

> INTRODUCTION

This report shares the results of the first ever inventory of the post-Games use of Olympic venues. We tracked the post-Games use of 923 Olympic venues at 51 summer and winter editions of the Olympic Games, from Athens 1896 to PyeongChang 2018.

For over 125 years, the Olympic Games have served as a celebration of humanity and helped to build a better world through sport. For the hosting communities, they can create jobs, contribute to the regeneration of cities and regions, and increase the opportunities for people to enjoy sport and physical activity. Providing upgraded or new sports venues are one of the many ways the Olympic Games create a legacy for their host.

What happens to Olympic venues when the Games come to an end? How many of them are still in use and serve their local communities? What are the best practices? How can we maximise the chances of success?

Learning from past experience can help us shape a better future. By looking at the post-Games use of venues that hosted the Olympic Games in the past, we wanted to understand better the likelihood of continued use beyond the Games. We identified key lessons, best practices and more opportunities for Olympic hosts to derive the maximum benefit from their venues in the years to come.

With Olympic Agenda 2020 we reimagined how the Olympic Games are organised. We provided more flexibility in designing the Games to meet the long-term development plans of a host city/region. The changes include ensuring that hosting territories would make the most of existing venues and only build new ones when a robust legacy plan exists. The results can be seen for the two editions elected after Olympic Agenda 2020. At Paris 2024, 95 per cent of the venues will be existing or temporary, while Los Angeles 2028 can host the Games without building a single new permanent venue thanks to its “radical reuse” concept.

The first chapter of this report presents the methodology of the inventory, and is followed by a chapter presenting the key findings from the inventory, looking at the full scope of the 125 years of Olympic venues and their post-Games use. The 51 chapters in the sequence present the post-Games use of the venues for each Olympic Games edition, one by one.

For each Games, the inventory is presented in the form of a summary table and graphics, with essential information on venue classification and current use status (pre-COVID-19) for all venues hosting medal events, Opening/Closing Ceremonies and Olympic Villages. There is then additional information on the post-Games use for a selection of individual venues, together with specific features of their use and relevant changes over time.

This report was assured by a third-party according to the audit standard ISAE 3000. The assurance report from KPMG can be found in Appendix 2.

> METHODOLOGY

The inventory involved a mixed-methods approach. Mixed-methods research uses multiple ways to explore a research problem and combines elements of qualitative and quantitative research.

SCOPE OF THE INVENTORY

In the context of the Olympic Games, a venue is any major Games site that hosts competitions or other primary Games events and activities. For the purposes of this inventory, we included all competition venues that have hosted an Olympic Games medal event, the Opening/Closing Ceremony venues, and the Olympic Villages. Exhibition sports and their venues are not part of the inventory. Youth Olympic Games are not included. Venues that only hosted Paralympic events are not included.

We looked at all the venues staging events in all sports and disciplines, at all the Games of the Olympiad and Olympic Winter Games of the modern era, from Athens 1896 to PyeongChang 2018.

We covered a total of 923 venues, spread across four continents, in over 20 countries.

The main information sources for the list of venues were the Official Reports of the Olympic Games or official publications from the Organising Committees (available on the Olympic World Library). When Official Reports were not sufficient (incomplete or conflicting information), the sport explanatory booklets were also used to cross-check or complete information. Olympedia, a website created by a group of dedicated Olympic historians and statisticians called the OlyMadMen, was also used as a source, especially for venues' geographical coordinates and to cross-check the list of venues.

VENUE CLASSIFICATION (CONSTRUCTION STATUS AT THE TIME OF HOST SELECTION)

Venue classification refers to the construction status at the time of the host city/territory selection to host the Games. Venues can be either temporary or permanent. A permanent venue is intended to last a long time. In contrast, a temporary building is suitable for a short period of use and is not intended to remain. Permanent venues can be either existing or new.

Existing Permanent Venue

The venue already existed when the host city/territory was selected to host the Games. The venue required no major changes or construction ahead of the Games.

New Permanent Venue

The venue did not exist before the host city was selected to host the Games. The venue was intended to be permanent, and its construction was initiated/accelerated by the Games.

