

APPENDIX 10B

FULL ENVIRONMENTAL REPORT

Environment and Sustainability Considerations for Calgary 2026

Prepared for:

The Calgary Bid Exploration Committee

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April 2017

Table of Contents

1. Purpose of the Report	3
2. Approach	3
3. Environment, Sustainability and the Olympic Games	3
4. Context for the 2026 Winter Games	5
5. Major Environment and Sustainability Initiatives of Past and Planned Olympic Games	6
6. Recommendations for Calgary 2026 – Carbon, Waste, Transportation	14
7. Additional Environment and Sustainability Recommendations for Calgary 2026	18
Appendix 1 – IOC Sustainability Strategy – A Summary	23
Appendix 2 – Host City Contract Operational Requirements for Sustainability and Olympic Legacy	25

1. Purpose of the Report

As requested by the Calgary Bid Exploration Committee, the purpose of this report is to:

- Prepare a summary of major environmental sustainability initiatives from past and planned Games with an emphasis on:
 - Climate Change and Carbon Management
 - Waste Management
 - Transportation
- Describe the key initiatives that should be considered from the list generated in item 1 above by a Calgary Games.
- Identify any other potential environmental initiatives that might be considered by a prospective Bid committee should Calgary decide to bid for the Games.

2. Approach

This report was prepared using information from four principal sources:

- Online information available from various websites related to Olympic Games and sport event management. In particular, information was drawn from the website and online library of the International Olympic Committee (IOC) including Official Reports of previous Summer and Winter Games as well as IOC policy related to sustainability and Olympic Game management.
- Reports, articles and papers available from the files of the consultant and other sport and event experts.
- Interviews with select Olympic Games, sport and sustainability experts.
- Experience of the consultant as a member of both the Vancouver 2010 Bid Corporation and the Vancouver 2010 Organizing Committee (VANOC).

The report first provides some context information concerning environment and sustainability as it relates to the Olympic Games and then summarizes environmental initiatives from 12 past and planned Summer and Winter Olympic Games from 2000 to 2022. From that background, a set of recommendations are provided for consideration in the environment and sustainability components of a possible future bid to host the 2026 Olympic Winter Games in Calgary.

3. Environment, Sustainability and the Olympic Games

The emergence of the environment as an important consideration in planning and hosting an Olympic Games can be traced back over 25 years to the early 1990s. There was increasing global concern about the impact of development on the planet – air quality and pollution, a growing hole in the atmosphere's ozone layer, climate change, toxic chemicals, water quality and scarcity, disappearing old growth forests, loss of habitat, species extinction, waste accumulation.

The United Nations called the world's nations together for a Conference on Environment and Development, informally called the Earth Summit, in Rio de Janeiro in June 1992. The Earth Summit was 20 years after the first UN Conference on the Human Environment in Stockholm, Sweden. Both Conferences were led by Canadian Maurice Strong. Several historically significant documents emerged from the Earth Summit:

- Agenda 21 – plan of action to pursue sustainable development
- Rio Declaration on Environment and Development
- Statement of Forest Principles
- UN Framework Convention on Climate Change
- UN Convention on Biological Diversity
- UN Convention to Combat Desertification

Prior to the Earth Summit, the UN had formed the World Commission on Environment and Development led by Norway's former Prime Minister, Gro Harlem Brundtland, to examine how development could continue to occur, especially in underdeveloped nations, without compromising the ability of the planet's environment to support a growing global population. In 1987, the Brundtland Commission released its report 'Our Common Future' which coined the phrase 'sustainable development' and defined it as 'development that meets the needs of current generations without compromising the ability of future generations to meet their own needs'. This pivotal work has remained the foundation for the concepts of sustainability.

In the lead up to the Earth Summit, the International Olympic Committee (IOC) was supporting planning and delivery of Olympic Winter Games in Albertville within the Savoie region of France (1992) and Lillehammer, Norway (1994). The Albertville Winter Games were the subject of criticism and protest due to environmental impacts created from building some of the venues. In Norway, local residents and non-governmental organizations expressed concerns about impacts the Games would have on their small communities. They pressured the Games Organizing Committee to examine the size and legacy of venues, the energy used, the waste created, and the transportation network needed to move athletes, officials and spectators. As a result of the discussions, plans for the Lillehammer Winter Games were refined with more careful consideration of both the impacts at the time of the Games and what legacies would remain once the Games were over. The 1994 Winter Games in Lillehammer became known as the 'first Green Games'.

