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Spatial Planning and Sustainability in the Application of the Olympic Agenda 2020

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MEGA-EVENTS AS URBAN GAME CHANGERS?

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SPATIAL PLANNING AND SUSTAINABILITY IN THE APPLICATION OF THE OLYMPIC AGENDA 2020: A COMPARATIVE ANALYSIS OF PARIS 2024 AND MILANO CORTINA 2026

Abdallah Jreij[1], Zachary M. Jones[2], Davide Ponzini[1], Stefano Di Vita[1]

Abstract

Growing concerns over the sustainability of sports mega-events have reduced the number of cities willing to host them. In response, the International Olympic Committee (IOC) launched Agenda 2020 in 2014 to reform the extant Olympic bidding process. It aims to encourage the use of existing or temporary venues and adaptive spatial strategies which minimize environmental and financial burdens.

This paper investigates how Agenda 2020 has reshaped the spatial and environmental dimensions of Olympic planning by comparing Paris 2024 and Milano Cortina 2026; the first Summer and Winter Games fully organized under this framework. Through comparative case study analysis, the paper examines the relationship that exists between global sustainability goals and local planning practices, focusing on the spatial logics, legacy strategies, as well as the plans of the Saint-Denis and Porta Romana Olympic Villages.

The study demonstrates that while Agenda 2020 promotes more flexible and territorially distributed configurations–diffused and constellation models–in its two applications, it tends to favour already well-equipped regions and produces uneven environmental and social outcomes. Despite the progress achieved through the new Agenda, the findings highlight the contradictions that exist between the IOC's sustainability discourse and the territorial realities of host cities and regions. In so doing, it offers insights for future mega-event planning and policy design under conditions of environmental pressure and hosting-requirement constraints.

Keywords:

Mega-events; Olympic Games; Spatial Planning; Paris 2024; Milano Cortina 2026; Agenda 2020.

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1. Introduction – Mega-events landing in place

Mega-events have long functioned as catalysts for urban and regional transformation, yet their forms (e.g., sport vs. cultural), scales (e.g., mega vs. giga vs. hallmark), and legacies (e.g., positive vs. negative; tangible vs intangible) vary widely (Müller, 2015). They can be concentrated in compact clusters, diffused across metropolitan areas, or distributed over vast region; each configuration generates distinct environmental, economic, and social consequences (Bortolotti *et al.*, 2024a; Jones, 2024; Ponzini et al., 2024).

Over the last two decades, the escalating costs, environmental risks, and political contestations surrounding such events have led to a decrease in the number of cities bidding to host the games (Lauermann, 2020; Oliver and Lauermann, 2017). The IOC's Agenda 2020, introduced in 2014, sought to restore the legitimacy of the Games by prioritizing sustainability, cost-efficiency, and flexibility in host-city/region selection and planning (International Olympic Committee, 2014).

Paris 2024 and Milano Cortina 2026 are the first Olympic editions–Summer and Winter–to implement these reforms from the earliest stages of the bidding process through to both the planning and eventual delivery of the respective Games. Both games reinterpreted the IOC's sustainability narrative which focused mainly on maximising the use of existing or temporary infrastructure, and both produced different spatial configurations:

- **Paris 2024** adopted a diffused model, dispersing events across historic urban sites and the city's existing metropolitan infrastructure;
- **Milano Cortina 2026** employed a constellation model, spanning more than 400 km between the urban centre of Milan and the Alpine regions of Cortina d'Ampezzo, Livigno, and Val di Fiemme (Jones, 2024).

These spatial configurations draw on an emerging typology in mega-event urbanism (Jones, 2024; Bortolotti *et al.*, 2024a). The traditional 'platform' model (Anchored and Satellite) concentrates venues within a purpose-built, bounded precinct, a dedicated Olympic park or zone, maximising logistical efficiency but also generating large-scale new constructions and, potentially, post-event white elephant risks (e.g., London 2012, Sochi 2014). In contrast, a 'diffused' model disperses events across existing urban fabric and pre-existing infrastructure within a metropolitan area; thereby minimising new construction while leveraging the given city's existing spatial assets. This model was not common for the Summer Olympics prior to the Agenda 2020, but it is common to the Winter Olympics and other large events. A 'constellation' model extends this logic further, distributing event locations and clusters across multiple cities or regions–often spanning hundreds of kilometres–to embed the Games within heterogeneous territorial systems. These cases embody a major shift from previous 'platform' models (e.g., London 2012, Sochi 2014) toward territorially extended approaches that try to embed Olympic projects into pre-existing urban systems and morphologies. Whether this spatial spread truly delivers sustainability or merely redistributes costs and impacts across wider territories remains an open question.

This paper asks: How has the IOC's Agenda 2020 influenced the spatial strategies and sustainability outcomes of recent Olympic Games, and what do the cases of Paris 2024 and Milano Cortina 2026 reveal about the evolving relationship that exists between global Olympic agendas and local planning practices?

