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Geographies in Transition: Landscapes, Representations and Territorial Change

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Matteo Di Napoli

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The Geography of the Olympic Winter Games in the Alpine Arc

Andrea Brambilla

Università IULM Milano

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ABSTRACT

Through a comparative analysis of the last three Alpine editions (Albertville 1992, Torino 2006, Milano Cortina 2026) and the forthcoming edition (Alpes Françaises 2030), the present study investigates how the IOC's reformed policy framework, driven by escalating costs, mounting climate concerns, and legacy imperatives, is fundamentally reshaping the territorial organisation of the Winter Olympic Games. The analysis reveals a clear shift from locally concentrated host models towards progressively dispersed, multi-venue configurations spanning larger administrative regions. Winter Olympic Games growth has amplified infrastructural demands while simultaneously exposing the climatic vulnerability of Alpine host territories, which are warming at rates significantly above the global average. These converging pressures are pushing the IOC towards prioritising climatically reliable, existing venues and even rotating venue pools, fundamentally challenging Pierre de Coubertin's original single-host-city vision and redefining the geography of winter sport mega-events.

Keywords: Alps; Olympics Winter Games; climate change; legacy; spatial planning.

1. INTRODUCTION

What relates Milan and Cortina d'Ampezzo? This was a major issue during the XXV Olympic Winter Games: Italy's largest economic centre paired with a charming Alpine resort overwhelmed by tourism. A road distance of 410 kilometres separates the two cities, located in different administrative regions, respectively Lombardy and Veneto.

Starting from the Milano Cortina 2026 Olympic Games¹, this contribution analyses the role and the growing spread of the Winter Olympics in Alpine territories, also considering the transformations driven by climate change. The event was presented to the world as the first widespread Olympics and defined as pioneering by the President of the Milano Cortina Foundation and former President of the CONI (Italian National Olympic Committee), Giovanni Malagò, who said that: “What awaits us over the next two weeks is a pioneering edition of the Winter Games: spread across a vast territory”². The tones were evidently propagandistic, yet this was indeed the first Olympics with two co-host cities, with Verona added as the host for the closing ceremony, and three Alpine clusters involved (Bormio-Livigno, Val di Fiemme, and Cortina-Anterselva).

The XXV edition of the Winter Games represents the paradigm of a possible evolution of the future Olympics. The Winter Olympics are radically different from the Summer Games, as they have historically been held in small localities, in fragile landscapes and with distinct logistical, transportation and climatic challenges (Essex 2024). Although smaller in scale than the Summer Olympics, the Winter Games are today firmly positioned among mega-events, ranking as the second most important multi-sport event in the world (Müller 2015).

This paper aims to demonstrate how the International Olympic Committee (from now on, IOC)’s new policies are driving a profound reconfiguration of the Winter Olympic geography by analysing the growth and spatial diffusion of the Games within the Alpine context, the territorialization processes (Turco 1988; Dansero and Mela 2007; Dansero and Puttilli 2010), and the related policies (Raffestin 1981), also in light of the climate change. The analysis was conducted through a comparative methodology across the last three Alpine Olympic editions that have taken place (Albertville 1992, Torino 2006, and Milano Cortina 2026) and those yet to come (the Alpes Françaises 2030).

¹ When reference is made to the term Olympics in a general sense, it is understood as inclusive of the subsequent Paralympic Games.

² Author’s translation from the Italian. The full text of the speech is available at: <https://www.olympics.com/it/milano-cortina-2026/notizie/il-discorso-di-giovanni-malago-presidente-della-fondazione-milano-cortina-2026-alla-cerimonia-di-apertura-olimpica>.

2. THE EVALUATION OF THE OLYMPIC WINTER GAMES

The first Winter Olympic Games was held in Chamonix, in the French Alps, in 1924, organised six months before the Paris Summer Games. Initially conceived as a standalone event under the name *Semaine internationale des sports d'hiver*, it was only retroactively recognised in 1925 as the *Jeux olympiques d'hiver* (Essex and Chalkley 2004; Essex 2024). Eight out of the first ten editions³ took place on the European continent; seven of them were hosted in localities situated along the Alpine arc. The first Italian edition was held in 1956 in Cortina d'Ampezzo, already well-known to international tourism since the 1930s, which definitively established it as a world-renowned tourist destination (Morazzoni e Pecorelli 2022). Subsequent editions partially broadened the global geography of the Winter Olympics: in North America, beyond the United States, which had already hosted two editions, the Games were held in Canada, while in Asia they were hosted first in Japan, and subsequently in Russia, South Korea, and China. Also noteworthy is the unsuccessful bid for 2022 from Almaty, Kazakhstan. Outside the Alpine territory, within Europe, editions were held only in Norway and in Bosnia and Herzegovina (Yugoslavia back then). The development of mega Olympic events contributed to the reinforcement of the Alps as a tourist destination, causing an excess of winter sports-related territorialization (Salsa 2019, 75).

