (Della Sala, 2023). Therefore, it is unlikely that replicating Beijing's mobilization strategies (such as centralized volunteer use or single channel emergency response) would fit with the bottom-up planning context or ethos of Milan. Moreover, if adequately put in place, these may be considered illegitimate or provoke social response.

4. Differences in Cultural and Historic Identities

Beijing's history as an imperial capital is evident in its monumental architecture or symbolic representation as the capital to the nation state often through largescale infrastructure projects (Zhang & Liu, 2022), whereas the history of Milan is characterized by a maritime and commercial, artistic and industrial legacy that results in cultural production, design and innovation when repurposing, and community culture (Della Sala, 2023). Historicity in Milan serves as a medium of everyday culture rather than a means of representation (Della Sala, 2023). Therefore, where heritage paradigms serve to represent histories in Beijing, planning for the legacy programs in Milan can't simply

uncritically import this practice.

To summarize, the distinctions between Beijing and Milan extend to governance models, spatial contexts, principles of engagement, and cultural narratives. Beijing does provide valuable lessons for spatial regeneration, adaptive reuse, and governance innovation (Chang, 2022; Zhang & Liu, 2022); however, its applicability to Milan is mainly at the strategic and technical levels. The social or institutional elements of reapplication are less significant. Milan must think about these lessons critically, framed by principles of deinstitutionalization, participation, or its own cultural historic basis (Della Salaam, 2023). Only within this context can Olympic legacy strategies be implemented successfully, achieve social legitimacy, and align with Milan's long-term urban outcomes.

4 Lessons from Beijing for Milan 2026: Addressing the Challenges of Olympic Urban Transformation (Outcomes from Beijing)

-Introduction

Beijing and Milan have very different political and administrative frameworks, but they encounter quite similar structural challenges associated with their respective Olympic preparations; specifically, they are both faced with how to maintain city heritage while transforming their urban environments, how to leverage short-term investments for long-term return, and finally, how to utilize the world's largest event to initiate a process of social change that will be sustained over time.

Beijing's dual Olympics in 2008 (summer) and 2022 (winter) provided an example of how the Olympics can serve as a way of experimenting with the systems that support urban growth, individual and collective innovation in governance and spatial planning, and a form of civic engagement (Zhang & Liu, 2022; Chang, 2022).

In its own dual Olympic experience, Milan has a platform for change that recognizes interinstitutional coordination and governance, adaptive urban spatial regeneration, and collective legacy in civic engagement as foundational systems for lasting urban transformation.

-Institutional integration and coordinated governance

In Milan's multilayered government, the challenging aspect of city and Olympic planning is aligning decisions between the municipal, regional, and national levels. Beijing established a coordinated governance system for the Olympics that operated smoothly through planning, construction, and post-event use (Chang, 2022). Though Milan has a transparent participatory mechanism, its partially formed responsibilities and delays in the process significantly impact implementation. Milan must develop a comprehensive, collaborative governing model as key to efficiency and accountability in the management of the Olympic Games in Milan-Cortina (Della Sala, 2023)

The 2008 Beijing Olympics marked a key moment in the modernization of governance in China, and after a successful bid in 2003, the Beijing Organizing Committee for the Olympic Games (BOCOG) established a governance structure that lies between central and municipal, city implementation structure (Chang, 2022). This system unified planning, infrastructure, environmental management, and finance within a single decision-making body, establishing a precedent for interdepartmental cooperation at the city and at the national level.

In 2022, the Olympic Winter Games extended the applicability of this model across multiple jurisdictions in the conducting of the Games, stretching between the distinct jurisdictions of Beijing, Yanqing, and Zhangjiakou and eventually connecting them through a regional mechanism for coordination (Della Sala, 2023).

This scalar coordination mode of approach opened up management capabilities not only for their venues, but also for the production of integrated transport and energy systems, creating opportunities for the Olympics to provide an institutional laboratory for regional governance.

In the case of Milan, the value in a substructure of coordination exists in the principle of coordination, and not necessarily centralization.

The fragmentation of responsibility across levels of governance in Milan (municipal,

regional, and national levels) often impedes decentralization (Bertuzzi, 2021).

By developing and promoting a transparent structure of coordination between institutions, private developers, and the civic sector, the games could provide the impetus for the Olympics to act as a stress test on governance through plan alignment via accelerated decision cycles and potentially increased accountability.

Ultimately, such a shift in the role of the Olympics would test Milan's ability to enhance its public sector efficiency while also finding ways not to expand the public sector bureaucracy.

-Heritage reuse and spatial regeneration

Milan is a dense urban fabric exhibiting layers of historical and industrial landscapes. Integrating consideration for historic development with modern functionality occupies an important position within Milan's sustainable development agenda (Cremaschi & D'Ovidio, 2019).

Beijing has shown through the adaptive work to the Shougang complex that an industrial heritage site can also be reactivated as a place for innovation and ecological renewal (Zhang & Liu, 2022).

By including heritage reuse while hosting the Olympics, Milan creates a space for Milan to continue its historic legacy, including opportunities to create new types of social and environmental resilience. The Olympic legacy of Beijing was based on generation and reuse rather than urban expansion. For instance, an ecological and spatial regeneration site was created from the previous steel production site of the Shougang industrial complex (Zhang & Liu, 2022). The industrial site of Shougang was decommissioned in 2005 and was placed through extensive remediation and redesigned to become a mixed-use development within a larger Berlin area where it held Olympic events and various community services. Its transformation was a representation of the evolving meaning of the word modernization in Chinese Urbanism; specifically, from "Demolition to

replacement" to "Preservation and adaptation."

The above regeneration was made up of three components:

The spatial integration of industrial ruins into a larger ecological context.

Cultural reinterpretation of shared memory surrounding the regeneration narrative;

Institutional integration of legacy planning into the Urban Policy Framework (Chang, 2022; Della Sala, 2023).

Milan should look to Beijing's example of how to position Olympic investment within the framework of establishing the Olympic Games as a vehicle for promoting long-term urban change. The legacy plans for the Beijing Olympic Games align with many of the currently available adaptive reuse plans of the significant and critical industrial sites and rail corridors that run through the city of Milan; for example, (i.e., Porta Romana, Bovisa, Scalo Farini (Cremaschi & D'Ovidio, 2019). Through a legacy-first approach and modular planning principles, Milan would be able to integrate flexibility into Architectural Design and Urban Governance. Additionally, Olympic legacy sites would support planning for long-term Urban Regeneration, requiring them to be developed and operated as larger projects rather than separate, self-contained projects.

-Community participation and inclusive legacy

Overview

Beijing's volunteer and community mobilization strategies suggest how the Olympic Games can deliver an overall shared legacy of intangible civic engagement. Milan, a city known for civil society and cultural diversity, should take a civic approach to ensure that all people and communities, not just developers and tourists, benefit from the Olympic effect (Cremaschi & D'Ovidio, 2019; Bertuzzi, 2021). Cooperative governance, educational partnerships, and digital transparency can help expand the Olympic effect for social cohesion and collective identification with urban change.

Socialization, or “soft legacy,” is driven by civic mobilization at a mass scale.

More than 1.7 million volunteers in service, culture, and the environment led the way for participatory governance during the 2008 Olympic Games, which was a major milestone for civic administration (Bertuzzi, 2021).

This model of volunteering had already evolved into a trisect oral model by 2022, linking government, university, and community-based organizations (Cremaschi & D'Ovidio, 2019). Moving from volunteerism toward institutionalism was another sign of social coproduction of administration.

Milan needs to validate that relational legacy is created through civic engagement — not through building form — but by generating civic engagement. Civic engagement for the 2026 Winter Games will establish the legacy of this event. Unlike Beijing's inherent top-down civic model, Milan offers a decentralized civic culture and structure that incorporates grassroots or bottom-up civic engagement and cocreation.

The introduction of volunteer programs affiliated with universities, participatory design labs, and digital mobilization will expand the reach of the games and create a living civic classroom where architecture, administration, and civics come together.

Through this transformation, the legacy of Milan as the host city for the 2026 Winter Games will consist of more than just the physical infrastructure; it will be a renewed social contract for the city of Milan.

Conclusion

Beijing's "dual Olympics" offer three eternal lessons to Milan:

Chang (2022) states that by coordinating at all levels, integrated governance can achieve more equitable and efficient outcomes. Zhang and Liu (2022) write about spatial regeneration being achieved by finding ways to adaptively reuse spaces/infrastructure, which allows for maintaining historical narratives while incorporating ecological innovation. Civic engagement is one way for citizens to form institutionalized relationships with their communities (Bertuzzi, 2021).

Cremaschi and D'Ovidio (2019) explain that the principles outlined above create a new definition for the Olympics in the context of Milan's pluralism, making it more than just a singular event but also a post-global urban learning opportunity.

Through this new definition of the Games, the Games will serve as a means of demonstrating how urban environments are able to structurally adapt to provide both efficiency and inclusivity; innovation and sustainability; local identity and global perspective.

5 Comparison of the Two Cities Milan and Turin

-Similarities of the Two Cities

Overview: The two main cities of Northern Italy, Milan and Torino, have roots in their respective industrial cities, and both cities utilized the Olympic Games as a tool for urban renewal and urban image reconstruction. While they differ in terms of historical perspectives and urban functions, they have many similarities in how they adapted to a postindustrial society, their approach to sustainable urban management, and inclusive Olympism (Della Sala, 2017; Cremaschi & D'Ovidio, 2019).

1 Common Industrial Roots and Post-Industrial Development

Both Milan and Turin have transitioned from industrial capital to diversified postindustrial cities. With Turin's Fiat-dominated manufacturing sector and Milan's overall geographic industrialist contributing to vast brownfields (Lingotto, Porta Romana, Bovisa) that fostered testing grounds for adaptive reuse projects. Both cities experienced an acceleration in their industrial zone redevelopments into creative clusters, cultural attractions, and mixed-use communities as a result of the Olympics, which drove renewed definitions of industrial heritage contributing to productive facets of urban identity (Bagnoli & Cavanna, 2011; Cremaschi & D'Ovidio, 2019).

2 Confluence in Sustainable Urban Policy, and Spatial Regeneration

The 2006 Turin Winter Olympics were the first national example of systemically integrating environmental sustainability principles while planning for mega events in Italy. Milan follows this trajectory in 2026, embedding principles of sustainability into the

design of its Olympic Village, and reusing disused railway yards and industrial land instead of developing new land. Adaptive reuse and urban densification in terms of a long-term goal of sustainability based on the reuse of heritage assets is central in both cities (Della Sala, 2017; Bertuzzi, 2021).