By comparing two events of different categories, scales, geographies, and governance systems, the paper makes three interconnected intellectual contributions. First, it advances existing mega-event urbanism literature by empirically observing how Agenda 2020's spatial reforms translate–or fail to translate–into sustainability outcomes in distinct territorial contexts. Second, it contributes to spatial planning theory by examining how global policy frameworks interact with local governance arrangements and planning cultures to produce divergent outcomes even under the same normative agenda. Third, it develops spatial justice as an operational analytical lens for evaluating mega-event planning; moving beyond infrastructural efficiency metrics toward questions of territorial equity, displacement, and long-term accessibility.

To address the paper's primary research question, the paper first traces the theoretical intersection between mega-event spatiality and sustainability (Section 2). It then outlines a comparative methodology and criteria for analysing planning documents and urban legacies (Section 3). Finally, it examines how each host city/region

operationalised Agenda 2020 through its spatial configurations as well as the design and transformation of an Olympic infrastructure: the athletes' villages. In particular, sections 4 and 5 discuss the cases of Paris 2024 and Milano Cortina 2026. Section 6 offers a cross-case analysis and synthesis table. Section 7 concludes with reflections for future policy and planning.

2. Mega-events, spatial strategies, and sustainability

2.1 From mega-event spatiality to planning theory

Scholars have conceptualised mega-events as 'exceptional planning regimes' that compress time, mobilise extraordinary resources, and often suspend ordinary governance in order to meet the event's deadline (Basso, 2017; Flyvbjerg & Stewart, 2012; Gaffney, 2013; Müller, 2015). Within this context, spatial configuration–the territorial arrangement of venues, infrastructures, and supporting urban projects and developments–plays a decisive role in shaping environmental, economic, and social outcomes (Essex & de Groot, 2017; Gold & Gold, 2008).

Historically, and for matters of logistical efficiency, Olympic models privileged compactness and visibility: monumental clusters designed as icons of national prestige (Kassens-Noor, 2012). However, this approach often produced long-term liabilities and negative legacies – "white elephants" – and extensive ecological disruption (Müller, 2015). Compact Olympic models tended to encourage the production of white elephants because they centralise a large number of highly specialised venues into a single purpose-built park. This concentration inflates the scale of facilities beyond everyday local demand, limits flexibility for adaptive re-use, and encourages monumental construction driven by political visibility rather than long-term viability. As a result, post-Games maintenance costs often exceed operational capacities, leaving many venues underused or abandoned. Athens 2004, Rio 2016, and Sochi 2014 are cases in point. The conception of Agenda 2020 reframed this logic by promoting flexibility and reuse, aligning, in theory, Olympic delivery with principles of sustainable urbanism and context-sensitive planning.

In this paper, sustainability is not understood merely as the environmental efficiency of buildings–such as energy performance, material consumption, or certification standards at the venue scale. Rather, it is approached through three interrelated dimensions: (i) environmentally sound spatial decisions, including site selection, prior land use, and whether development would have occurred independently of the Olympics; (ii) socio-spatial equity; and (iii) the long-term adaptability of event-related infrastructure. From a spatial perspective, sustainability concerns not only the reduction of new construction, but also the territorial distribution, siting, and post-Games transformation of facilities, including athletes' accommodation.

In planning theory, the above-mentioned shifts can be interpreted through three overlapping analytical lenses. First, spatial planning is conceived as the coordination of sectoral policies and spatial interventions across multiple scales (Healey, 2006). Second, sustainability transitions emphasise adaptive, long-term governance arrangements and resource-efficient socio-technical change (Geels, 2010). Third, spatial justice foregrounds questions of equity in the distribution of benefits, burdens, and risks (Soja, 2010).

Taken together, these perspectives provide a robust theoretical foundation for examining how mega-event planning engages with territorial transformations and sustainability. It also helps to clarify how the IOC's reforms intersect with local governance capacities. The spatial configurations of mega-events help show the different institutional and non-institutional actors mobilized by event-related projects and effects. In this sense, the observation of a 'spatial turn' in Olympic policy entails not only technical adjustments to venue location but also a reconfiguration of power, structure, responsibility, and legitimacy in the governance of mega-events. From this perspective, this contribution seeks to provide understanding as to whether the spatial turn of the Games enables a stronger connection between the mega-event and the local needs of the host cities and regions to be realised. This is a relevant challenge for evaluating the effects of the new Olympic Agenda, which risks generating multiple contradictions. Spatial justice, as deployed here, refers specifically to the equitable territorial distribution of the benefits, costs, and risks generated by mega-event investments–including affordable housing provision, transport access, community displacement, and the long-term

usability of converted infrastructure (Soja, 2010). Rather than treating spatial justice as an abstract normative horizon, this paper uses it as an empirical lens through which to assess whether Agenda 2020's spatial reforms narrow or widen territorial inequalities in host cities and regions. The two cases examined here allow us to test whether diffused and constellation configurations advance spatial justice in practice, or whether they merely relocate and redistribute its contradictions across larger territories.