Temporary Venue

The venue was constructed for the Games, and, when the Games were over, the site was returned to its previous condition.

The main source for venue classification was the Official Reports. Other sources used were the websites of resident clubs, website of the owner or operator of the venues, press articles, articles or blogs by amateur historians or fan clubs, and Wikipedia where the sources were listed.

²Preuss, H., Solberg, H.A. and Alm, J. (2014), "The Challenge of Utilizing World Cup Venues", Frawley, S. and Adair, D. (Ed.s), Managing the Football World Cup, Palgrave Macmillan, Basingstoke, Hampshire, pp.82-103.

Because temporary venues were meant to be dismantled after the Olympic Games, they were excluded from the analysis of post-Games use in the key findings. Nevertheless, they were part of the identification process of the venue classification and were addressed in a qualitative manner in the chapters dedicated to each Olympic Games edition.

CURRENT USE STATUS

Current status refers to the post-Games use, or lack of use, of the venue. There are multiple potential uses of Olympic venues. For the purposes of this inventory, we considered the uses identified in Preuss et al. (2014)² in the dimension "Stadium in use" which includes classic use as a sports facility, event location or tourist attraction. To this, we added the use as a business, military, cultural or educational facility.

The reference period for "current use status" assessment is the two years before the COVID-19 pandemic, i.e. 2018, 2019 and early 2020 (before COVID-19 lockdown).

The current use status can be "in use", "not in use" or "dismantled".

IN USE

The venue is regularly³ used for sport (practice, training and competition) and/or for non-sport activities (culture, leisure, entertainment, community or business).

NOT IN USE

The venue is not used regularly either for sport (practice, training and competition) or non-sport activities (culture, leisure, entertainment, community or business).

DATA COLLECTION

Initial desk research was combined with in-situ data collection (direct observation) and stakeholder consultations.

DESK RESEARCH

Desk research was initially conducted in English and French. Where necessary, additional desk research was conducted in the native language of the host country for the following languages: German, Italian, Portuguese, Spanish and Swedish.

The following steps were taken when collecting data on current use status through desk research:

- Identifying if the venue had an official website and/or active social media accounts where possible.
- If not, or if the venue belonged to a city/municipality, the website of the city was used to see if activities were offered at the venue (e.g. for a swimming pool).
- If the venue was privately owned/operated, the website of the owner/operator identified was used.
- If no information was found, maps and pictures available in the official publications of the Games and satellite images and interactive panoramas (e.g. Google Images and Street View) were compared to determine whether the building still exists.

Academic literature was used where available: for instance, articles dealing with the post-Games use or legacy of the venues.

For each set of data captured on current use status, we assessed the reliability of the source and cross-checked data from multiple sources (official websites, events websites, city tourism information website, etc.).

³ See appendix 1 for a detailed explanation of what was considered regular use.

⁴ Margin of error of .05. Bartlett, J.E., Kotlik, J.W. and Higgins, C.C. Organizational Research: Determining Appropriate Sample Size in Survey Research. *Information Technology, Learning, and Performance Journal*, 19, 43-50. 2001.

IN SITU DATA COLLECTION

In-situ data collection (direct observation) was carried out for a sample of 244 venues (a statistically significant sample for categorical data)⁴, representing 26 per cent of the venues studied.

For each venue for which in-situ data collection was available, a cross-check procedure was applied. A non-probability sampling technique, purposive sampling, was used to select the venues, based on the following criteria:

- Venues located in territories with a native language not spoken by anyone in the research team. Venues in Japan, China, South Korea, Russia, Greece, Bosnia and Herzegovina, and Norway were targeted.
- Venues in Games editions for which we found conflicting information during the desk research.
- Venues whose ownership and operations had changed recently.
- Editions from different time periods – pre-war; mid 20th century, late 20th century, 21st century.

STAKEHOLDER CONSULTATIONS

The inventory results were reviewed by local stakeholders – venue owners/operators, legacy entities, city/ regional governments, National Olympic Committees – for their respective editions. We received feedback for 89 per cent of the venues.

Additional stakeholder consultations were carried out with industry professionals and experts.

STUDY LIMITATIONS

As with the majority of studies, this inventory is subject to limitations.