Analysing data on the Winter Olympics from 1924 to 2026 (*Fig. 1*), a growth in athletes, medal events and participating countries is observed⁴. As Stephen Essex (2024) highlighted, this growth was paired with an increasing promotion of the Games through media coverage and commercial sponsorship. In parallel, mega Olympic events were progressively perceived as potential tools for regional development (Spilling 1996; Essex and Chalkey 2004).

³ The 1940 edition, first awarded to Japan (Sapporo), then to Switzerland (St. Moritz) and subsequently to Germany (Garmisch-Partenkirchen), and the 1944 edition awarded to Italy (Cortina d'Ampezzo), were cancelled due to the Second World War.

⁴ As of February 2026, the Olympic Charter sets the athlete limit for the Winter Olympics at approximately 2,900, support staff at 2,000, and the number of events at 100.

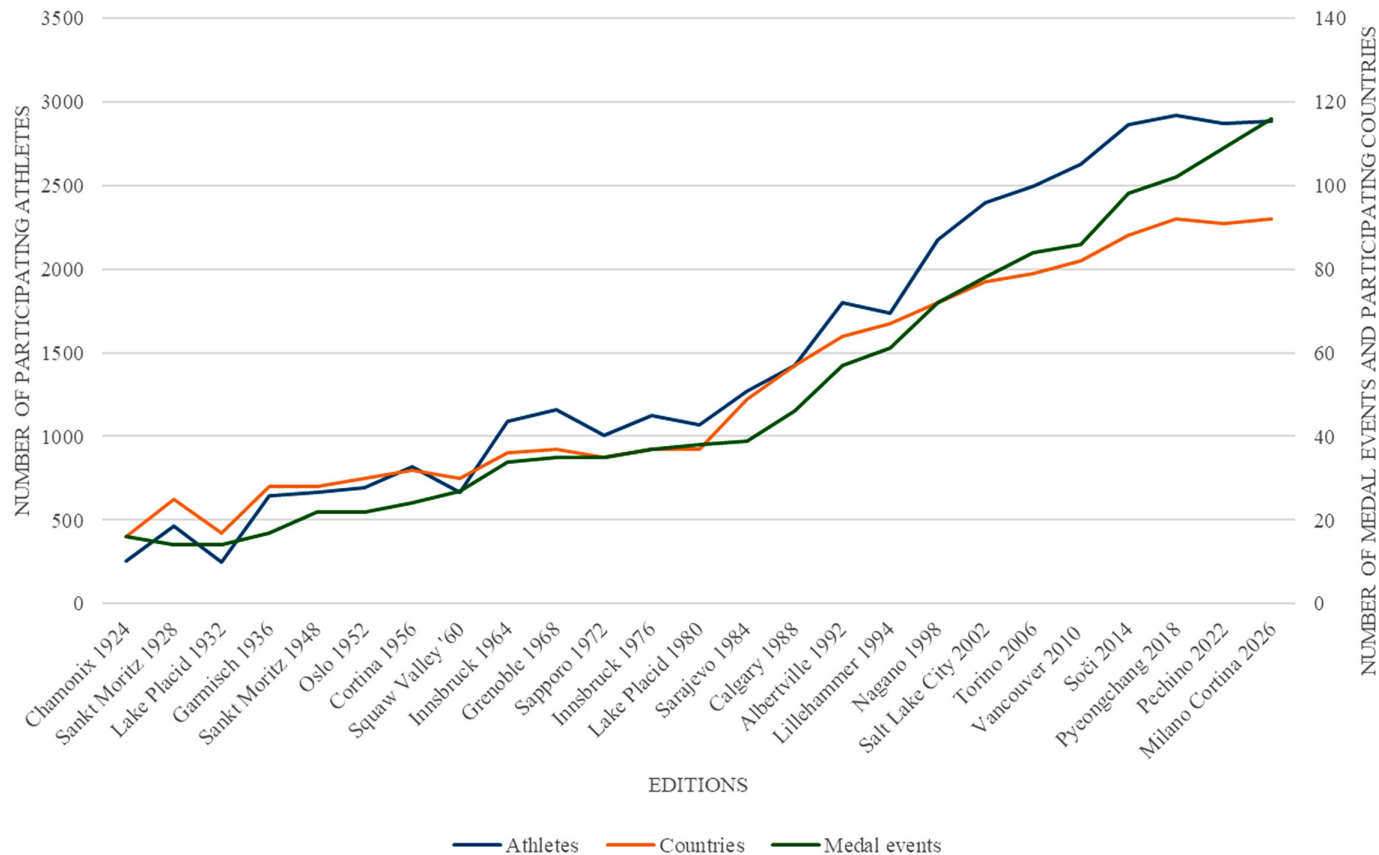


Figure 1. – The number of participating athletes (left), participating countries, and medal events (right) in all editions of the Winter Olympics.
Source: elaboration by the author, based on IOC data.

Table 1. – Sports, number of medal events and venues in the last three Alpine Winter Olympic editions.
Source: elaboration by the author, based on IOC data.

	ALBERTVILLE 1992		TORINO 2006		MILANO CORTINA 2026	
<i>Sport</i>	<i>Medal events</i>	<i>Venues</i>	<i>Medal events</i>	<i>Venues</i>	<i>Medal events</i>	<i>Venues</i>
Biathlon	6	1*	10	1	11	1
Bobsleigh	2		3		4	
Skeleton	0	1	2	1	3	1
Luge	3		3		5	
Speed skiing	demonstration	1	0	0	0	0
Curling	demonstration	1	2	1	3	1
Ice hockey	1	1	2	2	2	2
Freestyle skiing	2	1	4	2**	15	7**
Snowboarding	0	0	6	2**	11	
Speed skating	10	1	12	1	14	1
Figure skating	4	1	4	1	5	1
Short track skating	4		8		9	
Cross-country skiing	10	1*	12		12	
Nordic combined	2		3	2	3	2
Ski jumping	3	2	3		6	
Alpine skiing	10	3	10	3	10	2
Ski mountaineering	0	0	0	0	3	
TOTAL OLYMPIC EVENTS	57	13	84	16	116	18

Note: * Same venues; ** Same venues, but different infrastructure.

In this analysis, Albertville 1992 is compared with Torino 2006 and Milano Cortina 2026 (*Tab. 1*) since, with that edition, the Olympic Games returned to the Alps after three editions held in the United States, Yugoslavia, and Canada. Moreover, previous Alpine editions involved a significantly lower number of athletes, medal events, and participating countries (May 1995; Essex 2024).