2.2 Agenda 2020 and the evolution of spatial strategies

The IOC's Agenda 2020 and the subsequent Agenda 2020 + 5 (International Olympic Committee, 2014, 2021) seek to transform the bid process from a competitive race between candidate cities into a continuous dialogue between potential host cities and regions, and the IOC. According to the Agenda 2020+5:

- no new venues are needed, and the use of temporary venues is encouraged;
- sport can take place outside one single host city, where appropriate, and;
- from the candidature onwards, the Olympic Games are based first and foremost on long-term sustainability, including from an economic standpoint (International Olympic Committee, 2021).

It follows that the new framework encourages host cities and regions to maximise the use of existing or temporary venues, to reduce both financial and environmental costs, and to integrate Olympic-related projects within established planning frameworks. This model allows multi-city/region or even cross-border events; thereby breaking with the historical requirement of there being a single host city. At the same time, however, it also risks privileging well-equipped metropolitan regions with robust infrastructures and governance capacity (Lauermann, 2020).

This change in process has resulted in spatial dispersion becoming a new sustainability narrative: the Games can now be spread over broader territories; justified on the basis of its being more resource-efficient and context-sensitive. However, diffusion across multiple sites introduces logistical complexity, higher transport-related emissions, and fragmented governance. Relations with pre-existing infrastructure and facilities as well as the descending spatial effects of the same, have received limited attention so far. The Paris 2024 and Milano Cortina 2026 Games exemplify these tensions, which reverberate on the sustainability of such processes.

Through the lens of spatial planning, Agenda 2020 represents an attempt to reconcile global sustainability norms with local territorial realities–but it also exposes the contradictions between symbolic 'green' commitments and uneven spatial development.

3. Comparing Paris 2024 and Milano Cortina 2026

3.1 A comparative case-study approach

This research employs a comparative case-study approach to examine how the principles of the IOC's Agenda 2020 have been interpreted and operationalised in two distinct contexts. The cases were selected because they were the first Summer and Winter Olympic Games fully shaped by Agenda 2020. Study of the same therefore allows an in-depth comparison of spatial planning strategies under the same global policy framework but in contrasting geographical, governance, and seasonal conditions. The methodology and discussion of the two cases acknowledge the substantial differences between Summer and Winter Games in terms of size, budget, attendance, media visibility, and sustainability records (Müller *et al.*, 2021).

The study relies primarily on document analysis, drawing on IOC policy materials (including Agenda 2020, Agenda 2020+5, sustainability reports, and host-city/region contracts); official planning and design documents produced by SOLIDEO for Paris 2024 and by the Fondazione Milano Cortina 2026; municipal and metropolitan spatial plans, environmental impact assessments, and governmental communications; as well as secondary academic literature on Olympic urbanism, mega-event governance, and sustainability.

Additionally, comparative site visits were conducted at both locations on multiple occasions, often in collaboration with student groups - enabling closer observation of the development processes. These visits also facilitated informal exchanges with local stakeholders and actors, which provided supplementary contextual information, even though this was not attained through formal interviews.

Documents were reviewed for the period 2014–2024 which covered the bidding, planning, and pre-implementation phases of both Games.

3.2 Analytical dimensions

Four analytical dimensions guided the interpretation of the cases. The first concerns spatial configuration; namely, the degree of concentration or dispersion of venues. The second relates to governance structure and focused on coordination mechanisms across institutional scales and policy sectors. The third addresses sustainability strategy, and encompasses environmental, economic, and social objectives, as well as the instruments deployed to achieve them. The fourth examines legacy projection, including anticipated post-Games uses and longer-term territorial integration.

Each dimension was coded qualitatively to identify convergences and divergences between the two cases.

3.3 Limitations

No structured or planned interviews were conducted; findings are based mainly on secondary sources and documentary evidence. This limitation is acknowledged; however, it is mitigated by the authors having cross-checked several authoritative documents, relevant peer-reviewed literature, and the personal familiarity of the authors with both contexts. The comparative design enables the extraction of analytical insights rather than causal generalisations. In the empirical sections that follow (Sections 4 and 5), each case is examined in light of all four dimensions: spatial configuration is addressed in the planning rationale and spatial strategy subsections; governance structure is explored through the delivery and implementation subsections; sustainability strategy is assessed through the specific features and framing of each Village; and legacy projection is discussed in the legacy subsections. The comparative synthesis in Section 6 then applies these dimensions symmetrically to both cases through a structured table and cross-case narrative.