3 Governance and Social Inclusion Comparisons

Turin established a governance legacy model for inclusion through initiatives, such as Torino Internazionale and the Olympic Legacy Committee, which focuses on collaboration across the government, academia, and citizens. Milan is continuing this approach with its Piano di Governo del Territorio (PGT) and a new Municipal Legacy Committee, including elements of participatory planning, public dialogue, and social innovation into legacy governance (Cremaschi & D'Ovidio, 2019; Bertuzzi, 2021).

-Differences Between Cities

Overview

While Marilyn and Turin are close geographically and share cultural roots, they are markedly different in their urban scale, economic structure, and global orientation. These differences inform Olympic objectives for the cities: the 2006 Turin Games were focused on urban regeneration and reemployment, while the 2026 Milan Games aim to be framed around global competitiveness, leadership in design, and sustainable innovation (Della Sala, 2017).

1 Economic and Spatial Structure

While there is still manufacturing jobs in the Turin economy, and grid regeneration is based on using industrial remnants to help promote tourism and the creative economy, Milan's economy is diversified finance, design, and technology-related related. Therefore, the Milan 2026 Olympics' principal objectives are brand enhancement and livability, while the Turin Olympic objectives were focused on industrial recovery (Cremaschi & D'Ovidio, 2019; Bertuzzi, 2021).

2 Governance Scale and Complexity of Administration

Governance for the 2006 Olympic Games in Turin occurred primarily within a municipal

and regional framework of Piedmont, facilitating rather quick decision-making. Milan, however, operates under a multifactor governance structure. This structure brings together the Region of Lombardy, the Italian National Olympic Committee (CONI), and the Milan-Cortina Organizing Committee (MCOC). This increased governance complexity translates to higher demands for coordination, but potentially greater transparency and democratic legitimacy (Della Sala, 2017; Zucconi, 2020).

3 Cultural Stances and Legacy Stories

Turin's Olympic legacy is governed by a desire to rediscover its industrial self and continue this reconsolidation by framing itself in relation to culture and knowledge. A legacy story for Milan, conversely, is framed around a desire for global projection—it seeks to use the Olympics to reinforce the city as a leader in architecture, fashion, and sustainable urban innovation. Thus, we could say that Turin relates to consolidation for recovery, and Milan relates to innovation for projection (Della Sala, 2017; Bertuzzi, 2021).

6 Integrating Local Flexibility and Post-Industrial Adaptability (Outcomes from Turin)

-Introduction

In contrast to Beijing, where centralization is uncontrollable, Turin has demonstrated the capacity for a decentralized approach to withstanding disruptions through economic diversification and innovation. 2006 was significant for the city of Turin, which had endured several years of "deindustrialization", social fragmentation, and economic uncertainty, and the Olympic Games served as a "the catalyst" for this city to undergo a gradual and locally embedded transition in the Reorganization of urban systems to integrate economic restructuring, spatial connectivity, cultural revitalization, and environmental sustainability into a lasting transformation (Della Sala, 2022; Cremaschi & D'Ovidio, 2019).

This model of flexible and bottom-up transformation is an alternative for Milan to use while viewing its own Olympic Games program as an Urban/Resiliency Process rather than as an endpoint to Development. The Resiliency Process is Adaptive, Inclusive, and

Sustainable (Della Sala, 2022; Cremaschi & D'Ovidio, 2019).

The creation of the 2006 Olympic Games in Turin resulted in an unprecedented opportunity for this city to leverage its status as an economic and institutional center and to take advantage of it. As a result of the disintegrating Manufacturing Economy associated with Fiat and its associated businesses, as well as extensive Brownfield Sites and declining employment levels, the Olympics became an invaluable tool for shifting this city's economic focus toward knowledge-based, Cultural, and innovation-driven industries (Cremaschi & D'Ovidio, 2019; Della Sala, 2023).

By 2000, the condition of the City of Turin was already clearly distinguished by the Industrial Decline and the presence of numerous Brownfield Sites. The Olympics provided the City of Turin a Unique Opportunity to shift its Economic Focus away from traditional concepts to a Contemporary Model of several areas or locations of Cultural Production and Innovation, Transformed from Industrial Spaces into Educational, Research, and Creative Resources (Della Sala, 2023).

With respect to the Economic Shift developed by the 2006 Turin Olympic Games, rather than thinking of the Olympics as an event that would only provide an Influx of Development and Resources, Mozambique is presented with a different opportunity for Developing Systemic and Diversified Economic Models. Mozambique can use the Olympic Games as a catalyst for creating Clustered Economic Models that are connected with Design, Technology, Sustainable Construction, and Creative Entrepreneurship. As a result, the Olympics should be viewed as creating the Long-term Improvement over Leverage (Lanzani, 2018).

The key lesson from the 2006 Olympic Games in Turin is that Economic Resilience is created by Economic Integration, not from Cultural Productions.

-Spatial Integration/Functional Reconfiguration

Instead of taking the route of demolition and reconstruction, into the postindustrial landscape seen, Turin's response was Opening Synthesis via "Turfig" and, by interconnecting fragmented industrial lands and related transport corridors such as Roads, Railways, and the Metro, and, once again, through Public Transport and connection into a single coordinated structure.

The 2006 Olympic Games provided both a physical incentive and the impetus to create cohesive, interwoven neighborhoods, creating both new forms and redevelopment within existing urban parts.

The way in which Turin created these new urban spaces through innovative construction with a combination of remodeling already existing Urban Structures has resulted in some legacy buildings for future generations. In addition, the creation of the transport links that exist today also created the opportunity for greater interaction through shared outdoor green spaces.

The example of Turin offers Milan a potentially attractive alternative to what are typically termed "megaprojects." For example, through the construction of Olympic legacy venues and creating connections to existing transport structures, this can create the opportunity to unite urban mobility with both equal access and opportunity through shared space over time, etc. (Zucconi, 2020).

In cities that experience increased spatial experiences, the lack of opportunity to create and sustain those experiences over time is the potential downside of continued heavy investment in Urban Neon or creating new Urban Forms through either permanent structures, permanent connections, or permanent Urbanisms. As the example of Turin illustrates, temporary interventions can build upon and create increased opportunities for social engagement and social capital within both existing and future economic and

geographic spaces. (Bertuzzi, 2021).

-Cultural Networks and Social Integration

The Cultural and Social Revival was Turin's Cultural Olympics' defining feature. Cultural institutions such as Universities, Museums, and Community Agencies were created to unify & connect various places of cultural exchange taking place in Turin. Culture became a means of renewing Urban identity and social cohesion for the people of Turin (Lanzani, 2018; Bertuzzi, 2021).

The Olympic Cultural Olympiad established cultural consortia of Universities, Museums, and Community organizations in a permanent and continuing fashion (Cremaschi & D'Ovidio, 2019). Through collaborative programming, the Cultural Olympics were intended to create cultural cohesion through collaborative programming, and a sense of belonging and pride in their city for the citizens of Turin, as well as to create an opportunity for them to engage with their place of residence.

To sum this up, Milan's lesson from the Cultural Olympiad is that the Olympics serve as a means of integration for Culture. Cinematic events can be integrated with World-class Creative Sectors, the Design Week, the Fashion Week, and the Triennale to create structured, sustained cultural calendars of Sport, Art, and Innovation. The ultimate goal of Milan should be to aspire to incorporate Turin's example of using Culture as an infrastructure for Social Cohesion.

-Environmental sustainability and everyday ecology

The environmental legacy of Turin was focused less on "green branding" and more on incorporating sustainable practices into the everyday governance of the city. The introduction of clean transportation, renewable energy, and a system to monitor the environment made the Olympic Environmental Priorities part of Urban Policy (Zucconi, 2015). Through investment in transit, energy efficiency, and redeveloping old

industrial areas, such as Parco Dora, the city created an ecological basis of existence not only from the games (Zucconi, 2015). Rather than create "green icons" as a symbol, but to establish methods for citizen participatory monitoring and to develop Open Data Environmental Governance (Della Sala, 2023). The experience of the Olympic Games is a great reminder for Milan: Sustainable practices must be included in municipal policies and connected to the events of the games. Through this connection, the Olympic events can contribute to a communal ecological habit of adopting renewable energy, creating low-emission zones, and creating community gardens. The goal is not to have a "Green Olympics" but to create an everyday sustainable ecology that can live on beyond the 2026 Olympics.

7 A seven-dimensional strategy for Milan

-Prelude

The comparative review of Beijing and Turin, as presented in previous sections, offered two distinctly and fundamentally different, yet complementary frameworks of Olympic urban change. Beijing showed us the potential of institutional integration, spatial regeneration, and civic engagement within a centralized and efficiency-focused model, while Turin illustrated economic adjustment, networked flexibility, and cultural innovation within a decentralized context reflecting its postindustrial circumstances. Combined, these cases not only exceed the boundaries of their local histories but also provide a dual interpretation to begin understanding the complexities of Milan 2026.

To bring together and synthesize these complex local interpretations, this study adopts the Seven-Dimensional Framework, a theoretical construct created through comparative case analysis in conjunction with inductive thinking processes. The Seven-Dimensional Framework captures the different ways in which the Olympic Games can manifest urban transformation across seven possible dimensions—from structural, spatial, and social implications captured in Beijing's case to economic, cultural, environmental, and connective implications taken from the history of Turin. Each dimension represents differing but mutually influential points of operation between forms of urban governance,

physical space, and social change, demonstrating how megaevents can serve as initiators but also regulators of urban change.

This next section will therefore translate the six outcome categories from the Beijing and Turin case studies to introduce a comprehensive seven-dimensional model for Milan 2026. It is worth restating that the SevenDimensional Framework is not to be conceived of as a static typology, but a dynamic synthesis that is effectively realized in the ambition of seeing how Milan occupies its Olympic rationales recently created on status, globally located Olympic traditions, and its local histories. By utilizing this framework, this chapter intends to demonstrate the core argument of the thesis: the greatest impact of the Olympic Games is not dependent on its size of construction, but rather on how it can transform the arrangements that exist between governance, economy, society, and environment.

The SevenDimensional Framework is ultimately a diagnostic and prescriptive device that offers a pathway for the circumstances of Milan's Olympic planning and for other future European host cities in conjunction with sustainable urban development for the future.

-Governance Dimension: Integration across institutions; coordinated implementation

Overview

Governance integration is one of the most important challenges for any Olympic city making preparations.

Beijing's experience intensified during both the 2008 Summer Olympic Games and 2022 Winter Olympics revealed how coordination across multiple levels, and coordination across institutions especially, was possible to converge national, municipal, and community objectives (Chang, 2022).