From the Albertville 1992 Winter Olympics onwards, the increase in the number of medal events has required a growing amount of infrastructure and, consequently, venues capable of accommodating athletes and hosting a wider range of sports. Indeed, in contrast with summer Olympics, which mostly depend on multipurpose venues such as arenas and stadiums, the majority of winter disciplines are inherently dependent on a set of environmental and territorial preconditions: suitable terrain, sufficient snow cover, adequate temperatures, and accessibility. Several disciplines demand venues whose construction and operation generate a significant environmental and landscape footprint: among these are ski jumping hills, biathlon shooting ranges, and sliding tracks. These facilities are not only expensive to build, but they carry very high operational and maintenance costs relative to the limited number of athletes who uses them (Brown 2020). In this regard, in light of climate change, the IOC is considering including in the list of winter sports disciplines that are only occasionally practiced on snow, such as cross-country running and cyclocross⁵. Such choices would indicate new possible trajectories for the Winter Olympics, extending the reach of the event to countries that are generally underrepresented in the current programmes.

Table 1 shows how the number of medal events per sport discipline has doubled from Albertville 1992 to Milano Cortina 2026, whereas the number of venues used also increased, but not as much. At Milano Cortina, freestyle skiing was the sport with the highest number of medal events, surpassing even historically established disciplines such as Alpine skiing, cross-country skiing and biathlon. The same trends are found for the Paralympic Winter Games, as shown in *Table 2*.

⁵ These disciplines, which can also be practiced on snow, do not infringe Article 6, paragraph 2, of the 2026 Olympic Charter, which defines winter sports as those practiced on snow or ice. This is a current topic of debate within the IOC and could potentially lead to the inclusion of these sports as early as the Alpes Françaises 2030 or in subsequent editions. See: <https://www.theguardian.com/sport/2025/oct/02/cross-country-and-cyclocross-could-be-added-to-winter-olympics-by-2030>.