4. Paris 2024 Summer Games

4.1 Spatial configuration and planning rationale

Paris 2024 marks a milestone in the IOC's reform era as the first Summer Olympics fully structured around Agenda 2020. The diffusion strategy in Paris was framed as a sustainability measure that reduced new permanent construction and embedded Olympic venues into existing metropolitan infrastructures. However, the extent to which dispersion alone produces environmental or social sustainability remains contested. The bid capitalised on the ongoing *Grand Paris Express* infrastructure programme and embedded the Games within France's largest metropolitan development initiative. Although a number of competitions were held in other French cities (e.g., Lyon, Lille, Bordeaux, Nantes) and overseas territories (Tahiti), the Paris masterplan was organised around two complementary zones. The Paris Centre Zone showcased iconic landmarks–such as the Eiffel Tower, Champ de Mars, and Place de la Concorde–through temporary installations. The Grand Paris Zone, centred in Seine-Saint-Denis, provided a concentrated zone for the main permanent facilities, including the Aquatics Centre, the Media Village, and the Olympic Village.

Within the Grand Paris Zone, the venues were situated within a 10-kilometre radius of the Olympic Village in Saint-Denis (see Fig. 1). Approximately 95 percent of venues were existing or temporary; an unprecedented figure in Olympic history (Lopes dos Santos & Delaplace, 2024). The spatial spread was framed as a sustainability strategy, reducing new construction while extending the Games and investing in development projects beyond the capital's historical core. The number of visitors was 11.2 million and these persons were distributed on multiple locations (Paris 2024 Organising Committee, 2024).

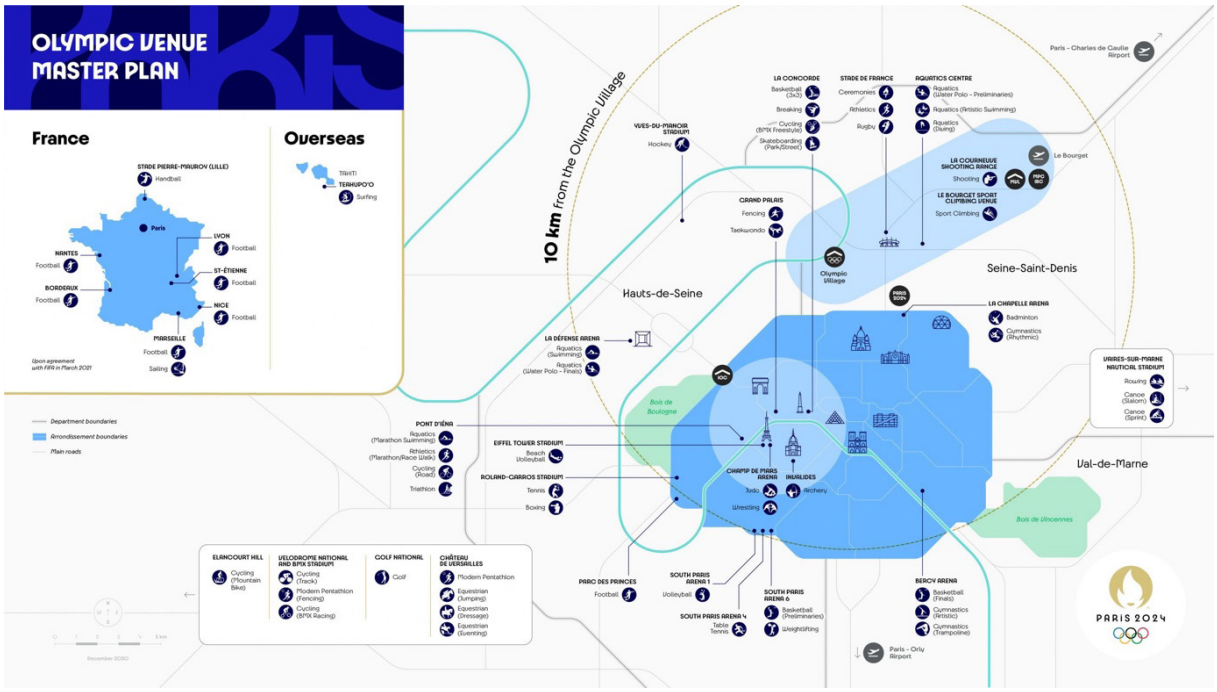

Fig. 1. The official Paris 2024 Olympic Venue Masterplan. *Source: Olympic Games Paris 2024*

4.2 Governance and implementation

Planning responsibilities were distributed across both national and metropolitan bodies. SOLIDEO oversaw the delivery of Olympic infrastructure in the Paris 2024 cluster, including construction programming, and cost and schedule control. The Métropole du Grand Paris acted as the project owner for major metropolitan-scale venues (such as the Olympic Aquatics Centre) and coordinated metro-scale planning. Local municipalities, most notably Saint-Denis, maintained municipal planning responsibilities and participated primarily in a consultative capacity rather than functioning as principal decision-makers (Faure, 2021).

This multilevel structure enabled coordination but also generated fragmentation and limited local participation–typical of 'exceptional planning regimes' (Wolfe, 2023).

4.3 The Saint-Denis Olympic Village

The Village, spanning 52 hectares across Saint-Denis, Saint-Ouen, and L'Île-Saint-Denis, was both the emblem and the test of Paris 2024's sustainability claims. Although Agenda 2020 prioritises venue reuse, athletes' villages remain the most structurally transformative Olympic infrastructures and raise questions about whether long-term housing conversion should be evaluated as a sustainability outcome or primarily a legacy outcome.