While it did embrace a degree of top-down control, Beijing nevertheless created a networked model of governance that engaged collaboration, accountability, and responsiveness in real time.

For Milan, which exists within an administrative structure that has overlapping

authorities at the municipal, regional, and national levels, the Beijing experience indicates there needs to be a cross-sectoral model of governance, where efficiencies can be combined with accountability and participatory legitimacy.

Figure19. Construction Zone



(Sources: Photographed by the author)

Key Tasks for Milan

1. Create a Milan – Cortina Olympic Coordination Office (MCOC): from fragmentation to integration

Milan will need to create a Milan – Cortina Olympic Coordination Office (MCOC) in order to consolidate communication, oversight, and decision-making across the fragmented administrative system.

The MCOC would consist of three interrelated layers:

The strategic layer: A steering committee, formed with representatives at the municipal, regional, and national levels along with the Olympic organizing committee, would oversee the strategic direction of initiatives, and ensure the municipal, regional, and national directions are all consistently followed in a similar policy direction.

The operational layer: Project-specific work teams would manage the work program in large areas of work, such as transportation, housing, infrastructure, and heritage, with

work in the teams coordinated in a matrix style across departments and municipalities.

The data layer: Instead of managing by intuition and informal peer-to-peer mechanisms, a data, digital observable system would provide authoritative data indicating progress, costs, and performance from an environmental perspective in real-time, so decisions could be based on data and can be accounted for in the public sphere.

To support a wider sense of transparency within the governance and politics across the Olympic development, the MCOC should have a Civic Oversight Division, also composed of citizen delegates and academics as observers. This redesign of the Olympic Games becomes a process of institutional learning, it improves the coordination of administrative functions, and creates social capital through the transparency of data.

2. Institutionalizing Legacy-Oriented Governance: From Temporary Project to Permanent Policy

Beijing is an excellent example of how early use of legacy planning in the Olympic project approval process was successful (Zhang & Liu, 2022). Similarly, Milan can take advantage of the opportunity to create a Legacy Impact Assessment System that will require each Olympic project to submit a completed Legacy Impact Statement. The Legacy Impact Statement will include:

Postgame projected use and management of the project;

Identification of the governing body responsible for operating and maintaining the project;

Identification of a funding mechanism to support maintenance; Social benefits associated with employment, education, and cultural opportunities created by the project; Lifecycle and sustainability assessments, including carbon and energy metrics for the project.

The Urbanistic Department will create the Legacy Rating Mechanism to distinguish between Olympic projects that focus primarily on short-term function objectives and those that create longer-term asset-focused benefits that provide funding incentives for the city. The Legacy Rating Mechanism will formalize the way the City of Milan will deliver Olympic legacy projects and extend the Olympic legacy the city created through the

infrastructure into a policy legacy for the City of Milan about how it will deliver megaprojects in the future.

3. Invent an Integrated Schedule and Cost Control System (IMS + EVM)

The 2008 experience in China demonstrated through the use of Integrated Master Schedule (IMS) and Earned Value Management (EVM) structures exhibits great Efficiency of Mult project Synchronization (Huang, Zhang & Wang, 2015; Lundqvist, 2025). This offers the potential for the city of Milan to utilize an Integrated Master Schedule (IMS) along with an Earned Value Management (EVM) structure to provide real-time Visibility and Management of Projects During the Multiple Stages Of Olympic Development.

As a Frequent example of Implementation for this type of control, the ability to:

Create a cross-platform real-time data Connection to Provide Immediate Access for The Ongoing Design, Procurement, Construction, & Auditing Processes.

Employing Earned Value Management (EVM) as a source to measure the performance of Construction or Product Development and to monitor the Performance Differences from the Current Estimates;

Utilizing Live Dashboards, Drafting Reports That Are Only Displayed Once to Reevaluate the Culture of Data Management;

Furthermore, target cost contracts (TCCs) would provide a Mechanism for Creating Additional Relationships Between Public and Private Funding for Maximizing the Effectiveness of Sponsorship Agreements. Additionally, it Establishes Limits on Financial and Time Investigation of any Future Projects. Ultimately, providing a Collaborative Governance Environment Where Eventual Effectiveness, Transparency, and Accountability will be assumed in All Stages of Development. By Doing This, The Final Product Will serve as a Legacy of Development in Italy.

-Spatial Dimension: Heritage Reuse and Regenerative Urbanism

Overview

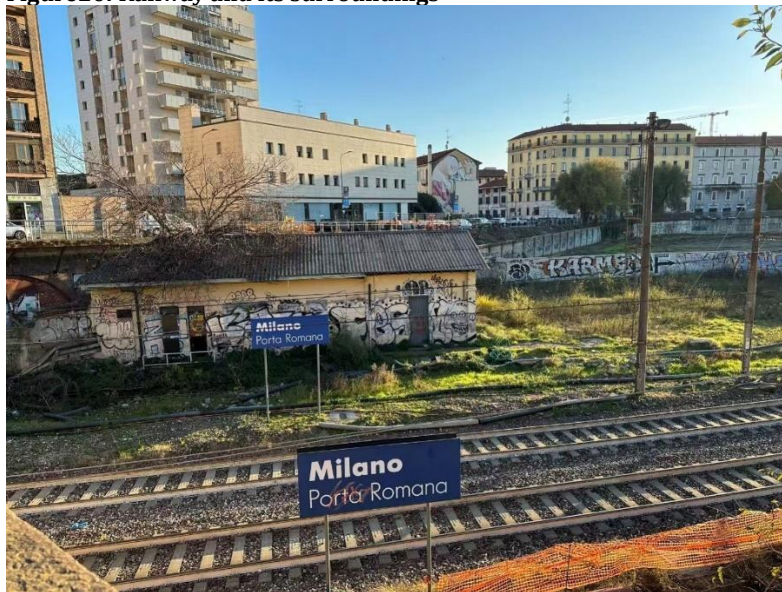
The spatial dimension represents the most tangible and quantifiable expression of Olympic legacy.

Beijing's conversion of the Shougang Industrial Complex to a mixed-use hub for culture, innovation, and recreation showcases the changing paradigm, moving from demolition and newbuild to adaptive reuse and ecological rehabilitation (Zhang & Liu, 2022).

The focus on preserving and redeveloping is enabling outdated industrial infrastructures to find value in being repositories of sustainable growth.

For Milan, the plethora of postindustrial sites, combined with a fragmented urban structure, holds the potential for the Olympic games to usher in a new era of brownfield regeneration and ecological continuity.

Figure20. Railway and its surroundings



(Sources: Photographed by the author)

Key Initiatives to Undertake in Milan

1. Porta Romana Olympic Village: Demonstration Project with a Triple Coupling

The Porta Romana site represents an exceptional chance for Milan to amalgamate Olympic use with sustainable urban revitalization. Utilizing a functional–morphological–ecological coupling strategy (Della Sala, 2023), Milan can fashion a regenerative development

scheme:

Functional coupling: Reuse of the athletes' village for affordable housing, student housing, and community uses, which address both post-Olympic use and social equity.

Morphological coupling: Keep the significant armature of industry, e.g., rail lines and warehouses, to create cultural boulevards and events while sustaining shared memory.

Ecological coupling: Redesign with gardens capturing stormwater, green roofs, and biodiversity corridors for climate resilience and energy efficiency.

In this way, an Olympic village extends its life from a temporary enclave to a permanent social and environmental asset, which serves the greater urban scheme of Milan.

2. Adaptive Reuse Handbook: Codifying Flexibility and Public Engagement

Beijing's "Water Cube"–"Ice Cube" transition demonstrates a form of design standards to prolong the life of buildings (Lanzani, 2018). Milan should produce an Adaptive Reuse Design Handbook that would outline best practices for building flexibility, sustainability, and citizen engagement. Important elements included:

Technical specifications for prefabricated and reversible construction

Policies supporting Meanwhile Uses, definition of temporary cultural and educational use pre and post Games.

Structure for public feedback, perhaps exhibition-based, voting-based, or digitally visualized.

Through these tools, dead spaces can have their social value revived, and a culture of adaptivity and inclusion can be embedded into architecture in Milan.

3. Urban Acupuncture: Embedding Microscale Regeneration and Connectivity

Beijing's metro extensions and greenway systems added mobility and livability during the Olympic experience (Chang, 2022). Milan can adopt the same principle through urban acupuncture, i.e., small, strategic interventions that have significant systemic value:

Develop multimodal micro hubs in the Bovisa and Porta Genova section of the city that combine metro, bicycle, and pedestrian access.

Transform old, disused rail corridors into linear parks, connecting fragmented neighborhoods.

Use the 15-minute City framework (Bertuzzi, 2021) to ensure a clustering of uses around the Games facilities to support daily lives.

Incremental action of this scale will stitch together the Olympic legacy into the experience of daily life in Milan, creating continuous community social regeneration, rather than simply redeveloping patches across the city.

-Social Dimension: Community Engagement and Culturally Inclusive Legacy Overview

The social dimension captures the intangible and often underappreciated aspect of the impact of an Olympic legacy. In Beijing, the elements of volunteerism and civic mobilization created an atmosphere of shared identity and pride in the city (Bertuzzi, 2021). Milan's flourishing civil society, driven by group associations and participatory institutions, can provide fertile ground to adopt these lessons within a European civic model based on empowerment and cocreation of processes rather than top-down structures.

Figure21. Urban Vitality



(Sources: Photographed by the author)

Key Actions for Milan

1. Community – Academia – Industry Volunteer Network

Learning from Beijing's multilayered volunteer scheme (Chang, 2022), Milan could create a Triple Helix Volunteer Framework of residents, academic institutions, and private companies (Bertuzzi, 2021). For example, there would be a role for:

Local communities: organize event logistics, neighborhood landscaping projects, cultural events; Academic institutions: support training and participatory research on sustainable futures; Private companies: contribute as corporate volunteers or based on ESG incentives to support resident participation.

The network of volunteers could develop into a permanent civic Infrastructure and inform volunteerism in place-based festivals, environmental projects, and educational events.

2. Co-Design Laboratories: Build Participation into Urban Policy

In the Olympic neighborhoods of Porta Romana and Santa Giulia, Milan should set up Codesign Laboratories, sites of collaborative planning.

In partnership with architects, students, and residents, the codesign lab would gather residents in participatory workshop-style groups to codesign and evaluate outdoor public space sites (using participatory workshops and digital visualization). The outcome would be entered into planning procedures in the city by planning officers, to make public input more than just symbolic.

This model would help push social inclusion forward and make civic engagement a formal way of governing.