*Table 2. – Sports, number of medal events and venues in the last three Alpine Winter Paralympic editions.
Source: elaboration by the author, based on IPC data.*

	TIGNES ALBERTVILLE 1992		TORINO 2006		MILANO CORTINA 2026	
<i>Sport</i>	<i>Medal events</i>	<i>Venues</i>	<i>Medal events</i>	<i>Venues</i>	<i>Medal events</i>	<i>Venues</i>
Para biathlon	4	1	12	1	18	1
Para cross-country skiing	23		20		20	
Para snowboard	0	0	0	0	8	1*
Para ice hockey	0	0	1	1	1	1
Wheelchair curling	0	0	1	1	2	1
Para alpine skiing	45	1	24	1	30	1
TOTAL PARALYMPIC EVENTS	72	2	58	4	79	5

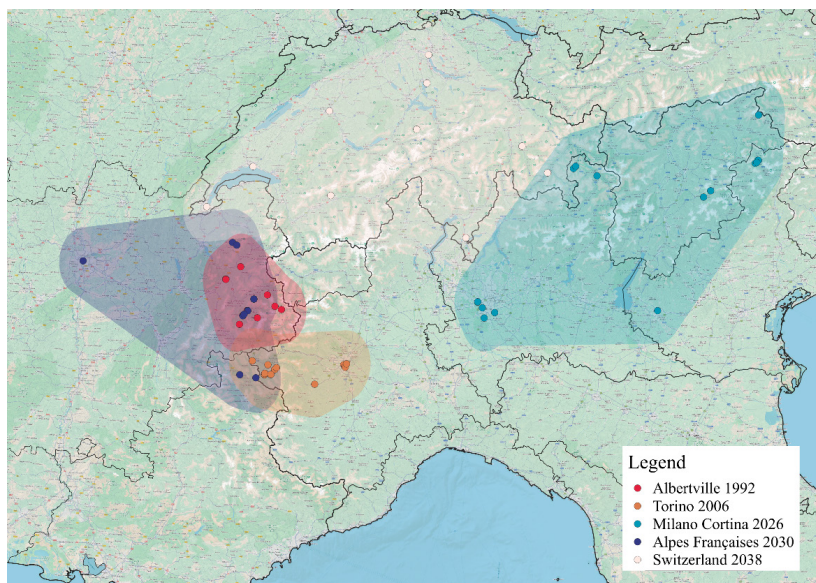
Note: * Not used during the Olympic Games.

3. THE SPATIAL CONFIGURATION OF THE OLYMPIC CLUSTERS

The IOC’s new policy framework (IOC 2014; IOC 2021) has generated an inevitable geographical rescaling of the Winter Games, characterised by the systematic prioritisation of existing venues and by the possibility of having multiple co-hosting cities or regions. While this approach theoretically mitigates both financial costs and climatic risk exposure, the most recent Alpine Winter Olympic editions point to the consolidation of a new geographical model, defined by the progressive spatial expansion of Alpine Olympic clusters. During the closing ceremony of Milano Cortina 2026 (Verona, 22 Febraury), the handover of the Olympic flag from the mayors of Milan and Cortina d’Ampezzo to the presidents of the French regions of Provence-Alpes-Côte d’Azur and Auvergne-Rhône-Alpes, the future hosts of the Alpes Françaises 2030, confirmed the IOC policy regarding the promotion of decentralized Olympic events.

The primacy of individual cities and localities as the organisational units of the Winter Olympic Games has undergone a profound transformation, a shift already embedded in the official nomenclature of recent and forthcoming editions. This is visible in: PyeongChang 2018 (the first to adopt a county-level toponym), Milano Cortina 2026, Alpes

Françaises 2030, Salt Lake City-Utah 2034, and the Switzerland bid for 2038 edition⁶. This evolution points to a consolidating trend towards increasingly regionalised Winter Olympics, progressively distancing the Games from the model of a single host centre or a confined cluster of valleys. *Figure 2* offers a spatial illustration of this evolution in the Alps from 1992 to 2038.



*Figure 2. – Map showing the extent of the last three Winter Olympic Alpine editions, the venues proposed for 2030 forthcoming edition and the prospective bid for the 2038 edition, as of May 2026.
Source: elaboration by the author, based on IOC data.*

The Albertville 1992 edition was therefore still a strongly localised event, centred on a small host city equipped with tourist facilities (Essex and Chalkley 2004), but lacking the services characteristic of many medium or large Alpine city. It was an edition that engaged exclusively the local territorial scale, and the first to be organised jointly with the Winter Paralympic Games.