Designed for 14,000 athletes, it will be converted post-Games into a mixed-use neighbourhood with roughly 2,200 housing units (half social or affordable), offices, schools, and public amenities (SOLIDEO, 2023; Lopes dos Santos and Delaplace, 2024). Sustainability features include low-carbon materials, energy-efficient envelopes, and climate-resilient design calibrated for 2050 climate scenarios. The development will also pilot a 48-hour autonomous energy system. However, critics note that there are contradictions between the (SOLIDEO, 2023) *green* narrative and local realities: the displacement of vulnerable populations, temporary closure of public spaces, and speculative pressure on land values (Faure, 2021; Wolfe, 2023).

Fig. 2. The Saint-Denis Athletes' Village seen from the Louafi Bouguera Olympic Bridge, 2025. *Source: Authors*

4.4 Legacy and contradictions

Post-Games, the Village is expected to contribute to urban regeneration in the under-invested northern periphery of the city. The redevelopment will accommodate approximately 6,000 residents and 6,000 jobs, along with schools, a gymnasium, and commercial services along the banks of the Seine. Yet socio-spatial risks remain acute. Rising property values and gentrification in Saint-Denis could erode the intended social legacy. Moreover, the Aquatics Centre–built with exceptional state funding after being rejected in the 2012 bid–illustrates the persistent tension that remains between Olympic image-making and long-term viability. These risks are consistent with broader scholarship on mega-events and urban displacement, which document patterns of socio-spatial polarisation, rent escalation, and community exclusion in host neighbourhoods, and how these often persist irrespective of stated social housing commitments (Lenskyj, 2008; Müller *et al.*, 2021; Shin et al., 2016; SOLIDEO, 2023; Lopes dos Santos and Delaplace, 2024).

The extensive use of central urban space, while celebrated as democratic and inclusive, also produced temporary exclusion: large areas of central Paris were fenced for security during the Games; limiting access for residents.

Despite these controversies, the Games acted as a catalyst for significant transport investments. These included the opening of the Line 14 extensions to Saint Denis and to Orly Airport–providing direct connections between the Athletes' Village, three major Paris stations, and the second airport of the city–and the advancement of Metro Lines 16 and 17. Collectively, these interventions contributed to the legitimisation of long-standing strategic metropolitan projects (Lopes dos Santos and Delaplace, 2024; Faure, 2021).

The Paris model thus combines dense urban reuse with targeted urban regeneration. However, the social value of the interventions or their risks of gentrification can be properly investigated only in the years following the event celebration and the post-event reconversion of the main venues and sites, in particular, the Olympic Village.

5. Milano Cortina 2026 Winter Games

5.1 Spatial configuration

The Milano Cortina 2026 Winter Olympics encompassed two regions (*Lombardy* and *Veneto*) and two autonomous provinces (*Trento* and *Bolzano*); forming the most territorially spread Winter Games in Olympic history.

The overall spatial configuration is structured around four main clusters. The Milan Cluster hosted indoor events–such as ice hockey and skating–in existing or privately developed facilities including the Rho fairground of Fiera Milano, and the two arenas of Palaltalia Santa Giulia (new) and Unipol Forum (existing). The Valtellina Cluster accommodated Alpine ski disciplines in Bormio and Livigno. Beyond Alpine ski competitions, the Cortina Cluster focuses on historic venues (inherited by the 1956 Winter Olympics), including the reuse of the existing Stadio Olimpico del Ghiaccio and the highly contested reconstruction of the abandoned bobsleigh track. Finally, the Val di Fiemme Cluster hosted Nordic skiing and biathlon competitions.

The overall distance between the farthest venues exceeds 400 kilometres; challenging logistics and coordination yet aligning with Agenda 2020's flexibility for multi-city/ region hosting (Di Vita et al., 2024; Jones & Vigotti, 2022).

Fig. 3. Map presenting the Geography and the 4 clusters of Milano Cortina 2026. *Source: https://fan26.olympics.com/en/fan26*

5.2 Governance and delivery

The Games are overseen by the Fondazione Milano Cortina 2026 (FMC 2026), a private-law foundation whose founding members include the Italian national government (through the Minister for Sport), the Italian Olympic and Paralympic Committees (CONI and CIP), the Regions of Lombardy and Veneto, the Autonomous Provinces of Trento and Bolzano, and the Municipalities of Milan and Cortina d'Ampezzo. The FMC 2026 operated under the Host City Contract and the Olympic Charter and thus remains subject to IOC oversight.

Milan's municipal strategy for the Games is consistent with the rationale of its long-term urban plan, approved in 2019 (Bazzanella et al., 2022). The Expo 2015 in Milan and the problematic and lengthy post-event transformation of the site induced more cautious decisions (Gaeta and Di Vita, 2021). Rather than building new infrastructure, the city focused on accelerating already existing redevelopment projects through public-private partnerships.