3. Participatory Budgeting and Community Benefit Agreements

To ensure a fair distribution of Olympic benefits, Milan could introduce a Participatory Budgeting Fund (PB) that allows residents to propose and vote on a portion of the revenue to designate for projects that benefit the community (Bertuzzi, 2021). Funds might support community gardens, cultural festivals, or youth entrepreneurship programs, etc. Additionally, Community Benefit Agreements for private developers might be a way to create an agreement to commit to local employment opportunities, decent housing, or public amenities.

Both PB and CBA mechanisms would embed the ideals of social justice directly to urban policy, so that the Olympic legacy is maximally beneficial in terms of prosperity and inclusivity.

Synthesis

The three dimensions from Beijing—governance, spatial regeneration, and social inclusion—make up the institutional basis of Milan's Seven-Dimensional Framework. They represent a show of how mega events can trigger structural reform, spatial reinvention, and civic renewal.

If Milan internalizes these three lessons, the city could turn the 2026 Winter Olympic moment into a sustainable urban transformation, with a new European model of adaptive, inclusive, and forward-thinking Olympic legacy.

Chart6. Timeline for Milan2026 Winter Olympics

Phase	Period	Key Tasks
Pre-Games Preparation	2024–2026	Establish MCOC; implement legacy impact assessment; finalize Olympic Village design; launch Co-Design Laboratories.
Games Operation	Winter 2026	Activate volunteer system and data platform; operate Meanwhile Use projects; test transportation and public spaces.
Post-Games Transition	2027–2030	Convert Olympic Village to housing and community center; complete industrial reuse; connect ecological corridors; institutionalize social legacy.

(Illustrated by the author)

Chart7. Comparison between Beijing and Milan Olympic strategies

Dimension	Beijing's Experience	Milan's Strategy
Governance Model	Centralized decision-making and rapid execution	Multi-level coordination under MCOC platform governance
Spatial Regeneration	Shougang "Preserve-Embed-Reactivate" approach	Porta Romana "Triple Coupling" model + Adaptive Reuse Toolkit
Social Participation	Nationwide volunteer and mobilization system	"Triple Helix" volunteer system + Co-Design + Participatory Budgeting

(Illustrated by the author)

-Economic Dimension: Post-Industrial Transition and Urban Resilience

Overview

The 2006 Winter Olympics marked an important turning point for Turin's planning framework.

By the end of the twentieth century, the collapse of the Fiat industrial empire had led the former manufacturing capital into economic decline, population loss, and social imbalance (Cremaschi & D'Ovidio, 2019).

However, in this context, the Olympics became a platform for economic and urban change rather than just a sporting event.

Thanks to investment and global attention, the Games revived the city and allowed for a restructuring of its industrial base, moving from a production economy to an economy based on knowledge and cultural innovation.

Turin's experience shows that the best value of Olympic legacies is not incurred in consumption during the Games but in long-lasting structural economic resilience.

Figure22. Unicredit Tower-Economic symbol



(Sources: Photographed by the author)

The lesson is especially pertinent for Milan.

While finance, design, and culture are all established strengths for the city, Milan is moving forward after the pandemic with new challenges that include real estate uncertainty, industrial relocation, youth unemployment, and a lack of innovation space.

For this reason, we should consider the Winter Olympics an opportunity for "innovation-led regeneration" that will turn the Games into a driver of industrial collaboration, knowledge transfer, and sustainable development.

Key Recommendations for Milan

1 Develop the "Olympic Innovation Corridor" – New Spatial – Industrial Synergy Model

Inspired by the regeneration of the Spina 3 and Lingotto districts in Turin, Milan can plan the Olympic Innovation Corridor along the Bovisa – Porta Romana urban corridor. This corridor—an intersection of transport, research, and redevelopment opportunities—would evolve into a multilayered innovation ecosystem by coupling the Olympic Village, university campuses, and corporate headquarters.

At the spatial level: Create an “Open Innovation Campus” that attracts companies in

green architecture, material technology, and digital fabrication.

At the industry level: Build a “Low Carbon Accelerator” to foster incubation of startups focusing on energy efficiency and applied circular design.

At the institutional level: Adopt land use incentives and tax reductions for research and development to draw long-term businesses.

This spatial/industry coupling would extend the temporary construction provided by the Olympic event into a sustainable innovation engine across the corridor.

2 Establish the “Event Academia Industry” Triple Helix Collaborative System

Turin exemplifies the early stage of collaboration between universities, enterprises, and government during the 2006 Winter Games. The Polytechnic University led investigations into venue design, traffic simulation, and environmental assessment, translating scholarly work into action-oriented urban innovation (Della Sala, 2023). Milan has the opportunity to further institutionalize this model through an Event – Academia – Industry Collaboration System, delineated by:

Academic Level: The establishment of an "Olympic Innovation Institute" at the Politecnico di Milano and Bocconi University, investigating studies around sustainable architecture, digital urbanism, and resilience.

Industrial Level: A facilitating role for public – private partnerships (PPP) in venue development, intending to test new materials in low-carbon technologies.

Government Level: Support from the municipality acting as an "institutional integrator" role through research allowances and coordination platforms to integrate scholarly knowledge into real-time urban projects.

This mechanism reorganizes the Olympic experience as a social process of knowledge generation and innovation, spreading the Olympics as a configuring base for Milan's next evolution of industry.

3 Build a “Long-term Branded Economy” — From an Event to a Permanent Attraction

Turin's Olympic story illustrates that the foundations for economic transformation are contingent on the infrastructure and handcrafted brand. A true outcome of the Olympics was amalgamating the identity of the Olympics with the identity of a "Cultural Capital" or "Mountain Sports City," and entangling the two identities into an event-based and tourism economy that is sustainable.

Milan can employ a similar branded transition based on the Olympics with a Winter Olympics Cultural Economy Ecosystem to further integrate the games into the cultural and creative branded experience of the city. This will involve:

Embedding the Winter Olympic experience alongside Design Week, Fashion Week, and the Triennale as part of an ongoing twelvemonth cycle of global engagement.

Repurposing select Olympic venues as international conference and exhibition centers with continued use.

Fostering collaboration across sectors of culture, sports, technology, and tourism to generate new flows of income.

According to this catalytic branded framework, Milan's Winter Olympics would become more than an episodic event; it would become a sustainable global urban branding experience.

-Network Dimension: Multimodal Integration and Spatial Integration

Overview

The most observable legacy from Turin's Olympic legacy was the reconfiguration of its spatial network. The materials were not only about repositioning the place identity of certain sites, but also about repositioning the larger mobility and infrastructure network of the city (Bertuzzi, 2021). The development of Metro Line 1 provided necessary Olympic transport, but arguably more important, it became and continues as the structural spine to provide connection from the northern edge to the southern edge of the city, generating

regeneration opportunities along its corridor and raising land value (Zucconi, 2020). This situation demonstrates that the Olympics should focus on “connected better instead of more.”

Indeed, a city’s legacy isn’t based on the quantity of its built environment, but the quality associated with increased accessibility and urban integration.

For Milan, current fragmented mobility systems and regional differences hinder holistic urban growth.

As a result, for the 2026 Winter Olympics, the context should be a networked spatial integration approach with the goal of a multimodal low-carbon metropolitan system, where Olympic venues and urban activities seamlessly connect.

Figure23. Milano Centrale-Network



(Sources: Photographed by the author)

Primary Actions for Milan

1 Create a Transit-Oriented Spatial Framework

The Olympics provide a unique opportunity for Milan to enact a multimodal transport integration framework:

Adjust the dedicated Olympic metro lines alongside the overall suburban S line system to accommodate event patronage, but also daily commutes.

Include a “Green Commuter Loop” connecting primary Olympic venues alongside residential neighborhoods within ecological transportation corridors.

Develop “Transit Oriented Nodes” over transportation facilities that include commerce, recreation, and public use programs.

This “mobility as structure” proposal may create transport infrastructure as the new permanent skeleton of Milan’s post-Olympics user experience.

2 Implement Double Transformation Frameworks between Olympic Venues and Communities

Turi’s transition of its Olympic Village from supporting the needs of athletes to a residence for students, cultural facilities, and social housing represents a successful transformation trajectory from a "temporary facility" into a "permanent asset." In each case, the community sustained participation both during the Olympics to host eventgoers, but subsequently also to serve residents, to underscore that the transformation was successful in addressing local needs.

Milan may replicate a similar flexibility in Porta Romana and Santa Giulia, as a dual-use system of community engagement and support:

Pregame: Open the facility to allow for community functions (e.g., temporary exhibitions or cultural events) to prompt community engagement before the Games.

Post Games: Shift to residency, educational, and cultural functions and integrated support again to support the community's continued use of the Olympic venue. This model eliminates the separation of "event space" and "urban space," embedding the Olympics within everyday urban life.

3 Apply "Urban Acupuncture" through Microscale Renewal

Supporting the post-Olympic plan of providing small change for large impacts, Milan has taken a position in pursuing incremental regeneration rather than full redevelopment:

Converting underutilized railway and brownfield corridor networks into linear parks/pedestrian pathways

Establishing micro hubs centered on Olympic clusters to enable a multimodal transit network

Transforming temporary sites into mobile community assets, such as pop-up libraries and modular pavilions

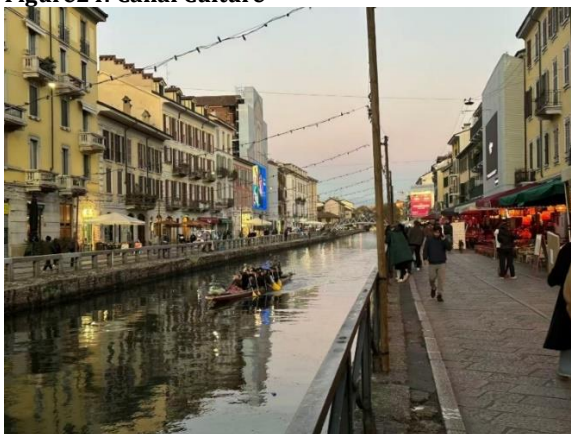
This progressive, cost-effective approach allows for structural urban transformation to occur by sharing the financial responsibility and creating collectively owned urban space.

-Cultural Dimension: Social Inclusion and Urban Identity

Overview

The Olympics in Turin served to create a new cultural identity for the city. They did not just alter how people viewed Turin but also fostered civic pride by reinterpreting its story from being a place of industrial and rational development to a place of creativity and culture (Lanzani, 2018). The continued engagement with the Olympic legacy through the establishment of a network of museums, festivals, and community programs represents a long-term investment in the development of cultural conversation. This reinforces that culture is not just about the historical legacy of a city, but is a medium for society to evolve and grow over time. In Milan, a similar challenge will exist in leveraging Olympic cultural heritage in forming an ecosystem of design, art, and education, which will continue to evolve and integrate over time.