In 1993, the IOC was considering what city would host the 2000 Summer Games and had included environmental considerations in the bid requirements. Five cities were in the candidature phase: Beijing, Berlin, Istanbul, Manchester and Sydney. Strategically, given what was happening globally and with the 1992 and 1994 Winter Games, Sydney invited Greenpeace Australia to develop environmental guidelines for the Games as part of their bid proposal, including venue design, renewable energy and waste minimization. Sydney was awarded the 2000 Summer Games by two votes over Beijing, and went on to solidify its reputation as the 'Green Games' by incorporating environment into all aspects of the event.

Several significant actions were taken by the IOC during the 1990s regarding environment and sustainability:

- 1994 – adopted Environment as Third Pillar of Olympic Movement along with Sport and Culture at the Centennial Olympic Congress
- 1994 – created a partnership with UN Environment Program
- 1995 – established the IOC Sport and Environment Commission
- 1996 – added a section on Environment to the Olympic Charter
- 1997 – published a Manual on Sport and Environment to encourage all members of Olympic Family to raise awareness on sustainable development
- 1999 – adopted IOC Agenda 21-Sport for Sustainable Development – action plan outlining how the Olympic Movement will contribute to sustainable development

Since the 1990's, environment and sustainability has become increasingly important within the Olympic Movement, largely led by efforts of Host Cities to showcase best practices, particularly related to environmental performance, in Summer and Winter Olympic and Paralympic Games every two years. Over this period, the concept of sustainability within the Games has gradually adopted the broader understanding that it includes economic prosperity and social inclusion as well as environmental stewardship. This more comprehensive approach was particularly profiled in the sustainability policies of Vancouver 2010 and London 2012 and has now become a foundation component of the latest strategic direction for the Olympic Movement outlined in Agenda 2020, approved by the IOC in 2014.

4. Context for the 2026 Winter Games

International Olympic Committee

Agenda 2020 – Shortly after Thomas Bach was elected President of the IOC in September 2013, the organization launched Agenda 2020, a strategic review of the Olympic Movement. The IOC identified many global challenges unfolding in the world that would affect sport, the Olympic Games and the Olympic Movement. President Bach stated that change for the Olympic Movement was inevitable so the IOC needed to be proactive and ‘be the leaders of change rather than the object of change’. Following discussions on 25 themes at an Executive Board retreat in December 2013 and again at the IOC session in Sochi February 2014, President Bach appointed 14 Working Groups to develop concrete proposals on the future strategic direction for key components of the Olympic Movement. The advice of the Working Groups and extensive input from stakeholders, experts and the public led to a consolidated list of 40 recommendations under Agenda 2020 that were unanimously approved at the December 2014 IOC Session in Monaco. Agenda 2020 represents the future strategic direction for the Olympic Movement and identifies 3 pillars: credibility, sustainability and youth.

Implementation of Agenda 2020 is already underway. Several recommendations relate to Olympic Games, and in particular, the invitation, candidature and selection process to identify future Host Cities. Two recent IOC initiatives that impact the 2026 Winter Games selection process being considered by Calgary are the Olympic Winter Games Strategic Review and the development of a Sustainability Strategy.

Olympic Winter Games Strategic Review – Agenda 2020 recommended that the invitation and selection process for future Host Cities give the candidates more flexibility to design Games that meet the Host City’s long term development plans. It also recommended that the Olympic Movement provide more support to Host Cities during the planning and delivery of the Games. As a result, in June 2015, the IOC Executive, in collaboration with the Association of International Olympic Winter Federations, initiated a review of Olympic Winter Games. The objective was to develop recommendations to enhance the value of Olympic Winter Games, especially for candidate and host cities, making them more sustainable and less impactful in financial, operational and environmental terms, with particular attention to sustainability, legacy and the host city invitation and selection process. The recommendations from the Review include:

- **Venue Concept** - Encourage sustainable, creative, cost-effective venue solutions to further support legacy goals.
- **Candidature** - Tailor the candidature process to reflect the specific character and nature of Olympic Winter Games, and provide more flexibility and support to prospective hosts.
- **Games Organization** - Optimize assistance and support to Organizing Committees from all Olympic Family stakeholders.
- **Games Organization** - Reduce cost and complexity of the Olympic Winter Games.
- **Positioning** - Define and uphold the specific nature and values of Olympic Winter Games and the various components, especially the programs.
- **Benefits, Legacy** – Promote the benefits of applying for and hosting Olympic Winter Games.