5.3 The Porta Romana Olympic Village

The Porta Romana Railway Yard redevelopment in the southern part of the city of Milan is a major urban transformation project, of which the Olympic Village represents only one component. Within the wider masterplan designed by OUTCOMIST together with Diller Scofidio + Renfro, PLP Architecture and Carlo Ratti Associati, and ARUP and managed by COIMA SGR, with Covivio and Prada Holding as partners, the Olympic Village constitutes the first portion to be developed, and its progress was accelerated specifically to meet the requirements of the Milano Cortina 2026 Games. Designed by Skidmore, Owings & Merrill (SOM), this section of the site will accommodate athletes during the Games before being converted into a student housing complex as part of the long-term redevelopment strategy (Di Vita et al., 2024).

Key features of the project include the construction of mid-rise timber buildings arranged around a central park, an integration with the surrounding rail- and metro-based mobility network, and the post-Games conversion of the Olympic Village into approximately 1,700 student-housing beds (Di Vita et al., 2024; Raco and Di Vita, 2024). However, the project also exemplifies Milan's financialised urbanism – a reliance on private capital to deliver public objectives. Planning permits were expedited to meet IOC deadlines, and this raises questions about the effective social equity of the intervention especially when one considers the high costs for renting future student housing in the site (Raco & Di Vita, 2024). This approach reflects broader patterns within existent literature on urban financialization, which documents how public-private partnerships in event-driven regeneration tend to accelerate real-estate valorisation while limiting redistributive outcomes (Raco, 2014; Weber, 2010; Aalbers, 2016).

Fig. 4. The construction site of the Athletes' Village at Porta Romana in December 2025, two months prior to the opening of the Games.
Source: Authors

5.4 Legacy and critique

The *Porta Romana Village* reflects Milan's broader urban model: incremental regeneration driven by real-estate valorisation. While positioned as low-risk with minimal environmental impact since the development is taking place on a brown field, this approach reinforces market-driven logics and might intensify gentrification in surrounding districts already transformed by *Fondazione Prada*.

Across the wider Olympic territory, the reliance on dispersed venues reduced new construction but increased mobility-related emissions and fragmentation. Moreover, some conflicts arose when, due to technical reasons, the reuse of existing venues ended up implying high environmental impacts: for instance, the decision to rebuild the existing *Cortina bobsleigh track*, despite expert criticism, exposed the tension that exists between environmental responsibility and local prestige politics (Jreij, 2026). Originally built for the 1956 Cortina Winter Olympics and decommissioned in 2008 due to safety concerns and prohibitive maintenance costs, the track's reconstruction was opposed by environmental groups, the Italian Alpine Club, and several IOC advisors who argued that rebuilding a facility in a protected Alpine landscape contradicted Agenda 2020's commitment to avoiding unnecessary new construction. The decision was nonetheless advanced under pressure from local authorities, at an estimated cost exceeding €80 million. Moreover, the delays in event planning led the decision makers to focus primarily on the Olympic venues by: (i) derogating ordinary procedures of environmental assessment, in contradiction with the sustainability goals of the new Olympic Agenda; and (ii) postponing the discussions on the territorial legacy of the Games (beyond the single event venues), also in contradiction with the legacy requirements of the new Olympic Agenda (Arcidiacono *et al.*, 2024).

It follows, that Milano Cortina's constellation model demonstrates both the adaptability of Agenda 2020 and its limitations when sustainability is filtered through uneven governance and private-led planning.

6. Post-Agenda 2020 – Comparison of Paris and Milan

This article presents for the first time two instances of the application of the Agenda 2020 and systematically compares them. The comparison of Saint-Denis and Porta Romana as the central Olympic Villages of these two Olympic games offer analytical value that exceeds what either case could reveal in isolation. Saint-Denis represents a state-led, socially ambitious legacy model embedded in an urban regeneration programme targeting a historically under-invested periphery, with strong central governance and an explicit social housing mandate. In contrast, Porta Romana represents a privately-led, financialised model within a brownfield redevelopment strategy, where the Games accelerated a pre-existing urban project shaped primarily by market actors and public-private partnerships. Together, the two Villages illuminate how Agenda 2020's flexibility can interact with radically different local governance traditions, planning cultures, and socio-economic contexts –producing divergent sustainability and legacy outcomes whilst operating under the same global policy framework. Both Paris 2024 and Milano Cortina 2026 exemplify how Agenda 2020 has redefined Olympic spatial strategies. Each interprets the IOC's sustainability discourse through locally specific planning frameworks —yet their outcomes diverged substantially.