The first concerns the fact that the information available about Olympic Games venues in the sources is not homogeneous by either type of venue.

The criteria for defining a “venue” vary across the 125 years that separate Athens 1896 from PyeongChang 2018. Some editions considered a venue from a field of play perspective, while others considered a venue from the support infrastructure perspective. This has an impact on their classification as “new”, “existing” or “temporary”. We addressed this limitation by following the classification of the Official Report (e.g. field of play or supporting infrastructure). Where the Official Report also provided a classification, we would either adopt it if aligned with the definitions in this study, or change it to remain consistent across this report.

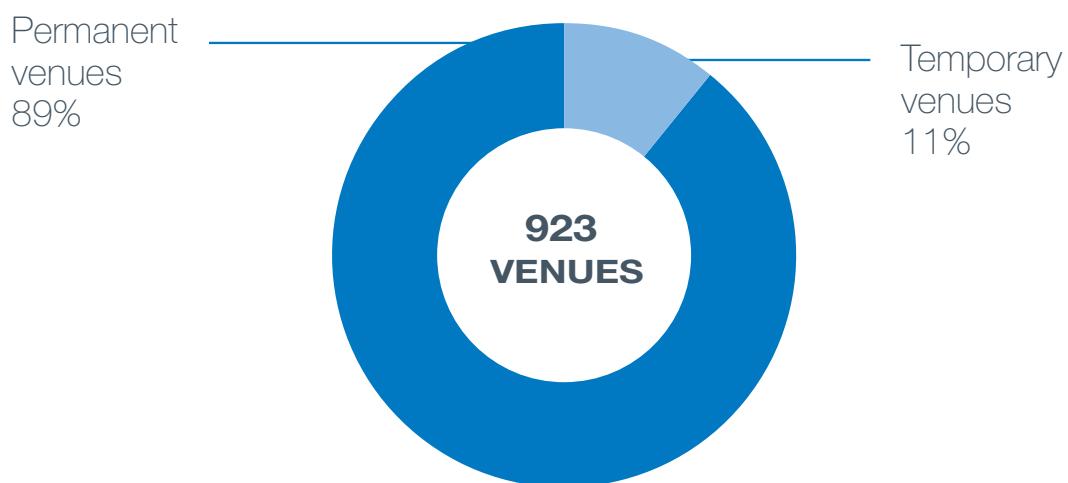
The second limitation relates to the lack of a single criterion applicable to all different venues to assess whether a venue is used regularly. During our research, it very soon became clear that the assessment of use status had a qualitative dimension. We addressed this limitation through: 1) a conversion mixed research design, transforming qualitative assessment into quantitative data; 2) the adoption of a decision tree to bring consistency to the qualitative assessment; 3) the discussion of any “borderline cases” with an internal review panel (extended four eye principle); and 4) a review of the inventory results by local stakeholders.

Third, the COVID-19 pandemic had an impact on the use of venues. Therefore, the “current” use status at the time of publication – April 2022 – may differ from the use status in the inventory, which refers to the years 2018, 2019 and the first few months of 2020 (before the pandemic was declared on 11 March 2020).

> KEY FINDINGS

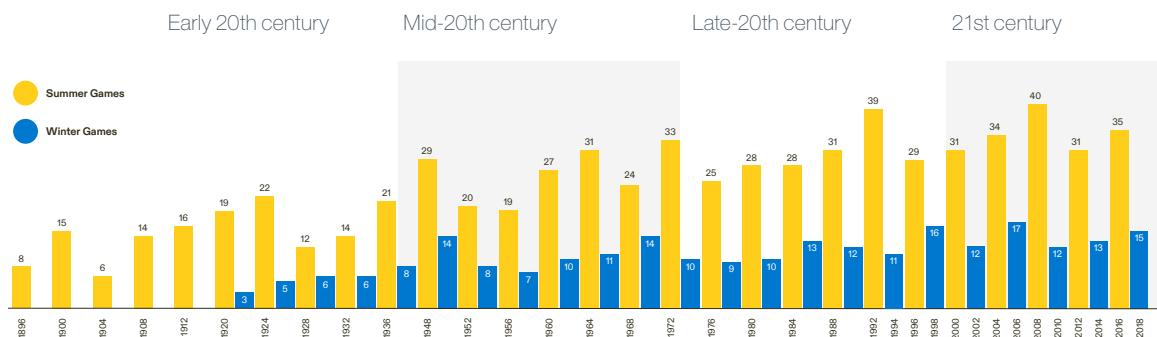
A total of 923 venues were used in the 51 Olympic Games editions from Athens 1986 to PyeongChang 2018. Of this total, 817 were permanent and 106 were temporary.