Sustainability Strategy – in addition to identifying Sustainability as one of three pillars for Agenda 2020, two recommendations specifically related to Sustainability:

- Recommendation 4 – include Sustainability in all aspects of the Olympic Games
- Recommendation 5 – include Sustainability within the Olympic Movement’s daily operations

One of the actions under Recommendation 4 was to develop a Sustainability Strategy that would enable potential and actual Olympic Games organizers to integrate and implement sustainability measures that encompass economic, social and environmental spheres in all stages of their project. The IOC Executive approved the new Sustainability Strategy in December 2016 and

published an Executive Summary in March 2017. A summary of the Strategy is included in Appendix 1. The Strategy identifies 3 spheres of responsibility for the IOC:

- IOC as an Organization
- IOC as Owner of the Olympic Games, and
- IOC as Leader of the Olympic Movement.

And five focus areas for Sustainability with a description of strategic intent for each:

- Infrastructure and natural sites
- Sourcing and resource management
- Mobility
- Workforce
- Climate

More detail is expected to be released by Summer 2017 regarding implementation of the Sustainability Strategy. Much of the intent of the Sustainability Strategy is now captured in the Host City Contract Operational Requirements for the 2024 Summer Olympic Games Candidature process that is currently underway (see Appendix 2).

All of the above needs to be carefully considered in exploring a Calgary Bid for the 2026 Olympic Winter Games.

5. Major Environmental Sustainability Initiatives of Past and Planned Olympic Games

Summer Games

Athens 2004 Summer Games

- **Context** – selected in 1997 as Host City for the Centennial of the Modern Olympics; defeated Rome, Italy, Capetown, South Africa, Stockholm, Sweden, Buenos Aires, Argentina plus six other cities had submitted an initial bid.
- **Environment** – strategic goals for environment include: organize/host Games in healthy environment, contribute to improved environment in Athens and Attica Region, develop environmental awareness
- **Major Initiatives:**
 - **Principles for Environment** – comply with/go beyond Greek and European environmental legislation; develop comprehensive program of environmental actions; achieve cooperation of government agencies, local authorities, private sector
 - **Olympic Environmental Alliance** – establish an alliance of government agencies, local authorities, sponsors, private sector, non-government organizations – for engagement, communication
 - **Cleaning and Waste Management** – a keystone of the Environment Program, design of waste collection system at front of house, recycling program; definition of venue cleaning requirements; cleaning and waste managers at each venue to oversee cleaning and waste management delivered by sponsor
 - **'Greening' venues** – involved planting guidelines, donation of plants to communities, improving viewsapes around venues
 - **Schinias Rowing Centre** – a special situation developed when protests erupted over the plans to reshape wetlands to create the rowing and canoeing venue. Through negotiations, the plans were refined and an environmental management plan prepared, an airport was removed and a portion of the area was established as a national park.

Beijing 2008 Summer Games

- **Context** – Beijing was selected as Host City in 2001, defeating Toronto, Canada, Paris, France, Istanbul, Turkey, Osaka, Japan. Beijing had competed once before for the 2000 Summer Games and lost to Sydney Australia by 2 votes. The IOC hoped that the Olympic

Games would enable China, the world's most populous country, to become more engaged in world affairs.