Figure24. Canal Culture



(Sources: Photographed by the author)

Key Measures for Milan

1 Cultivate an "Olympic Cultural Alliance."

It's possible for Milan to use the current cultural assets already located within the city to create a foundation for a potential Olympic cultural legacy. A collaboration of organizations already operating in the city, such as Triennale, Design Week, and Fashion Week, will allow for a Cultural Alliance to:

Establish a schedule of exhibitions, international forums, and creative workshops to take place in conjunction with the Games.

Provide the opportunity for artists, architects, and students from around the world to work together on large-scale public art projects.

Work with cultural institutions globally to establish an inter-institutional curatorial exchange program.

Thus, Olympic culture becomes a continually evolving urban creative ecosystem, rather than just an isolated event.

2. Implement the "Education & Cocreation Program."

With Milan's robust educational and design system, Olympic themes are best integrated into both formal and informal education. Secondary schools and universities may, in addition to design challenges and shows, run courses such as "Olympics & Urban Regeneration". These courses could be linked to museums, developing "Youth Cultural Guide Programs" where young urban citizens act as storytellers of urban identity in their communities. This blended model will create an opportunity for inter-generational (especially cultural) exchange/transfer and instill an enduring humanistic vibrancy into the Olympic legacy

3. Develop a "Neighborhood Cultural Festivals" and Digital Heritage Platform

Building upon Turin's legacy of inclusion and expanded participation of youth, migrants, and other underrepresented groups (Cremaschi & D'Ovidio, 2019), Milan could produce Neighborhood Cultural Festivals in each neighborhood, organized by the cultural communities, in collaboration with the neighborhoods to celebrate their identities and intercultural connections.

At the same time, the establishment of an Olympic Memory Archive (a digital library of images, oral histories, and community stories) will collectively store memory and reflect together the social inclusion aspect, while embedding cultural heritage into their daily experience of urban life.

-Ecological Dimension: Sustainability, and Everyday Ecology

Overview

Turin's environmental legacy was different in that sustainability became a slogan for ongoing institutionalization in daily governance.

Low-carbon transportation, renewable energy, and environmental monitoring became part of governance policy (Zucconi, 2020). This illustrates that environmental heritage should not act simply as a symbolic monument but as part of the everyday experience of citizens.

For Milan, too, the Winter Olympics provide a moment to convert visions of a "sustainable city" into actionable systems.

Figure25. Bosco Verticale



(Sources: Photographed by the author)

Key Recommendations for Milan: Extending the Green Mobility System

Similar to the progress with Turin, Milan should overhaul its transportation system in the

pre-event phase:

Install electric and hydrogen buses, and programs for shared mobility

Create new dedicated walking and cycling greenways connecting the Olympic venues

Include carbon emission and air quality monitoring in the transport assessment

After the Games, this system could blend into the permanent mobility network and become a continuum from event to everyday.

2 Standardize Renewable Energy and Green Building Methods

Some of the venues in Turin used geothermal and solar technologies (Cremaschi & D'Ovidio, 2019) to generate renewable energy.

This could be formalized in Milan by establishing Olympic Green Building Standards that ensured:

Carbon-neutral architectural design

Rainwater harvesting and waste heat recovery systems

Renewable energy self-sufficiency rates of greater than 50%

In the Postgame phase, some of these venues can serve as the laboratories for Sustainable and low-carbon building methods.

3 Establish a Citizen-Led Eco Governance Platform

Post 2006, Turin created an open environmental data system that had inclusion of citizens (Della Sala, 2023). Milan could formalize this strategy, with a Community Green Observer Network that:

Allows residents to document environmental data through mobile apps

Gives public access to real-time pollution, energy, and greening metrics

Involves other universities and nongovernmental organizations to analyze and suggest data-driven, sustainable improvements to policy.

This framework would represent a triadic Eco eco-governance system that directly links technology, society, and policy.

In-Depth Analysis

The four dimensions derived from Turin's economic transformation, spatial connectivity,

cultural integration, and ecological sustainability make up Milan's transformative and cultural core of a SevenDimensional Framework.

While the three dimensions from Beijing are designated for structure and governance, the four dimensions from Turin are more focused on human centeredness and locality.

Together, they represent a holistic synthesis through which Milan can achieve institutional efficiency while sustaining social agility.

In summary, Milan will use this integrated "seven dimensional" approach, to demonstrate empirically, to Europe and the world, that it is possible to move from a biproduct of the 2026 Winter Olympics to a European model of innovation, inclusivity, and sustainability, that is a city capable of leveraging a world stage and a world event into a shared adaptive legacy of urbanism.

Chart8. seven-dimensional strategy for Milan

Category	Dimension	Source City	Keywords	Core Logic	Implications for Milan
Structural	① Governance Dimension	Beijing	Cross-level coordination · Institutional integration · Early-stage planning	Establishing an efficient, unified coordination mechanism for planning, construction, and operation	Create the Milan-Cortina Olympic Coordination Office (MCOC) to align multi-level governance
Structural	② Spatial Dimension	Beijing	Brownfield regeneration · Adaptive reuse · Ecological repair	Reactivating urban spaces through flexible redevelopment	Integrate Olympic venues with Milan's ongoing urban renewal strategies
Structural	③ Social Dimension	Beijing	Volunteer networks · Participatory governance · Inclusiveness	Strengthening civic participation and social cohesion	Foster co-design laboratories and participatory budgeting models
Transformative	④ Economic Dimension	Turin	Post-industrial transition · Innovation-led growth · Knowledge economy	Leveraging the Olympics to restructure urban economies	Create innovation clusters and cross-sector partnerships through Olympic projects
Transformative	⑤ Network Dimension	Turin	Multi-nodal structure · Transport connectivity · Functional integration	Embedding Olympic facilities into the metropolitan network	Establish interconnected Olympic-community-mobility systems
Cultural	⑥ Cultural Dimension	Turin	Cultural collaboration · Education partnerships · Urban identity	Using culture as a driver of social inclusion and identity renewal	Form a Milan Olympic Cultural Alliance to extend event legacy
Ecological	⑦ Environmental Dimension	Turin	Green mobility · Renewable energy · Co-governance	Institutionalizing sustainable practices into daily governance	Develop "everyday ecology" through citizen-led environmental initiatives

(Illustrated by the author)

8 Concluding Reflections: Toward a Model of Adaptive Olympic Urbanism

-Introduction

The earlier sections examined Beijing and Turin as two discrete yet complementary models of the Olympic urban transformation phenomenon. Beijing, within a centralized regime, constitutes an exhibit of the advantages of structural efficiency by its capacity to promote multilevel governance, spatial redevelopment, and social participation through elaborate top-down coordination. Turin, on the contrary, is characterized by adaptive flexibility; a city that responded to postindustrial decline by making the Olympics an act of local innovation, cultural reinvention, and environmental sustainability. With the comparative synthesis of these two ideals in mind, Milan's challenge is not to select between one or the other, but to synthesize both civic, societal, iterative, stretched, and urban agricultural aspects in a new paradigm of adaptive Olympic urbanism. This final section coordinates the seven-dimensional framework in a coherent conceptual and strategic framework, to demonstrate how Milan2026 might act as a testing ground for a sustainable, inclusive and resilient Olympic legacy model.

-Integrative interpretation of the seven dimensions

The seven-dimensional framework of governance, spatial, social, economic, network, cultural, and ecological aspects is not a checklist of indicators but instead represents the interaction system of forces that together delineate the sustainability of Olympic legacies. Each dimension works in isolation as well as to the other dimensions: governance achieves coordination; spatial provides intentionality; social provides legitimacy; economy provides innovation; network cohesion achieves spatial continuity; cultural enables coherence or identity; ecological provides long-term balance.

1. Structural Dimensions: Efficiency and Coordination

The first triad governance, spatial, and social dimensions arise from the initiative of systemic efficiency, illustrated in the case of Beijing. Efficiency, in this case, is not simply bureaucratic speed, but the ability to leverage and align actors, policies, and infrastructures towards a united urban agenda (Chang, 2022). For Milan, it means that the

governance of the Olympic Games will have to go beyond administrative boundaries, producing crosscutting sectors, therefore shared responsibilities. As outlined above, a Milan – Cortina Olympic Coordination Office (MCOC) can be a technical and symbolic hub of this integration. Equally, the spatial and social dimensions need to operate through mutually reinforcing layers. Spatial regeneration – particularly of brownfield districts like Porta Romana – can only obtain social legitimacy if it is inclusive in its planning and democratically managed (Cremaschi & D'Ovidio, 2019). Therefore, the spatial proposals for Milan must contain participatory governance frameworks and community feedback loops so that gentrification does not result, and legacy assets are actually distributed fairly.

2. Transformative Dimensions: Capability and Creativity.

The last four dimensions (economic, network, cultural, and ecological) are normally derived from the lessons gathered from Turin's adaptability. They provide a framework that explains the bottom-up dynamics of urban transformation: resilience by diversity, connection by networked infrastructure, cohesion by cultural identity, and sustainability by ecological sensibility. Together, they are more than individual components; instead, they transform the Olympics from a singular, event-led spectacle into a continuous process of metropolitan transformation. These two structures, efficiency (Beijing) and adaptability (Turin), are the theoretical centerpiece of adaptive Olympic urbanism. This conception of legacy, instead of being a predetermined mission or a chance outcome, is coproduced by institutional actors and citizen involvement over time.

-Theoretical Significance: Event Led Urbanism to Adaptive Urbanism

The academic importance of this framework to redefining Olympic Urbanism as an adaptive system rather than an event-led system. Conventional academic discourse on mega events, particularly the Olympics, tends to adopt one of two paradigms: the instrumentalist paradigm, which views the Olympics as state-led infrastructure instrumentality, or the critical paradigm, which critiques the sociocracies inequalities of mega events. However, both paradigms also note the Olympics as temporary deviations from the normative processes of urban governance (Hiller, 2000; Roche, 2003). The seven-

dimensional framework developed in this thesis offers a more nuanced understanding, as it draws from both the efficiency logic in Beijing and the adaptive logic in Turin, and establishes the basis of a hybrid grid of event-led adaptation, whereby the megaevent becomes an experimental site for the governance of innovation, transferred technologies, and social cocreation. The model makes contributions in relation to three academic discourses in discussing the 'Olympic legacy':

Event urbanism and Legacy Theory. The model changes the discourse of legacy and treats it as a process of governance rather than an outcome or post-event condition. Legacy is not grounded in “what remains,” but rather “what evolves,” or how relationships evolve between infrastructure, institution, and identity (Girginov & Hills, 2009).