TOTAL VENUES IDENTIFIED



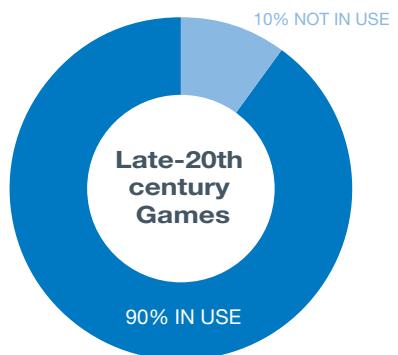
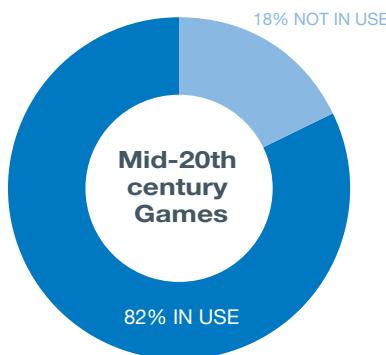
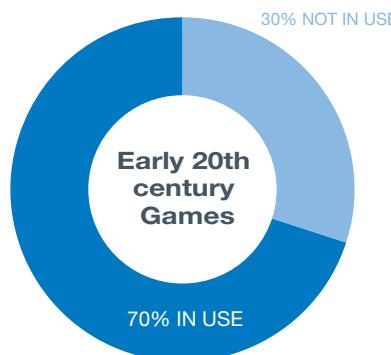
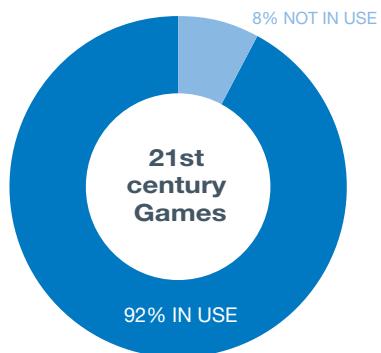
The graph below shows the number of venues used to host the Olympic Games in each edition. The numbers increased over time, as a result of the growth in the number of sports and disciplines in the programme.

TOTAL NUMBER OF SUMMER AND WINTER OLYMPIC VENUES



Recent Olympic Games have 92 per cent of permanent venues still in use.

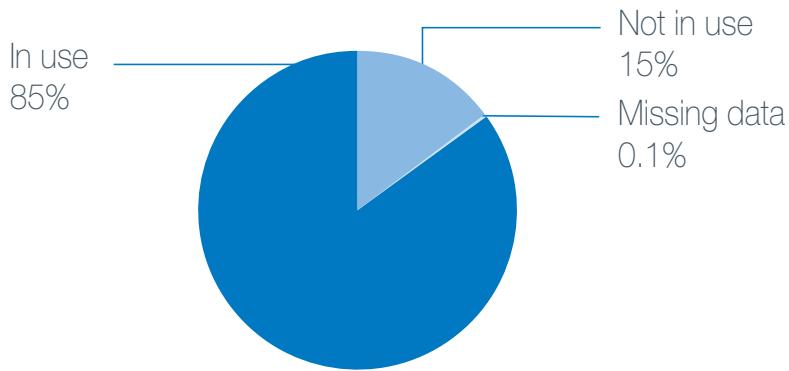
CURRENT STATUS*



*Excludes temporary venues

85 per cent of the permanent Olympic venues (all editions) are still in use.

USE STATUS OF PERMANENT OLYMPIC VENUES*



* All 51 editions of the Olympic Games between Athens 1896 and PyeongChang 2018 are included.