- **Environment and Sustainability** – Beijing presented their Bid as 'Green Olympics, High-Tech Olympics, People's Olympics' and committed to carry those priorities into the organizing stage. Their 'Green Olympics' focus was on environmental protection and sustainability, without any reference to the broader concept of social, economic and environmental sustainability. Three primary focuses: ensure environmental protection at Olympic Games venues and facilities; adopt eco-friendly and energy saving technology and materials; raise public awareness of environmental protection. Very significant environmental issues in the city: air quality, traffic congestion, lack of sewage treatment, water quality and infrastructure, solid waste management
- **Major Initiatives:**
 - **Environmental Protection at Venues** – Environment team was part of Construction function; developed ecological environment construction plan for each venue, then for operations established BOCOG Environmental Guidelines in April 2004 that led to Environmental Management System Manual for venue operators
 - **Green Buildings** – established Environmental Guide for Olympic Projects – Construction, then identified 24 Green Olympics demonstration construction projects using green building materials, energy conservation, water conservation, wastewater recycling, landscaping
 - **Green areas** – established green areas around venues, achieving 60% of the venue areas planted with natural landscaping (exceeding their 30-40% commitment)
 - **Solid waste** – achieved a 73% recycling rate for waste removed from venues
 - **Civic improvements** – it is hard to comprehend the magnitude of improvements in the City infrastructure during the Games organizing period:
 - 9 sewage plants constructed – treatment capacity increased from 300 million m3 to 800 million m3
 - 10,000 hectares of municipal green area added
 - solid waste sorting went from 10% to 50%
 - 40 rivers received improvements in bank stability, streamside planting
 - air quality monitoring and removal of polluting equipment, plants

London 2012 Summer Games

- **Context** – London selected as Host City in 2005, defeating Paris, Madrid, New York, Moscow in a closely contested race that required 4 rounds of voting. 2012 would be the third time London had hosted the Summer Olympics.
- **Environment and Sustainability** – Sustainability was integral to London's bid, striving for the most sustainable Games ever and pitching their plans as the 'One Planet Olympics' referring to the fact that if all the world lived the way Europeans and North Americans lived, it would require 3 planets. The sustainability plan for the Games had five themes: climate change, waste minimization, biodiversity, inclusion and healthy living.
- **Major Initiatives:**
 - **Sustainability Plan and Management System** – carrying on from the Bid, LOCOG integrated sustainability considerations into the objectives of every function; they developed a Sustainability Management System (SMS) to identify the key actions, responsibilities, performance measures and reporting structure to ensure clarity and accountability; their SMS became the foundation for the Event Sustainability Management System established as ISO 20121 by the International Standards Organization in 2012
 - **Independent Commission for Sustainable London 2012** – established a commission of sustainability expertise to provide independent assurance and commentary to the various organizations (including LOCOG) contributing to preparations for the 2012 Games
 - **Green Buildings** - there is a long list of sustainable building examples in the London 2012 venues. Natural light and ventilation, energy conservation, rainwater harvesting and sustainable materials are used throughout. Several were purposely built as

temporary venues for the Games and were to be dismantled so materials could be used on other construction sites.

- **Waste Management** – London 2012 was the first Summer Games to declare a goal of Zero Waste to landfill with a target of 70% reused, recycled, composted. LOCOG deployed multi-bin systems for separation at source followed by sorting at a dedicated facility.
- **Sustainable Procurement** - through their sustainable sourcing code, LOCOG set sustainability criteria early in the procurement cycle, encouraging functions, purchasing staff and suppliers to ensure things had a life after the Games, or could be recycled, composted.
- **Carbon Management** – London 2012 described their approach to carbon management as low carbon. The OCOG did ground breaking work in calculating the projected carbon emissions well in advance of the Games and working with various partners to avoid or reduce their emissions, but they did not commit to a 'zero carbon' result by acquiring carbon offsets from other carbon reduction projects.
- **Food Vision** – an ambitious program to source healthy, fresh, sustainably sourced food for Games time providing varied, tasty and reasonably priced catering options
- **Logistics** – used alternate-fuelled and efficient vehicles (including river barges, intelligent route planning, and smart driving to successfully manage the movement of goods to and from venues before, during and after Games

Rio de Janeiro 2016 Summer Games (Official Games Report is not yet available)