Industrial Heritage and Urban Regeneration. The model emphasizes adaptive reuse and incremental renewal, as it mediates brownfield regeneration and reconciles maintaining industrial memory with ecological transition, thus providing a roadmap contextual to steering urban futures beyond the syndrome of “build and abandon.” (Della Sala, 2023)

Urban Resilience and Sustainability. the model positions Olympic legacy within a larger discourse of urban resilience, where sustainability lies in adaptability—not permanence (Lanzani, 2018; Zucconi, 2020).

Consequently, the seven-dimensional model functions as both a diagnostic and prescriptive instrument for evaluating the quality of legacy, and advocating post-event governance reform and facilitation.

Strategic Recommendations for Milan 2026:

Empirically, the framework is not so much theoretical as it is operationally translatable. For Milan 2026, this means utilizing policies that successfully put into practice the seven

dimensions during the planning, implementation, and post-event transition phases.

1. Institutional Integration and Transparency

Create a Permanent Legacy Observatory that will measure social, economic, and environmental outcomes at Olympic sites.

Use Integrated Master Schedules (IMSS) and Earned Value Management (EVM) to ensure transparency throughout the process (Lundquist, 2025).

Encourage data transparency through the production of an online Olympic data portal with access to all urban and financial metrics.

2. Spatial Regeneration and Adaptive Reuse

Prioritize the transformation of brownfield sites (i.e., Porta Romana, Bovisa, and Santa Giulia) in the spirit of “legacy design.”

Introduce flexible and modular structures that will provide opportunities for the venues to adapt from Olympic to civic purposes after minor renovations.

Create an Adaptive Reuse Toolkit to provide guidance for architects and planners to consider heritage, ecology, and community needs in their reconceptualization.

3. Social Participation and Inclusive Planning

Create a Participatory Budgeting (PB) framework and allocate funding from Olympic revenues for local initiatives.

Build upon the Community – Academia – Industry Volunteer Network to build excitement about civic engagement beyond the events' conclusion.

Develop Co-Design Laboratories in Olympic districts to involve citizens in the collaborative design of the future use of public spaces.

4. Economic Diversification and Innovation Ecosystems

Support the creation of the Olympic innovation corridor linking the research, design, and manufacturing clusters along the Bovisa – Porta Romana.

Provide tax incentives for low-carbon and circular economy businesses.

Encourage cross-sector partnerships between universities and private companies for the incubation of innovation and green technology transfer.

5. Network Integration and Urban Mobility

Link all Olympic sites through a low-emission, multimodal mobility system that coordinates metro, cycling, and pedestrian networks together. Encourage transit-oriented development (TOD) around primary stations to create a fusion of residential, cultural, and commercial purposes.

Apply principles of the “15-minute city” to ensure neighborhood-level service and spatial accessibility.

6. Cultural Continuity and Education

Establish the Milan Olympic Cultural Alliance to integrate Olympic legacies with ongoing events (e.g., Design Week and the Triennale).

Launch the Olympic Education and Urban Regeneration Program in partnership with educational institutions (i.e., university and school education).

Create a Digital Olympic Archive, maintaining a collective memory of citizens, volunteers, and cultural makers.

7. Environmental sustainability and co-governance

Enforce Olympic Green Building Standards within subsequent development projects, requiring that a minimum of 50% energy from renewable sources be implemented in new venues.

Establish the Community Green Observer Network for environmental monitoring undertaken by citizens.

Institutionalize “Everyday Ecology,” converting temporary environmental initiatives into long-term choices for the city.

Collectively, these approaches cast Milan's Olympic project into a multiscale governance ecosystem – to operate across institutions, we derived environmental governance frameworks across infrastructures, localities, and communities beyond the Olympic and cultivate the Olympic legacy as a live legacy, not a fixed monument or being memorialized.

-Reflection and Getting Through Life

The Milan 2026 Winter Olympics not only symbolize Italy's reemergence back into the global stage of mega events but, more importantly, emerge as a critical barometer for whether Europe can conceptualize and maneuver innovative questions of urban governance under the imperative of sustainability.

The adaptive model birthed through this thesis integrates the Olympics as an ongoing process of learning, negotiation, and reinvention, rather than a cyclical process of construction and celebration.

From Beijing, we learned the discipline of coordination. From Turin, we learned the resilience of reinvention. Together, these attributes represent a hybrid legacy compatible with contemporary European urbanism, which is simultaneously decentralized yet cohesive, heritage conscious yet future focused, urban and geographically local but connected globally.

Beyond Milan, the SevenDimensional Framework provides a reference point for forthcoming host cities like Los Angeles 2028 and Brisbane 2032.

It can serve as both an evaluative measure and as an action strategy towards the economic aspirations, environmental responsibility, and social equity of event-led envelopment.

At its core, the Milan 2026 Games will be not only defined by architecture or logistics, but will provide a standard for them related to how it develops the relationship between the Olympics and the city.

If the Games succeed in transforming Milan into a model of adaptive, inclusive, and sustainable urbanism, this will signify the start of a new chapter for the Olympic movement.

not where a city hosts the Olympics, but where the Olympics host a city.

-Theoretical Implications and Original Contributions

In conclusion, the comparative case of Beijing, Turin, and Milan provides evidence that the Olympic Games can be seen not as an ongoing sporting event for approx twenty-six days, but as an ongoing tool of urban adaptation, regeneration, and innovation of governance systems. Stemming from this evidence, this study presents a new theoretical proposition, Adaptive Olympic Urbanism, to illustrate how host cities internalize the Olympic impulse into their spatial, institutional, and cultural systems. This proposition attempts to provide a romantic contextualism to the existing concept of event-led urbanism, which, for example, often presents the Olympics as a singular, isolated experience, rather than a continual iterative event of adaptation transformation embedded with the development trajectory of each city.

1 Transition from Event-led Urbanism to Adaptive Olympic Urbanism

Conventional event-led urbanism theories (Essex & Chalkley, 2004; Hiller, 2006) focus on megaevents as a catalyst for investment, infrastructure expansion, and image branding, while often neglecting the time and systemic continuity of Olympic legacy beyond the event cycle. The histories of both Beijing and Turin show that the Olympic legacy is not strictly "after" the Games, but rather "with" the city — impacting policy choices, governance models, and sociocracies' identities over decades.

Adaptive Olympic Urbanism, thus, reimagines the relationship between megaevents and urban transformation as cyclical and context sensitive, where the Olympics are not only a catalyst, but also an experimental landscape for urban development strategies that span time. In this form, each Olympic city produces its own adaptive pathway: Beijing and the institutionalization of sustainability governance, Turin in terms of culture and postindustrial reinvention, and Milan in the form of incorporating resilience-based planning within its existing urban framework.

2 Developing the Seven-Dimensional Legacy

Framework as an Analytical Innovation

Building on the findings from the comparative analysis, this research both refines and extends preceding legacy assessment models (Preuss, 2019; Girginov & Hills, 2009) into

a SevenDimensional Legacy Framework, consisting of the governance, spatial, social, economic, cultural, network, and ecological dimensions. While earlier frameworks focused on an objective tally of legacies centered on tangible features such as built infrastructure or economic returns, for example, the SevenDimensional Legacy Framework centers on the interdependence of hard and soft legacies — not simply an outcome of synonymous existing with a unique policy — and pulls material, institutional, and symbolic legacies into one form of evaluation. This framework, which features seven manners of understanding dimensions of Olympic legacy within a multiscale and multitemporal system, allows for a more integrated view of Olympic legacy. First, the governance dimension describes how institutional learning and interagency collaboration materialize; the spatial dimension describes what is meant by "reprogramming" and "reconnecting" built environments; the social dimension describes what was meant by participation or inclusivity or volunteering; the economic dimension describes observable evidence of resilience to postindustrial restructuring; the network dimension describes regional and transnational attachments associated with the host event city; the cultural dimension addresses how civic identity and symbolism endure; and the ecological dimension assesses sustainability as well as measures of ecological adaptation and response. Together, the possible consolidation of these associative layers affords both a theoretical and methodological contribution. In adopting this seven-dimensional framework, it serves a larger purpose than simply a methodological analysis to understanding Olympic legacy, as its application does offer some potential beyond the Olympics to other forms of megaevent urbanism as well, such as the World Expo or Commonwealth Games.

3. Integrating Legacy Theory and Adaptive Governance

Another theoretical contribution of this research was the connection of legacy governance to adaptive systems theory. Clearly, successful Olympic cities demonstrate that some iterative levers and mechanisms link the event planning phase to the generated policy

reform phase, together with the post-event, or post-re-event management phase. These observations relating to Olympic legacy governance have some important relationships to concepts of adaptive governance in urban sustainability (Folke et al, 2005), which identified institutional adaptability and change, intersectoral collaboration, and iterative learning feedback loops as ways to conceptualize a long-term form of resilience. The idea of an adaptable loop can be clearly observed in Beijing's transition from infrastructure-led modernization (2008) to an adaptation to some form of sustainability and governance (2022). In Turin, a supportive case of adaptive governance and legacy adaptation and reuse can be observed through how the featured industrial heritage structures were transformed into cultural assets. Lastly, in Milan, current preparations for 2026 appear to be attempted with an active integration of legacy planning even before the start of the games into regional policy. Along with the examination of these cases, adaptive governance – rather than monumental building – defines the value and durability of an Olympic legacy.

4 Towards a Global Model of Adaptive Olympic Urbanism

In all, this research proposes a generalizable theoretical model of the Olympic Games as a vehicle of adaptive urbanism. It does not view legacies as static assets, but reconceptualizes legacies as dynamic capacities – or the capacity of a city to absorb change, repurpose infrastructure, and evolve governance arrangements in the midst of changing social and environmental conditions.

From this perspective, Adaptive Olympic Urbanism provides a different lens through which to think about megaevents as situated within the long-term metabolism of a city – one that seeks to sync event planning with sustainable urban transformation. Additionally, it enhances the global dialogue on legacy planning with emphasis on resilience, inclusivity, and contextual adaptability, providing cities that host the Olympic Games with a replicable but flexible framework for structuring a legacy of the Olympic impulse into ongoing urban progress.