⁶ In case Switzerland 2038's bid will be approved; this would be the first case of a sovereign state lending its name to an Olympic host designation. See: <https://www.switzerland2038.com/en/>.

The Torino 2006 Winter Olympics, even though confined to the Province of Torino, mark a step towards the enlargement of the Game's area. Competition venues were distributed between the capital, the Susa Valley and the Chisone Valley. Several venues, including the bobsleigh, luge and skeleton track in Cesana Torinese, as well as and the ski jumping in Pragelato, were progressively abandoned, contributing to a problematic mountain legacy (Dansero, Mela, and Rossignolo 2015).

With the Winter Olympics returning to the Italian Alps, Milano Cortina 2026 has involved two regions and two autonomous provinces; even maximising the use of existing venues, this has not rendered the edition free of critical issues (Morazzoni e Pecorelli 2022; Morazzoni e Di Napoli 2024; Maggioli, Morazzoni, e Pecorelli 2024). A broader territorial scope, however, also entails a potential multiplication of interventions, including those only tangentially related to the Olympic event itself. This constitutes a form of Olympic territorialisation that risks prioritising construction works of questionable utility for local community development and for the quality of life of mountain populations (Maggioli, Morazzoni, e Pecorelli 2024, 27).

In relation to this, a debate has arisen over the possibility of using venues outside the host country for the Alpes Françaises 2030 edition; in particular, the choice of the indoor speed skating oval could fall on the Thialf Arena in Heerenveen (the Netherlands), where speed skating attracts public interest, or on the Oval Lingotto in Turin (Italy), built for the 2006 Winter Games⁷. This is not the first time the use of a foreign venue has been considered: the IOC had proposed the bobsled track of St. Moritz in Switzerland or Ischgl in Austria for Milano Cortina 2026, thereby avoiding the reconstruction of the Cortina track. However, the final choice was to rebuild the Cortina track (Maggioli, Morazzoni, e Pecorelli 2024, 20-21). According to the Simico website⁸, the venue is projected to remain operational until 2030; however, in the immediate aftermath of the Games, structural deficiencies prevented it from hosting the Italian sliding championships⁹. The debate on the Olympic legacy, within the framework of the IOC's new policies, could in the future open a new era in the organisation of the Winter Olympic Games, which are increasingly difficult to host due to climate change.

⁷ See: <https://www.bbc.com/sport/articles/cd6z281w809o>.

⁸ See: <https://www.simico.it/opera/cortina-sliding-center-eugenio-monti/>.

⁹ See: <https://altreconomia.it/reportage-da-cortina-dopo-le-olimpiadi-con-la-pista-transennata-e-acqua-da-tutte-le-parti/>.

4. CLIMATE CHANGE AND IOC POLICIES

The Winter Olympics are indeed the Games most severely affected by climate change. A substantial body of literature demonstrates (Scott *et al.* 2015; Scott *et al.* 2019; Scott *et al.* 2023; Steiger and Scott 2025; Scott, Steiger, and Orr 2026) that the implications of climate change begin to impose a global-scale reconfiguration of the outdoor winter sports industry. Winter sport events are among the most critically exposed, as their structural rigidity affords significantly less flexibility for adaptations compared to other sporting events.

The consequences of climate change on competitive winter sports are already measurable. Warm temperatures and inadequate snow conditions resulted in the cancellation of 7 of the first 8 International Ski and Snowboard World Cup competitions during the 2022/23 season, a trend that intensified in the following season with 26 World Cup events cancelled across 5 disciplines in 2023/24 (Scott, Steiger, and Orr 2026). Scott *et al.* (2015) provide a systematic comparative assessment of former Winter Olympic host venues in relation to projected temperature increases driven by climate change, modelling scenarios for both 2050 and 2080. Their findings demonstrate pronounced climatic vulnerability across a significant number of past host locations, pointing to an accelerating crisis in the utility of these sites as future hosts. The situation becomes more complex for the Paralympic Winter Games, typically held in March and therefore more exposed to climate change (Scott *et al.* 2019). These implications are not lost on professional athletes themselves. Survey-based research conducted by Scott *et al.* (2023) found that more than 90% of athletes surveyed expressed strong concern over the extent to which climate change will shape the future essence of their disciplines.