- **Context** – Rio de Janeiro was selected in 2009 as the first Host City from South America, defeating Madrid, Spain, Tokyo, Japan and Chicago, USA after 3 rounds of voting. Rio developed its large event experience along with some needed venues by hosting the 2007 Pan American Games and being a key host for games in the 2014 FIFA World Cup. Rio 2016 received extensive criticism in the period leading up to the Games as promised infrastructure upgrades had not been delivered, particularly extensions to sewer and storm water systems that would clean up Guanabara Bay, site of sailing competitions. Brazil also suffered from extensive political and financial disruptions in the year before the Games.
- **Environment and Sustainability** – Rio 2016 pledged a 'Green Games for a Blue Planet' during its bid proposal. Sustainability, both environmental and social, was an integral part of their Bid commitments including an extensive list of legacy projects related to sewer upgrades, transit investment, restoration of run-down areas and clean up of Guanabara Bay.
- **Major Initiatives:**
 - **Sustainability Management System** – following the London 2012 Games, Rio 2016 designed and obtained ISO 20121 certification for its Sustainability Management System.
 - **Venue Planning** – 70% of competitions took place in existing venues lowering the capital cost of the Games and reducing the risk of leaving a legacy of unwanted facilities; handball court is planned to be disassembled and used to build 4 elementary schools; portions of the temporary media centre will be used by PyeongChang 2018 and Tokyo 2020
 - **Transportation Infrastructure** – extension to metro line, improvements to the key city roads, upgrades to the city airport
 - **Waste Treatment Infrastructure** – one new sewage treatment plant constructed (7 were promised), 2100 km of new collection system, new solid waste handling facility constructed
 - **Opening Ceremonies** – dramatically lower cost for Opening Ceremonies (10% of London, 5% of Beijing) with an unprecedented call for action on climate change
 - **Green Procurement** – established a procurement manual emphasizing environmentally beneficial products
 - **Certified Products** – worked with Forest Stewardship Council to secure 100% legally sourced sustainable timber for overlay, with Marine Stewardship Council and Aquaculture Stewardship Council to acquire 70 tonnes of certified seafood for catering in villages and venues

- **Carbon Management** – worked with Dow (corporate sponsor) to develop a carbon management strategy including receiving 2 million tonnes of GHG compensation
- **Habitat and Biodiversity** – new golf course constructed in an area removed from protected status – a controversial decision – but 44 hectares of new natural vegetation established; 9 km of river courses recovered

Tokyo 2020 Summer Games (planned)

- **Context** – Host City selected in 2013 defeating Madrid, Spain and Istanbul, Turkey. Vision: Sport has the power to change our world and our future – 3 core concepts: achieving personal best, unity in diversity, connecting to tomorrow
- **Environment and Sustainability** – embracing IOC Agenda 2020 – begin implementing recommendations; Sustainability Strategy with 5 themes – Climate Change (Carbon Management), Resource Management, Natural Environment and Biodiversity, Consideration of Human Rights, Labour, Fair Business Practices, and Involvement, Cooperation and Communication (Engagement)
- **Major Initiatives to this point:**
 - **Sustainability Management** – will pursue ISO 20121 certification for Sustainability Management System and will also use tools such as a sustainability sourcing code (procurement), environmental assessment, Olympic Games Impact
 - **Principles** – 4 principles guiding Sustainability efforts
 - Responsibility for Sustainability (Stewardship)
 - Involvement of All Interested Parties (Inclusivity)
 - Adherence to Ethical Principles (Integrity)
 - Openness about Decisions, Accountability (Transparency)
 - **Planning Structure** – have set up an Urban Planning and Sustainability Commission with 3 Discussion Groups (Urban Planning, Sports/Venues, Sustainability) and 3 Working Groups (Low Carbon, Sustainable Procurement, Resource Management)