Dimension	Paris 2024 (Diffused Model)	Milano Cortina 2026 (Constellation Model)
Spatial configuration	Metropolitan diffusion within the Grand Paris area; 95 % existing or temporary venues.	Dispersed over 400 km across Lombardy, Veneto, Trentino-Alto Adige; multi-cluster system; 85 % existing or temporary venues.
Governance model	Centralised delivery through SOLIDEO and strong state coordination; limited municipal autonomy.	Polycentric and Multilevel governance via Fondazione Milano Cortina; Simico; reliance on regional cooperation and PPPs.
Infrastructure strategy	Integration with Grand Paris Express and Seine-Saint-Denis regeneration; modest new construction (Aquatics Centre, Village)	Reuse of existing Alpine venues; selective new projects in redevelopment areas (Santa Giulia Arena, Porta Romana Village) or controversial sites (Cortina bobsleigh).

Dimension	Paris 2024 (Diffused Model)	Milano Cortina 2026 (Constellation Model)
Sustainability framing	'Greenest Games' narrative; emphasis on carbon neutrality, cleaning of the Seine River, and social legacy through affordable housing.	'Low-impact' Games; focus on cost control, reuse, and regional cooperation, but limited holistic environmental assessment.
Social impact	Risk of gentrification and displacement in Saint-Denis; uneven benefits across Île-de-France.	Market-driven regeneration; potential gentrification and exclusionary effects and spatially uneven investment.
Legacy vision	Urban transformation and housing supply in Seine-Saint-Denis; transport modernization and upgrade.	Facility re-use and enhanced urban connectivity in Milan; uncertain Alpine legacy and governance.

As summarised in Table 1, several comparative insights emerge from the analysis. First, in terms of scale and spatial configuration (Table 1, row 1), Paris demonstrated the feasibility of dense yet regionally integrated Olympic planning, whereas Milan extended spread to a macro-regional geography; with the latter largely due to the geographic constraints of the Winter Olympics and their reliance on natural resources. While this reduced the imbalance of urban concentration, it also amplified logistical and ecological issues, as well as planning challenges. Second, the governance structures of the two Olympic games editions differed markedly (Table 1, row 2): both operated through exceptional planning regimes, but Paris benefitted from strong national oversight, whereas Milan-Cortina's polycentric arrangement complicated accountability and monitoring. Third, sustainability contradictions persisted in both cases (Table 1, rows 4-5). Despite commitments to reuse and low-carbon development, neither event fully addressed systemic impacts such as long-distance mobility or speculative real-estate pressures, and sustainability remained framed primarily through infrastructural efficiency rather than socio-spatial equity. Both cases also illustrated a noticeable expansion in temporary venues and temporary housing, which has enabled new spatial configurations to emerge. Although these interventions have been frequently presented as inherently sustainable, they raise important questions about whether, how, and where such structures are actually reused after the Games.

In particular, these questions are evident in the case of Milan-Cortina. While the Milan urban cluster relied on existing planning approaches in which the private-led conversion of industrial brownfields tended to induce gentrification rather than social inclusion, the three Alpine clusters of Cortina, Val di Fiemme, and Valtellina were supported by an implicit spatial vision that sought to reduce distances between the main urban areas at the foot of the Alpine space and related fragments of urbanity made by international Alpine resorts, within a process of mountain metropolisation (Perlik, 2011). It follows, that this implicit spatial vision was focused neither on specific cultural and natural resources of local landscape, nor on those specific issues of territorial fragilities and disparities which characterize Alpine areas. As a result, it was not able to invert traditional processes bringing city into mountain areas (Dansero, Mela, 2016; Dematteis, 2018; Perlik, 2018).

The legacy planning of both Paris and Milan-Cortina included the conversion of their Olympic Villages into long-term housing. While athletes' accommodation is generally more adaptable after the Games – especially when compared to specialised sporting venues that are difficult to reconvert, carry high maintenance costs, and risk becoming white elephants –questions of affordability and accessibility remain unresolved, even in cases of social housing redevelopment programs. Moreover, although diffused and constellation models mitigate concentrated construction pressures, they may also transfer new burdens onto local communities.

Overall, the comparison reveals that Agenda 2020 has succeeded in reducing material excess but not necessarily in ensuring territorial justice or environmental coherence. The reform privileges resource-rich metropolitan regions, and the metropolisation of high-end Alpine areas which are capable of mobilising existing infrastructures and governance capacity, thereby reinforcing spatial inequalities in Olympic hosting.

7. Conclusions and Policy Reflections

7.1 Reassessing Agenda 2020 through spatial planning

The Agenda 2020 reforms, as illustrated through examination of the Paris 2024 and Milano Cortina 2026 cases, pushed spatial models from centralisation toward greater spatial spread. Yet, spatial diffusion which seeks to maximise the use of existing facilities and infrastructure and does not in itself equate to sustainability, remains a controversial concept when applied to mega-events (Müller *et al.*, 2021). IOC prescriptions seek to restore the Games' appeal to cities and regions by improving the planning and design of related single venues. However, this does not necessarily correspond to the achievement of broader socio-spatial balances between the (given) mega-event and host cities and regions. At the same time, when global frameworks meet heterogeneous territorial systems, outcomes depend less on IOC prescriptions through Agendas and related recommendations than on local governance capacity, existing planning tools, and socio-economic contexts.