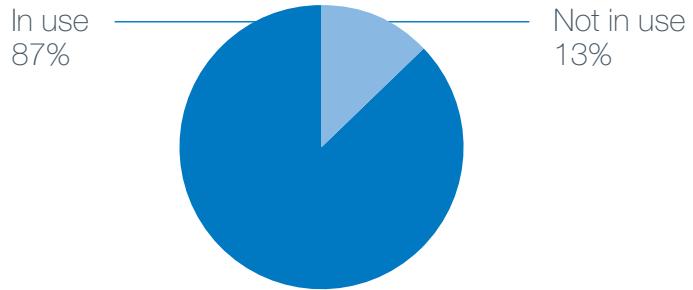
There are multiple potential uses of Olympic venues. For the purpose of this inventory, we considered the following uses: as a sports facility (training, competition, leisure sport), as an event location, as a tourist attraction, and as a business, cultural or educational facility.

The reference period used for the “current use status” assessment is the two years before the COVID-19 pandemic, i.e. 2018, 2019 and early 2020 (before COVID-19 lockdown).

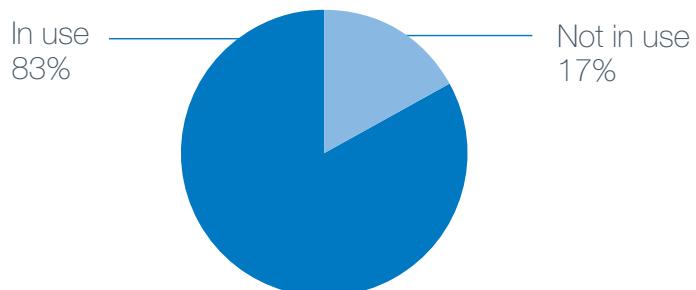
Of the 15 per cent of permanent venues not in use (124 venues), the majority (88 venues) were unbuilt or demolished for a variety of reasons. Some had reached the end of their life, some were destroyed during war periods or in accidents, while others were replaced by new urban development projects or were removed for lack of a business model. The remaining venues not in use are closed or abandoned (36 venues).

The percentage of venues still in use, whether new or existing, is similar.

CURRENT USE (NEW VENUES)*



CURRENT USE (EXISTING)*

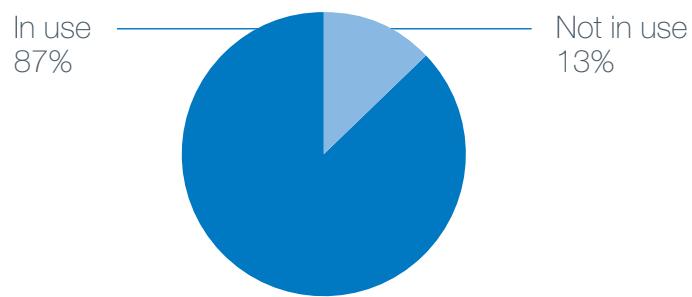


*Does not include temporary venues

⁵ The list of complex venues was based on the "core basket" of venues from Preuss, Andreff and Weitzmann (2018). The IBC/MPC is not included, because it is out of the scope of this study (it is neither a medal event venue, nor an Opening/Closing Ceremony venue, nor an athletes' village).

87 per cent of complex venues are still in use.