-Limitations and Future Research Directions

In adapting the Adaptive Olympic Urbanism framework, this study sought to make a broad theoretical and comparative frame with which to understand the relationship between the Olympic Games and urban transformation, and there are limitations to this study that should be noted and acknowledged in future studies. These limitations emerge primarily as temporally, methodologically, and contextually. At the same time, these limitations enable valuable directions for refining and testing the Adaptive Olympic Urbanism framework in the future.

1 Temporal and Empirical Limitations

As noted earlier, a significant limitation of this study is the lag of empirical verification. While Beijing and Turin may offer a wealth of post-event data points, their Olympic cycles have just been completed, and the Milan 2026 Winter Olympic Games are still in their preparatory phase. Much of the analysis about Milan's potential legacy will be predictive and interpretive, and less about measurable outcomes. Conclusions about Milan are drawn almost exclusively through planning documents, organizational policies, and statements made by government representatives. Although this information is useful, it amounts to a documented intent rather than outcomes.

In addition to that, the verification of Olympic legacies is time-lagged to some degree, depending on the material, institutional, and social outcomes of the legacies, some of which may take years, if not decades, to formulate. This means that the verification of sustainability, urban governance change, or social inclusion will require longitudinal evidence that is not available at this time. The impact of the recent global economic recession, recession-reducing austerity measures, has led to small public sector budgets to limit what governments actually do in relation to what they planned to do. Similar to many postindustrial cities, Milan faces higher gaps between legacy aspirations and the financial capacity to achieve them. That gap may have big implications for realizing the desired aspects of the Olympic plan.

For future research, there is merit in suggesting that a long-term follow-up study is needed, and particularly to follow up 1020 years after Milan 2026 to see if the legacy commitment can endure amid conditions of financial uncertainty and reduced state capacity.

2 Methodological Limitations

This research adopts a qualitative and interpretive methodological approach using examination of the policy documents, planning documents, and secondary data. Although this allows for a comprehensive exploration of institutional frameworks and spatial shifts, it simultaneously limits opportunities for quantitative verification. Any evaluative econometrics, geospatial models, and environmental accounting fell outside the scope of this study.

In future work, mixed-method approaches that combine an interpretive inquiry with data analytics may be adopted. GIS mapping could show changes in land use and mobility in ultrasound; econometrics could analyze the legacy projects' productivity changes; and environmental simulations could analyze the changes in carbon emissions and energy efficiency.

Such an approach would provide a stronger empirical base for Adaptive Olympic Urbanism, for it could be used as a conceptual analytical lens, and also as an employed and measurable policy tool.

3 Contextual and comparative limitations

The context limitations of this analysis also present observed limitations.

The selected cases of Beijing, Turin, and Milan present different social and political systems and trajectories of development, but remain rooted in the Chinese and Italian contexts. The selected cities also provide a meaningful difference in centralized governance and pluralistic governance, but differ from various Olympic legacies worldwide.

It should also be mentioned that this research is not meant to fully define a specific

mechanism for perfect policy retrocopies. The comparative method was mentored not toward modeling, but to critically investigate locally based practices with reflection. That said, the conditions of political systems, governance ideologies, and cultural mindsets, though, change how Olympic legacies are framed and functionalized. Diversity in collective values—between state-led mobilization cultures and participatory civic traditions—makes it inherently challenging to establish a universal model. Future research ought to explore how sociocultural cognition and political logic affect the transferability of legacy approaches across different cultures and systems of governance.

Furthermore, extending future case studies to the Global South (for example, Rio de Janeiro in 2016, or Johannesburg's experience of bidding) will facilitate consideration of handing legacies under conditions of limited resources or fragile institutions and further develop the contextual universality of the framework proposed in this study.

4 Theoretical and Conceptual Boundaries

On a theoretical level, Adaptive Olympic Urbanism remains an emerging concept that requires additional operationalization and cross-disciplinary quantification of performance. While this study provided a seven-dimensional Legacy Framework, the dimensions' interactions, governance, spatial, social, economic, cultural, network, and ecological have not been empirically codified, and each dimension requires measurable indicators, but such indicators must be drawn upon collaboratively by architects, urban planners, sociologists, economists, and environmental scientists.

The creation of a unified assessment system requires cross-sectoral collaboration, with recognition from multiple disciplines, analogous to the collaborative agreement on the implementation of Building Information Modeling (BIM) as an interdisciplinary standard. Creating a standardized Adaptive Legacy Index (ALI) would require not only academic agreement but also an agreement actively negotiated through academic conferences or organizations, or other means of international recognition. While it would be an extraordinarily difficult challenge to occur, the necessity for a unified metric to create

standardized comparable legacies in Olympic host cities in order to substantiate credibility in science is undeniable.

In addition, future research should demonstrate how adaptive processes evolve, whether they are occurring at a cyclic, incremental, or transformative timeframe, while also showing how these trajectories are positioned within larger and long-term spatial systems such as digital ciliation, climate change, or demographic transition. The amalgamation of Adaptive Olympic Urbanism with resilience theory or systems thinking, or postindustrial urbanism, will also advance the theoretical and interdisciplinary relevance.

5 Future Research Directions

Notwithstanding these limitations, this study has opened several viable avenues for future work on Adaptive Olympic Urbanism. These are intended to address both the empirical validation of Adaptive Olympic Urbanism and build theoretical depth.

First, future studies must relate to the evolution of Olympic legacy over time by focusing on the temporal aspect of adaptation. Legacy should be conceived of as an ongoing process of adaptation and learning typified by a post-event outcome rather than a single fixed outcome. Longitudinal studies across intervals — for example, five years, ten years, and twenty years after each Olympic Games — might reveal how cities institutionalize adaptation through governance reform and spatial reuse.

Second, research should aim to operationalize the Seven-Dimensional Framework by developing measurable indicators and observed data benchmarks. These indicators may include indices of governance transparency, spatial reuse ratios, participation rates, or records of GHG reductions. An Adaptive Legacy Index (ALI) can be developed to allow cities to compare systematically, as well as translate academic thinking into actionable governance instruments.

Third, future work should compare these adaptive governance mechanisms across political systems, looking at how institutional fluidity, policy continuity, and modes of citizen participation play out under different modes of governance. Comparing Beijing's state-led model to that of the negotiated governance employed in Turin and Milan will provide opportunities to consider how strategies could migrate, localize, or hybridize.

Fourth, future research should give attention to the long-term social and cultural dimensions associated with adaptation, such as identity building, volunteer networks, and civic engagement. Understanding how social and cultural “soft legacies” persist beyond the Games will be a valuable dimension to measuring an Olympic host city's inclusivity and cultural resiliency. In conclusion, researchers should investigate synergies between Adaptive Olympic Urbanism (AOU) and the United Nations Sustainable Development Goals (SDGs), especially SDG 11 (“Sustainable Cities and Communities”). Linking the Olympic legacy to this global policy setting will illustrate how mega events strategically align in relation to frameworks of sustainable urban governance and contribute to the broader global agenda of inclusive, resilient, and sustainable cities.

6 Final Reflection on the Development of Research

Ultimately, these limitations do not undercut the impacts of this inquiry, but rather emphasize the dynamic and emergent nature of Olympic legacy studies. The nexus of megaevents, shifts in governance, and sustainable development is a complex living system it is not static, but constantly shapeshifting due to feedback, adaptation, and innovation.

As cities around the world navigate economic uncertainty, social rupture, and environmental strain, there looks to be a tendency for the Olympic Games to be not only spectacles but also laboratories of adaptive governance and civic renewal. Refining Adaptive Olympic Urbanism via empirical testing, theory integration, and international collaboration is ongoing as an intellectual and practical pursuit.

The framework presented has not concluded, but rather the beginning of an open-ended

framework: a conceptual foundation for scholars, policymakers, and practitioners to think differently about how global events can ignite new forms of urban transformation that are more enduring, inclusive, and adaptive.

-Policy and Planning Implications

The comparative analysis between Beijing, Turin, and Milan captures the sense that while Olympic Games occur within a fixed timeframe, both the governance of, and spatial changes initiated by the Olympic Games can endure far outside the span of the Games. As a result, the most meaningful policy lesson is not the creation of a set of universal measures. Rather, it is to provide cities with a framework for reflection with which to view the Olympic experience as an ongoing agent of adaptive transformation.

1 From Event

Governance to Adaptive Urbanism: A key lesson relates to the transition in governance rationale. The Olympics should not be seen as a standalone administrative episode, but rather part of a longer process during which institutional learning, cross-sector coordination, and civic engagement have been gradually incorporated into the urban system. The case of Beijing's slow institutional trajectory and Turin's inability to maintain momentum demonstrates that the sustainability of the legacy relies less on the scale of investment than on the site's ability to relearn to adapt over time. For Milan—and future hosts—the ongoing legacy is likely to be developed not by the built works completed for the Games but through the establishment of a governance environment able to learn, recalibrate, and respond to the changing conditions.

2 Balancing Ambition with Feasibility

A second lesson relates to the same ongoing tension between ambitions and designations and resourcing. During a time of slower economic growth and public finance increasingly being reined in, the future of the Olympic legacy planning will depend on a more strategic understanding of feasibility. Milan is illustrative in this capacity: while the Games do allow for opportunities to regenerate the regional area, it is the pursuance of objectives that are accountable to fiscal realities that matter the most through branding and transportation

interfacing. Under these circumstances, cities should reconcile their Olympic goals with the realities of a sustained governance framework, reducing their reliance on spectacle-based decision-making through forms of transformation that are fiscally responsible and institutionalized as sustainable. The constructed infrastructure of the city can also be in service of the Games' time and longer-term planning, and this provides a connection around which to build.

3 Incorporation of Spatial, Social, and Institutional Dimensions

The research also points to the multidimensional nature of legacy.

Urban initiatives separate from social inclusion or cultural involvement experience much lower rates of retention, whilst participatory programs that are unmoored from institutional supports are also less likely to endure. Beijing is a case in point to understand successfully wedging culture and ecology into institutional structures of entrenchment, whereas in Turin strong connection to social supports failed to endure. For Milan, this would indicate that spatial planning, community-focused programming, and governance arrangements need to be seen as transaction-oriented and interconnected. In this transaction-oriented understanding, legacy might flow from the interchange of industrial legacies, civic energy, and communal stories into new urban value.

4 Developing a Culture of Measurement and Reflexivity

Another core implication has to do with the importance of systemic evaluation, monitoring, and assessment.