Winter Games

Salt Lake City 2002 Winter Games

- **Context** - first Host City selected (1995) after Environment added as 3rd Pillar of Olympic Movement; controversy associated with bribes during the Bid process; defeated Ostersund, Sweden, Sion, Switzerland, Quebec City, Canada; followed the 'Green Games' of Sydney; dealt with dramatic implications on Games security and finances in final 6 months before the Games following catastrophic 9/11 events
- **Four stated Environment goals** – zero waste, zero net emissions, urban forestry advocacy, zero tolerance for non-compliance
- **Major initiatives:**
 - **Environmental Advisory Committee** – started early (1994) and maintained engagement with ENGOS
 - **Venues** – only 3 new venues (Oval, Olympic Park (bob/luge track, ski jump), Soldiers Hollow (x-country)) plus Athletes Village; Oval certified as LEED Silver green building; Athletes Village legacy as university student housing.
 - **Zero Waste** – emphasis on recycling/composting with no Games-time waste to landfill; 3 steps: work with suppliers/sponsors to source eco-friendly materials, sort all Games waste, educate Games participants; 95% compost/recycle of Games waste reported
 - **Zero-net Emissions** – first Games to tackle carbon management (measure, reduce, offset); Games time carbon estimated to be 123,000 tonnes CO₂e; created Olympic Cleaner and Greener program to acquire donated emission reduction credits that were retired; certified by Climate Neutral Network
 - **Urban Forestry Advocacy** – Cool Spaces 2002 (reduce urban heat islands and ground level ozone); planted 100,000 trees in Utah; Plant it Green – Global Tree Race reported 15 million trees planted globally

- **Compliance** – strong emphasis on Environmental Management System – 12 point platform for environmental risk reduction at Games time; 100% compliance
- **Awards/Recognition** – Olympic Champions program recognizing sponsors supporting Environment Program; Spirit of the Land Award for compliance partners; Eco-Works hotel greening program

Torino 2006 Winter Games

- **Context** – first Host City selected (1999) after IOC revised the Bid process following issues from the 2002 Winter Games selection process; defeated Sion, Switzerland; Bid included a 'Green Card' outlining an environmental action plan
- **Environmental strategy** – Strategy guided by a legislative and regulatory framework. Legislation was passed to authorize the Games and included an obligation to consider environmental compatibility and identify mitigation strategies to minimize impacts and opportunities to improve the environment. A Strategic Environmental Assessment was undertaken leading to development of Strategic Plans for Water, Natural Hazard Prevention, Site Safety, Landscape, Inert Materials, Sustainable Transport, Environmental Monitoring and others that were constantly updated through the phases of Games planning and delivery.
- **Major initiatives**
 - **Environmental Management System** – developed in conformance to ISO14001 and European Commission EMAS (EU Eco-Management and Audit Scheme) to enable a systematic, cross-organizational approach to managing for the environment, and promote continuous improvement, during the Games preparation and delivery. First application of EMAS to a large sports event and, following audits, TOROC was certified EMAS compliant.
 - **Sustainability Report** – TOROC produced a Sustainability Report in 2006 that complied with Global Reporting Initiative (GRI) standards
 - **Environmental Advisory Assembly** – statutory body of TOROC comprising of local institutions and main environmental associations to formulate and provide feedback on TOROC environmental policies and initiatives (2001-05)
 - **Sponsors and Sustainability** – Games sponsors invited to share environmental sustainability policies and practices; those that demonstrated conformance were allowed to use Ambiente 2006 (Sustainability) logo
 - **Green Procurement** – incorporated environmental preference criteria in all principal categories of suppliers who undertook to respect TOROC policies by signing Specification on Environmental Quality and Protection
 - **Carbon Management** – established Heritage Climate Torino program (HECTOR) to increase awareness of climate change and offset GHG emissions during the Games. Estimate of direct and indirect emissions at Games time set at 118,500 tCO₂e. Regional government issued a call for green energy projects in the Games area (5 million euro program) with commitment that emission reduction credits would be used by the Games. UNEP donated 4 years of carbon credits from tree planting and several other parties contributed credits.
 - **Eco-label Program for Tourism** – campaign to encourage regional tourism operations to obtain European Eco-Label certificate for green operations supported by EU funds and TOROC staff support. 30% of total hotel capacity obtained certificate
 - **Environmental Monitoring** – TOROC and Agenzia Torino 2006 jointly undertook monitoring and audit (100) of construction projects and overlay works prior to Games time.
 - **Waste Management** – overall waste prevention and management plan prepared relying on Green Procurement efforts to reduce waste at source and increase recyclable materials, then separation of waste at venues to minimize landfill contribution.
 - **Partnerships** – TOROC established partnerships with UNEP (communication and HECTOR contribution), European Commission (EMAS guidelines for sustainable

sport events and Eco-Label) and local authorities (green procurement, EMAS for local events, museum project)