COMPLEX/LARGE VENUES – CURRENT USE STATUS*



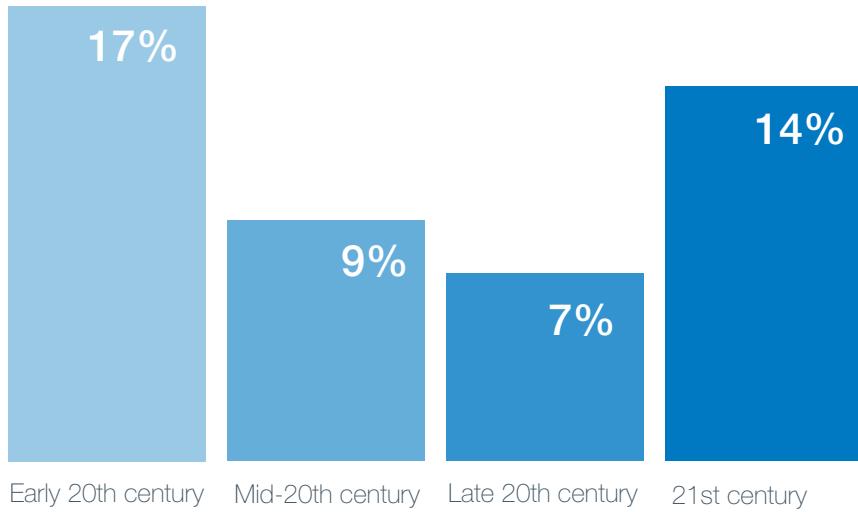
*Excludes temporary venues

Complex/large venues include the Olympic Stadium, Olympic Village, swimming pool, velodrome, ski jumping hill, sliding centre and ice hockey⁵ stadium. They represent the most iconic venues of the Games, which are often the most expensive to build and operate.

There are 247 complex and large venues: 196 are still in use and 29 are no longer in use. Temporary venues are excluded.

The proportion of temporary venues used has evolved in the 21st century.

TOTAL NUMBER OF SUMMER AND WINTER OLYMPIC VENUES



Temporary venues were also used in the early editions of the Olympic Games – early 20th century – for different reasons. At the time, the technical requirements of competitions allowed for simpler configurations of the fields of play. The number of athletes and spectators were also smaller, thus requiring less complex structures.

With technological advances and increased availability of new materials, temporary structures can fulfill more complex technical requirements for both field of play and spectator stands. Olympic Games hosts of the 21st century have taken the opportunity to use temporary venues when there was no long-term need for new permanent ones.

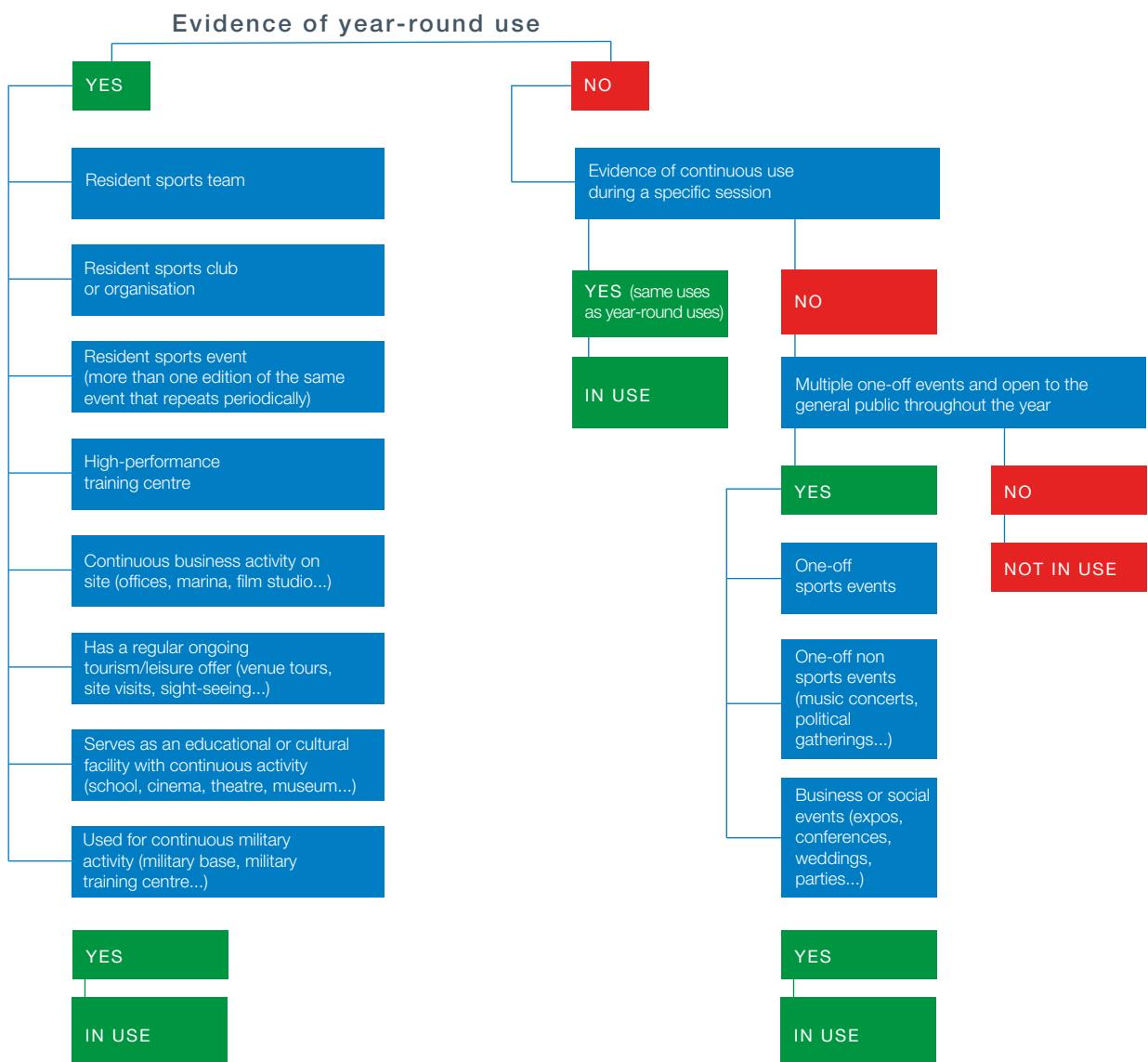
Through Agenda 2020, the IOC actively encourages hosts to use temporary facilities. We will therefore see the consolidation of the trend towards increased use of temporary venues.