Spatial planning theory helps unpack the sustainability and socio-economic contradictions of such mega-events. Strategic coordination remains essential to integrating Olympic projects into long-term spatial visions, while strong planning capacity is needed to prevent event-driven exceptionalism from overriding ordinary planning processes and values.

In the Paris and Milan cases, we noticed the existence of different governance styles and varying connections with existing territorial visions, infrastructural, and development projects. The strategic coordination between the Olympic Games and the existing spatial planning of host cities and regions is necessary, but not sufficient to achieve specific goals.

The following reflections can be drawn from the cases examined.

First, as the Olympic Agenda 2020 allows unprecedented multi-city/region hosting, the strategic coordination between multiple planning levels becomes more challenging. Second, a spatial vision that connects the Olympic configuration with long-term plans of different regions can support decision-making from the early bidding stages. Third, governance practices respond to IOC principles but are embedded locally while facing contextual sustainability challenges. Fourth, in each Olympic cluster, the level of inclusiveness of spatial planning makes the difference in integrating the temporary use of existing venues and brownfields, promoted by the Olympic Agenda 2020, with the development of permanent spaces and facilities for local communities. Finally, in order to avoid the limitation of potentially positive socio-spatial effects in the medium-long term, and the risks of exacerbating already existing territorial disparities, the legacy focus should extend to broader urban and regional scales rather than to the only reuse of individual venues. In this regard, and in light of the prospect of anti-fragility (Blečić, Cecchini, 2020), trans-scalar and cross-border territorial visions and scenarios could help reinforce connections between Olympic clusters and the surrounding or intermediate territories in the post-event period (Arcidiacono et al., 2024, Bortolotti et al., 2024b).

Since the introduction of Agenda 2020, Athletes' Villages have remained one of the main urban investments pursued by host cities, often using the Games as a catalyst for broader urban development—despite the Agenda's stated preference for reusing existing facilities. A broader comparative study of Olympic Villages—from past games to recent ones—and their post-event reconversion would be particularly valuable in assessing whether they constitute successful and sustainable investments. In this regard, the sustainability of an Olympic Village depends less on its construction footprint during the Games than on its long-term use, accessibility, and affordability in the years that follow.

7.2 Policy implications for future Games

Several policy implications emerge for future Olympic editions. First, context-sensitive and multi-scale evaluation is essential: IOC assessments should consider not only environmental performance but also governance effectiveness and social equity across the host territory, distinguishing strategies and actions for cities from those for non-urban areas. Such evaluation should not be derogated but extended from single venues to broader regions involved. Second, given that the sustainability and socio-spatial effects are

often uneven, the peripheral and 'in-between' areas should not be approached in terms of redistribution or compensation but rather integrated into spatial planning practices. Third, integrated territorial governance is increasingly necessary, as multi-city/region and potentially cross-border Games require permanent supra-local bodies capable of coordinating investments, mobility, and environmental monitoring. Fourth, legacy accountability must be strengthened through mechanisms that verify the actual post-event conversion of Olympic Villages and venues, thereby ensuring accessibility and long-term community benefits, as well as the post-event effects in surrounding regions. Finally, the experiences of Paris and Milan underscore the importance of systematic knowledge transfer, including the creation of an open, continuous database of spatial and environmental data to support subsequent hosts.

7.3 Final considerations

Given the methodology adopted, our findings cannot be generalized but can lead to critical observations. The post-Agenda 2020 Olympics show a potential paradox: while they reduce construction footprints and embrace adaptive reuse, they also imply spatial and governance arrangements that risk institutionalizing spatial unevenness within their configurations between central and peripheral areas, and more broadly favouring more equipped cities and regions. The transition from iconic centralisation to distributed constellations marks progress in environmental intent but not necessarily in social or territorial outcomes. The latter depends on how global recommendations translate into contextualized planning practice (Ponzini, 2020).

The comparison of Paris and Milano Cortina under Agenda 2020 offers the following to each of the three fields it engages with. For mega-event studies, it provides empirical evidence that policy reform at the international level without contextual spatial governance risks inducing uneven sustainability outcomes. Second, it provides a systematic insight into the same principles applied to Summer and Winter Games and confirms the value of comparative analysis across mega-events of different sizes, budgets, and so on. In addition, it urges mega-event research that centres on spatial configurations and planning. Regarding spatial planning theory, it shows how global normative frameworks are filtered through and transformed by local planning cultures and institutional capacities and also explores the relations between spatial configurations implied by mega-events and sustainable planning practices. For sustainability research, it challenges infrastructural definitions of sustainability by showing that environmental efficiency and territorial justice are not equivalent–and that the latter remains largely unaddressed by recent Olympic reforms.

Our contribution compares two individual cases, acknowledging their differences. Future research could build on this comparative foundation to deepen other instances of implementation or other specific goals of Agenda 2020 and its legacies. As more Games will be delivered based on the same agenda, multi-case and longitudinal studies can further contribute to the international debate.

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Author's Note

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