The Alpine region is particularly implicated in this crisis. The centrality of the Alps in winter sports is evident, for example, when looking at the Alpine Skiing World Cup circuit: in the 2025/26 season, only 8 of the 30 venues featured on both the men's and women's calendars were located outside the Alpine arc¹⁰, underscoring how this event remains today structurally anchored to this mountain range. The impact of climate change on the Alps is most pronounced in winter, with the region

¹⁰ See: <https://www.fis-ski.com/DB/alpine-skiing/calendar-results.html?eventselection=&place=§orcode=AL&seasoncode=2026&categorycode=WC&disciplinecode=&gendercode=&racedate=&racecodex=&nationcode=&seasonmonth=X-2026&saveselection=1&seasonselection=>

warming at a rate significantly higher than the global average (Ceppi *et al.* 2012; Mercalli e Berro 2016; Bausch and Gartner 2020; Del Gobbo *et al.* 2023; Steiger *et al.* 2024; Peleg, Koukoulou, and Marra 2025). The Winter Olympics are therefore the most visible symptom of a winter sports system facing a structural climate crisis. This crisis will therefore force many Alpine territories to fundamentally reconfigure their productive and tourism development.

The climate crisis affects not only the organisation of events but also their legacy. The concept of Olympic legacy (Preuss 2015; Gold and Gold 2024) emerges as a response to a series of challenges associated with hosting the Games, including the uncontrolled escalation of costs and the abandoned venues and infrastructure, commonly referred to as ‘white elephants’ (Davis 2020). Without exception, every Olympic Games since 1960 has surpassed its initial budget projection, with an average cost overrun of 172% in real terms (Flyvbjerg, Budzier, and Lunn 2021). The IOC’s policies, already initiated in 2013 and articulated through Olympic Agenda 2020 (2014) and Olympic Agenda 2020+5 (2021), represent a strategic response to mounting criticism of the Games’ economic and social costs. Central to these agendas is the repositioning of legacy as a key instrument for consolidating public support and legitimising hosting the Olympic Games (Gold and Gold 2024, 13).

In 2022 the IOC approved additional criteria that guided the allocation of the Alpes Françaises 2030 and Salt Lake City-Utah 2034 Games¹¹: organizers should aim to use only existing or temporary venues, and the proposed venues for snow-based competitions should be climatically reliable at least until 2050 (Scott, Steiger, and Orr 2026). These reforms narrow the field of territories eligible to bid, limiting potential host countries to those that possess the resources and infrastructure to stage the Games. In their Sustainability Report (2025), the IOC acknowledged that it is evaluating the rotation of a pool of host venues for the Winter Games, making a new organisational model emerge. This undermines the concept of the Olympic single host city (Lopes dos Santos *et al.* 2021) modelled on the past Olympic tradition and conceived on de Coubertin’s idea that each country can take its turn in organizing the Games (Müller 2000, 360). As far back as 1929, the Olympic Charter maintained that an Olympic host city should not share its privilege with any other city; this provision was progressively relaxed from 1980 onwards, and the current reform

¹¹ See: <https://www.olympics.com/ioc/news/ioc-eb-sustainable-future-olympic-winter-games-opportunity-2030-2034-double-allocation>.

period has brought about a complete paradigm transformation. This shift is reflected in the renaming of the contractual agreement concluded between the host and the IOC, from Host City Contract to Olympic Host Contract (IOC 2026, 76), signalling a move away from the centrality of the city as a foundational principle of the Olympic Movement.

5. CONCLUSION

Through a comparative analysis of the Alpine territories that hosted the last three Winter Olympic editions and are expected to host the next one, this article problematizes the future organization of the Winter Olympic Games. By highlighting the challenges faced by both the Winter Olympic Games and their host territories, future editions will likely become widespread, oriented towards cost containment and the maximisation of existing venues. Data on the cost and legacy of the Milano Cortina 2026 and the Alpes Françaises 2030 editions will provide an empirical test of whether this spatially widespread model can deliver on its promise of economic sustainability.

Building on this evidence, though this is an exercise in speculation, one could envisage: the emergence of a supranational edition (as already occurs in the case of the FIFA World Cup); or an Alpine edition designed to include more Alpine countries; or eventually the rotation of a pool of host venues as proposed by the IOC. Also, it remains to be seen whether the evolving Olympic debate will lead to the inclusion in the Winter Games of sporting events that only occasionally take place on snow and ice, or whether some indoor disciplines will have to be included.

The legacy of the Winter Olympics shows that the Games are becoming increasingly unsustainable from a territorial, economic and climatic perspective. The major challenge will therefore be to find a new organisational model that can adapt to the geography of the host locations and to the communities that inhabit them.

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