> APPENDIX 1 CRITERIA FOR REGULAR USE

The criteria used to evaluate whether a venue is used regularly are explained through the decision tree below.

These criteria were developed through discussions with academics, venue operators and venue owners. The starting point was Preuss, H., Solberg, H.A. and Alm, J. (2014). A first version of the criteria was tested in a pilot study of the Olympic Stadia in 2018 and expanded to other types of venues based on discussions with venue operators.

REGULAR USE DECISION TREE



> APPENDIX 2



Independent limited assurance report on Selected Indicators of the post-Games use of Olympic venues inventory of International Olympic Committee

To the International Olympic Committee management

We have undertaken a limited assurance engagement on the International Olympic Committee's (hereinafter "IOC") selected indicators, namely "number of venues", "typology" and "current use status", published in the IOC's report "Over 125 years of Olympic venues: post-Games use" for the period from 1896 to 2018 (the "Selected Indicators").

Our assurance engagement does not extend to information in respect of earlier periods or to any other information included in the IOC's report "Over 125 years of Olympic venues: post-Games use" or linked to other Information, including any images, audio files or embedded videos.

Our Limited Assurance Conclusion

Based on the procedures we have performed as described under the 'Summary of the work we performed as the basis for our assurance conclusion' and the evidence we have obtained, nothing has come to our attention that causes us to believe that IOC's Selected Indicators are not prepared, in all material respects, in accordance with the "methodology on post-Games use of Olympic venues inventory" as described in the IOC's report "Over 125 years of Olympic venues: post-Games use" on pages 6,7, and 8.

We do not express an assurance conclusion on information in respect of earlier periods or to any other information included in the in the IOC's report "Over 125 years of Olympic venues: post-Games use" or linked to other Information, including any images, audio files or embedded videos.

Understanding how the IOC has Prepared the Selected Indicators

The "methodology on post-Games use of Olympic venues inventory" as described in the IOC's report "Over 125 years of Olympic venues: post-Games use" on pages 6,7, and 8 has been used as criteria reference for the disclosures of the Selected Indicators. Consequently, the Selected Indicators need to be read and understood together with the "methodology on post-Games use of Olympic venues inventory" as described in in the IOC's report "Over 125 years of Olympic venues: post-Games use" on pages 6,7, and 8.

Inherent Limitations in Preparing the Selected Indicators

The Selected Indicators include information based on information provided by various sources that are subject to inherent uncertainty because of limitations described in chapter "Study Limitations" of the IOC's report "Over 125 years of Olympic venues: post-Games use" on page 8.