Vancouver 2010 Winter Games

- **Context** – Selected as Host City in 2003 defeating Salzburg, Austria and PyeongChang, South Korea. Proposal incorporated two centres for the Games, one in Vancouver for ice sports and freestyle skiing, and one in Whistler for snow sports and ice track events. Opening and closing ceremonies held in Vancouver, with two athlete villages. Major infrastructure investments in rapid transit extension to the Vancouver Airport, highway upgrade to Whistler, large expansion to convention centre in Vancouver – all planned even if Games bid was not successful. Vancouver was the first Games bid to propose social, economic and environmental sustainability as a foundation, including a focus on social inclusion and aboriginal participation, along with a management system to track and report progress. Achieved a majority in City of Vancouver referendum on whether citizens wanted to host the Games – last referendum won by an aspiring host city.
- **Sustainability Framework** – six sustainability performance objectives – accountability, environmental stewardship and impact reduction, social inclusion and responsibility, aboriginal participation and collaboration, economic benefits, sport for sustainable living. Five areas of focus within environmental stewardship and impact reduction: biodiversity and habitat, energy and climate change, air quality, water quality and conservation, waste management.
- **Major initiatives:**
 - **Sustainability Governance** – leadership and oversight by a Board Committee on Sustainability, and guidance and feedback by a Board Advisory Committee on Sustainability (diverse external interests), executive accountability across functions for sustainability performance.
 - **Sustainability Management and Reporting System** – comprehensive management/reporting system to foster organization-wide, cross-function accountability and public accountability for sustainability performance (34 key performance indicators). Based SMRS on globally recognized standards for performance management, engagement and reporting (ISO14001, AA1000, Global Reporting Initiative) - five annual Sustainability Reports, final report 3rd party certified. Led to a new sustainable event management standard for CSA (Canada Standards Association) and a Sustainable Sport Event Toolkit (SSET)
 - **Green Building Certification** – VANOC and venue partners achieved Silver, Gold and Platinum LEED green building ratings for 34 structures associated with 2010 Games, including a Platinum designation under the Neighbourhood Development category (multiple buildings/services) for the Vancouver Village.
 - **Carbon Management Program** – comprehensive program to achieve low carbon outcome for the Games – ‘Know, Reduce, Offset, Engage/Inspire’. Published initial inventory forecast in 2007, tracked and reported carbon emissions annually, pursued carbon reduction through building design, energy use, renewable energy choices, transportation plan, procurement and waste management, logistics. Offset direct footprint of Games (from 2003 to 2010) plus athlete and officials travel (118,000 tCO₂e) using certified emission reduction credits from offset sponsor. Deployed various engagement initiatives for partners, media, spectators to voluntarily offset their footprint.
 - **Transportation** – two compact clusters of venues and athlete villages enabled transportation efficiency. Heavy emphasis on mass transit for staff, volunteers, spectators at Games time. Smart driver training for staff and volunteers, no idling policy, efficient logistics management, Smart freight contractors.
 - **Waste Management** – set zero waste goal in Bid stage and pursued a zero waste strategy from 2003 to 2010. Set target of diverting 85% of all Games-time waste from landfill – achieved 77% (63% recycled/composted). Used a source reduction approach in collaboration with sponsors and suppliers (Buy Smart - green and ethical procurement strategy) including recycling capability, reuse opportunities, defining

end-of-use strategies (e.g. donations). Used waste separation approach in both front and back of house locations. Focused strongly on waste reduction during venue construction, fit out and overlay, and post-Games restoration periods.

- **Habitat/Biodiversity protection** – six steps in minimizing impact on natural sites – smart site selection, environmental assessments, venue design and green buildings, environmental management plans for overlay and operation, ongoing monitoring and compliance, restoration post-Games. Environmental management team on-the-ground at all venues during pre-Games fit-out/overlay, Games operation and post-Games restoration periods.
- **Sustainability Stars** – recognized and celebrated examples of sustainability innovation by Games partners, sponsors and VANOC (62 Stars recognized) that demonstrated measurable, positive social, economic and environmental impact that are new and/or significantly scaled up for Games delivery.