The Seven-Dimensional Framework in this research is premised that legacy could not be governed without ongoing metrics monitoring across institutional, spatial, social, economic, cultural, network, and ecological dimensions. Developing these dimensions into more specific indicators requires an awareness of the need for disciplinary collaboration and the development of an international discourse of shared standards. The BIM phenomenon illustrates how collective tools can help reform responsive professional practice; likewise, there would be significant benefits from collective indicators and shared grammar to assess legacy with better fidelity. Some versions of this collective activity will be complex. It might necessitate new cross-city coalitions or distinct

international avenues, but that difficulty comes part and parcel with its merits: by comparison, itself is a form of governance innovation.

5 Reimagining Olympic Legacies and Knowledge as a Commons

The final implication goes beyond any singular host city. When understood broadly, the Olympic legacy exemplifies a common pool of knowledge about urbanism, an ongoing collective experiment of cities that are attempting to test, share, and refine strategies for adaptation and amelioration for sustainability and inclusion. The new emergent collaborations between Beijing and Milan and the frameworks created in international agreements for cooperation suggest a broader conception of networked legacy governance. In this paradigm, the former host city participates not only in its local and regional regeneration track but also contributes to our collective repository of global urbanism thinking. Institutionalizing knowledge mobilization, host cities exchange, comparative research, and open data practices have the potential to reconfigure the Olympic event as its own perpetually held platform for cooperative innovation rather than an event that is done periodically.

6 Concluding Reflection

At the end of the day, the policy implications described here are not offered as a path that cities can follow as a prescription for doing them. Rather, we propose that cities look to cultivate a form of adaptive stewardship in which treating reflection and learning as part of the apparatus for governance. Viewed in this way, the Olympics are transformed from a bounded Festival into a moment in which the bigger question about urban aspirations, scarcity of resources, and aspects of identity are rendered visible.

For Milan 2026 and subsequent future hosts, the task ahead is not to replicate successes previously done, but to internalize principles that underscore adaptability, inclusivity, and resilience. This is the only way the Olympic Games' legacy can become a living process, one that can sustain urban development and expand our collective capacity to dream, imagine, and adapt.

PART 5: Final Conclusion

-Revisiting the Research Question.

This research started from a simple yet broad question of how the Olympic Games, as longstanding global megaevents, change cities and create legacies that last notably when local governments act under different systems of governance.

By considering Beijing (2008/2022) and Turin (2006) and starting to think about Milan 2026 as a one-directional case, this study demonstrated that the Olympic Games are less monolithic contests than two interlinked catalysts that are abutted to existing urban processes. They facilitate institutional coordination, site redevelopments, and renewed social and cultural life. However, in terms of relative depth and longevity, impacts differ greatly based on political organization, fiscal power, and local civic traditions.

-Theoretical Contribution: Adaptive Olympic Urbanism

In this way, the concept of Adaptive Olympic Urbanism is introduced, which challenges the notion that the Olympics matter as a transitory intervention, since they become intertwined with the city's very fabric. A previous reading tended to focus on either state-led modernization or strategic urban boosterism, and now we consider the coalescence of efficiency and resiliency: centralized authority can provide guidance and resources, while community engagement can help support continuity and local relevance.

The SevenDimensional Framework (governance, spatial, social, economic, cultural, environmental, and network dimensions) provides a wide-ranging framework for addressing how legacies emerge over time. This suggests that the most significant legacies from the Olympics do not always result solely as modern, or often postmodern, structures. Rather, legacies reside in a city's capacity to imbue new practices and instill institutional routines. Similar to other global standards such as BIM, constructing a shared international system to assess Olympic legacies is a collaborative and negotiating process

amongst institutions that would most likely require a temporally based cross-professional approach, and while this is aspirational, it is also worthwhile.

-Key Lessons from a Comparison

Beijing is an example of what can be done with strong state coordination. In two Olympic cycles, Beijing's institutional environment permitted various reforms while overseeing significant physical brownfield regeneration—an impressive example of this is the redevelopment of the Shougang complex to provide an urban park—while also integrating all-encompassing improvements that served an ecologically and infrastructurally supportive strategy for the city.

On the other hand, the conversation that Turin supports provides an alternative path of inquiry. In a constrained resource environment and a decentralized context, the city responded to a regeneration agenda that was established as a result of a cultural project, through more robust mobility networks, and associated civic actions. The Torino experience is less a series of abilities than an adaptive version of revolutionary legacies, which reinforces that the event and its sustainability are established less by the nature of the amount invested in Olympism than by civic engagement and smart governance.

In comparative terms, these two examples of building legacies themselves suggest that neither approach to cross dialogue is representative or sufficient without the other. The greatest legacies will emerge at the intersection of institutional capacity and civic ingenuity. For the City of Milan, this will require the establishment of a governance paradigm that is modelled as balanced, rational, and inclusive.

-Practical and Political Implications

The research provides multiple practical implications. When attitude is combined with some strategic thinking, the Olympic Games can be a lever for cities to pilot new modes of governance and ideas for long-term planning. For cities like Milan, one of the most important things to think about will be how to repurpose the temporary facilities built for

the Games as permanent institutional sites. A legacy connected to urban planning will be worth much more than a legacy that is only associated with physical structures.

In an environment of massive economic uncertainty and constrained public budgets, cities will need to adopt more pragmatic approaches to urban planning and development. It is becoming increasingly difficult to legitimize large-scale projects when you have more pragmatic paths forward, such as through adaptive reuse, incremental renewal, or participatory design. Fiscal discipline does not compromise ambition; rather, it strengthens a transformation's robustness and equity. When communities, volunteers, and artistic actors participate in Olympic city celebrations, the Olympics can help encourage civic engagement in ways that extend beyond the celebration.

The governance of legacy should also be understood as an ongoing process rather than a stopping point once the Games have concluded. Effective forms of transformation require coordination among municipal, regional, and national governance levels. Public-private partnerships, transparent financing, and long-term governance structures can work to bridge fragmentation and build public trust. In this way, the Olympic legacy applies a form of governance ecology that can continue to encourage experimentation beyond the closing ceremony.

-Limitations & Future Research

There are a number of limitations that can be acknowledged. The most immediate limitation relates to the time: Milan 2026 has yet to occur, and therefore any assertions about the post-Olympics legacy can only be taken provisionally. Longitudinal evaluations—five, ten, or even twenty years after the Games—are necessary to know whether the expected adaptive outcomes were achieved.

Economic and political constraints are another possible challenge. The recent slowdown and shrinking budgets of public finances demonstrate the fragility of ambitious legacy programs. Cities with limited financial capacity may need to take stock of how to temper their willingness to trail blaze with the need to be fiscally responsible. Thus, comparative

research will need to be conducted across a varied set of political contexts to further consider how the culture of governance impacts the potential for legacy adaptation.

Thirdly, measurement is a limitation. The SevenDimensional Framework provides conceptual coherence, but pulling the framework into a set of usable indicators requires disciplinary oversight. While comparisons through a standardized global index may be difficult to establish, the index would significantly contribute to the legacy analyzed in comparative value. Finally, this study has demonstrated the importance of cultural context. Even when cities have aspired to or aligned with the same principles, the practice of those principles "looks" different according to the local norms, institutional context, and shared narrative history of each city. Therefore, future studies could articulate meaningful overlaps of future induction of quantitative measures of Adaptive Olympic Urbanism, qualitative approaches in cultural perception analysis, and questions of ethnographic inquiry that incorporate sociocultural legacies of programs across the adapted Olympic Urbanism model that have an international relevance.

-Greater Implications for Milan and beyond

Looking forward, the Milan 2026 Winter Olympic Games will provide an opportunity for Europe to radically rethink the larger issue of mega-events and urban sustainable development. The Milan 2026 Winter Olympics can draw from Beijing's coordinated approach and Turin's incremental, community-driven model that inserts the European version of adaptive urbanism that could act to blend institutional joining with spatially flexible, socially inclusive, rationalized technologies.

If the model is successful, it could turn Milan into a laboratory for policy and urban experimentation, creating an environment where all Olympic investments serve both the broader Olympic agenda and the longer-term metropolitan aims. The model could also assist future hosts (Los Angeles 2028 and Brisbane in 2032) to begin demonstrating how legacy can be seen as a coherent governance paradigm rather than an ideal promise.

Ultimately, this study demonstrates that the Olympics are not just an event in a city, but rather part of the ongoing evolution of a city. The societies explored in this analysis share in the negotiation of *_ambition_*, *_limitations_*, and *_who they are_* in a rapidly changing world. The model of Adaptive Olympic Urbanism extends beyond the Games to convey a broader set of possible experiences of urban governance that are rooted in *_learning_*, *_adaptations_*, and in a *_sustainable and human-centered_* way. Every host city engages in the same narrative to mark the evolution of a city and to have global attention turned to the enduring motion of renewal.

Discussion

This thesis examines the relationship between Olympic legacies, urban governance, and post-industrial transformation through a comparative analysis of Beijing, Turin, and Milan. Having explored these themes both empirically and theoretically, this study proposes several open-ended questions for future academic research, inviting further discussion and reflection among scholars, educators, and graduate students. This section aims to present these issues for deeper exploration rather than offering definitive conclusions.

Topic 1. Viewing “Legacy” as a Process Rather Than an Outcome

As one of the paper's core arguments, legacy is understood as an ongoing urban evolution rather than a predetermined singular outcome. This article delves into the contrasting temporal trajectories of Beijing and Turin: Beijing underwent two Olympic cycles under state-led development, while Turin demonstrated a slower, path-dependent yet contentious transformation process:

How should legacy be conceptualized—as infrastructure, governance systems, or cultural reproduction mechanisms?

If legacy exhibits temporal lag, how should “success” be evaluated?

Under differing governance systems, what fundamentally drives variations in legacy

formation—institutional factors or cultural dynamics?

Topic 2. Event-Driven Urbanism vs. Adaptive Urbanism

Regarding the thesis proposing Adaptive Olympic Urbanism as an alternative theoretical framework, the following questions arise:

Can the Olympics serve as a long-term “testing ground” for cities? Or does its mandatory timeline inevitably prioritize short-term objectives?

Does the adaptive model overestimate a city's capacity to coordinate diverse stakeholders' interests?

Can the Olympics truly be integrated as part of a city's existing long-term planning, or do they function as a specific event that diverts or even distorts the city's original development trajectory?

Topic 3. Resilience, Sustainability, and the “Green Olympics”: Are They Truly Real?

Beijing 2022 is hailed as a landmark case for sustainable Olympics, yet numerous issues persist behind this green facade:

Are the green achievements structural? Or do they depend on high-investment “special moments”? Or are they merely a gimmick?

Does carbon neutrality account for overall environmental costs, such as artificial snowmaking and high-speed rail construction?

How can we evaluate the ecological legacy from a broader societal perspective and an ecological transition angle, rather than solely based on emissions data?

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