Furthermore, due to the inherent limitations of any internal control structure, it is possible that errors or irregularities may occur in disclosures of the Selected Indicators and not be detected. Our engagement is not designed to detect all internal control weaknesses in the preparation of the Selected Indicators because the engagement was not performed on a continuous basis throughout the period and the audit procedures performed were on a test basis.



IOC's Responsibilities

The International Olympic Committee management is responsible for:

- The preparation of the Selected Indicators in accordance with the “methodology on post-Games use of Olympic venues inventory” as described in in the IOC’s report “Over 125 years of Olympic venues: post-Games use” on pages 6,7, and 8.;
- Designing, implementing and maintaining internal control over information relevant to the preparation of the Selected Indicators that is free from material misstatement, whether due to fraud or error.

Our Responsibilities

We are responsible for:

- Planning and performing the engagement to obtain limited assurance about whether the Selected Indicators are free from material misstatement, whether due to fraud or error;
- Forming an independent conclusion, based on the procedures we have performed and the evidence we have obtained; and
- Reporting our independent conclusion to the International Olympic Committee management

As we are engaged to form an independent conclusion on the Selected Indicators as prepared by management, we are not permitted to be involved in the preparation of the Selected Indicators as doing so may compromise our independence.

Professional Standards Applied

We performed a limited assurance engagement in accordance with International Standard on Assurance Engagements 3000 (Revised) *Assurance Engagements other than Audits or Reviews of Historical Financial Information*, issued by the International Auditing and Assurance Standards Board.

Our Independence and Quality Control

We have complied with the independence and other ethical requirements of the *International Code of Ethics for Professional Accountants (including International Independence Standards)* issued by the International Ethics Standards Board for Accountants, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality, and professional behavior.

Our firm applies International Standard on Quality Control 1 and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards, and applicable legal and regulatory requirements.

Our work was carried out by an independent and multidisciplinary team including assurance practitioners and sustainability experts. We remain solely responsible for our assurance conclusion.



Summary of the Work we Performed as the Basis for our Assurance Conclusion

We are required to plan and perform our work to address the areas where we have identified that a material misstatement of the Selected Indicators is likely to arise. The procedures we performed were based on our professional judgment. Carrying out our limited assurance engagement on the Selected Indicators included, among others:

- Assessment of the design and implementation of systems and processes for determining, processing and monitoring relevant data, including the consolidation of data;
- Inquiries of employees responsible for the determination and consolidation as well as the implementation of internal control procedures regarding the Selected Indicators;
- Inspection of selected internal and external documents to determine whether qualitative and quantitative information is supported by sufficient evidence and presented in an accurate and balanced manner;
- Assessment of the data collection, validation and reporting processes as well as the reliability of the reported data on a test basis and through testing of selected KPIs calculations;
- Assessment of the consistency of the requirements of the Selected Indicators with other information and of the overall presentation of the disclosures through critical reading of the IOC's report "Over 125 years of Olympic venues: post-Games use".

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had we performed a reasonable assurance engagement.

KPMG AG

A handwritten signature in black ink, appearing to read "S. Jurt".

Silvan Jurt

Licensed audit expert

A handwritten signature in black ink, appearing to read "C. Kaufmann".

Cyrill Kaufmann

Licensed audit expert

Zurich, 2 May 2022

> CREDITS

ABOUT THE OSC

The IOC Olympic Studies Centre is the world source of reference for Olympic knowledge. Our mission is to share this knowledge with professionals and researchers by providing information, giving access to our unique collections, enabling research and stimulating intellectual exchange. As part of the IOC, we are uniquely placed to collect and share the most up-to-date and accurate information on Olympism. Our collections cover all the key themes related to the Olympic Games and the Olympic Movement, and their place within society. Find out more via the Olympic World Library, a library catalogue and portal for information entirely devoted to Olympic knowledge. The resources include the official documents of the IOC and the Organising Committees for the Olympic Games, and publications by internationally renowned researchers.

To find out more about the Olympic Studies Centre, check out our website www.olympic.org/etudes or write to us at studies.centre@olympic.org.

IMAGES

Cover: © 2021 Getty Images/ YAMAZAKI, Yuichi