Sochi 2014 Winter Games

- **Context** – selected as Host City in 2007, defeating Salzburg and PyeongChang, both of whom also lost to Vancouver in 2003; proposal included major investment in venues and infrastructure to create a four-season international resort destination at Sochi on the Black Sea; 10 new competition venues in two clusters (coastal and mountain) linked by a new highway and new high speed train; total Games costs reported to be over \$50B; sustainable development approach integrated in proposal
- **Sustainable Development priorities** – healthy living, harmony with nature, barrier-free living, economic prosperity, modern technology, culture and national values
- **Environmental Strategy** – Games in Harmony with Nature; Climate Neutral Games, Zero Waste Games; Enlightened Games
- **Major Initiatives:**
 - **Sustainability Management System** – first major project in Russia with systematic approach to sustainable development; linking partners with sustainable development results and indicators
 - **Green Building Construction** – first time green building construction standard used in Russia (also BREEAM (from UK) on several venues)
 - **Environmental Management System** – EMS certified to ISO 14001; strategic environmental assessment plus environmental impact assessment for each venue; regular reporting; monitoring by UNEP, UNESCO, WWF
 - **Environmental Compensation Measures** – 3 venues re-located from initial plan due to environmental impact; expanded protected areas (41,700 ha increase in special protected natural areas); 500 compensatory measures; replanting flora/restoring fauna; 500,000 trees planted; re-introduced Persian Leopard
 - **Zero Waste** – Sochi waste system modernized including closing/reclaiming landfill and creating sort facility; 97% of waste reportedly recycled; improvements in wastewater management and storm water management
 - **Climate Neutral Games** – reduced carbon emissions (energy efficiency, renewable energy, cleaner vehicles); calculated footprint and compensated (offset) for both direct carbon footprint of Games (OCOG control) and flights of spectators and media – total of 500,000 tonnes CO₂e.

PyeongChang 2018 Winter Games (Planned)

- **Context** – selected in 2011 as Host City following 2 previous unsuccessful Bids for 2010 and 2014; able to observe and learn from sustainability programs in Vancouver 2010, London 2012 as well as Sochi 2014 and Rio 2016
- **Sustainability Framework** – 5 focus areas (17 initiatives) – low carbon green Games, preserve nature for descendants, healthy enriched life, pride of nature and civil society, advancing PyeongChang to the world.
 - **Low Carbon Green Games** – includes six planned initiatives: establish recycling infrastructure, sustainable infrastructure, strengthen cooperative network, self-

sufficient renewable energy, establish green transportation, minimize carbon emissions

- **Stewardship of Nature** – includes 4 planned initiatives: ensure biodiversity, restore damaged nature, build water supply infrastructure, purify polluted water
- **Major Initiatives:**
 - **Sustainability Management Strategy** – first Olympic Winter Games to achieve ISO20121 Certification for their SMS in July 2016 (London 2012 and Rio 2016 also obtained ISO certification); includes Sustainability Management Business Process (systematic process for pursuing results), a risk management system, materiality assessment, ongoing stakeholder communication, audit/report (interim SUS report in Feb 2017, audit/report in 2017 and 2018)
 - **Corporate Social Responsibility Guidelines** – published Corporate Social Responsibility Guidelines developed on basis of ISO26000 and UN Global Compact
 - **Venue Plan** – 12 venues, 6 are new; pursue G-SEED certification for new buildings (Korean Green Building standard); 10 of 12 venues have legacy plans for post-Games use; Gangneung Olympic Park built on reclaimed landfill site
 - **Transportation** – Coastal Cluster and Mountain Cluster of venues connected by new high speed rail link (open 2017 - much lower emissions compared to bus/vehicle alternative); vehicle fleet - mix of hybrid, electric, natural gas
 - **Energy** – wind and solar power, geo-thermal heating available, additional wind power capacity being added to power Games entirely with renewable energy
 - **Carbon Responsible Games** – released GHG inventory in Feb 2015; will measure GHG emissions annually using 3rd party; plan to offset entire emissions from planning phase through to post-Games phase (have already received donations of 600,000 tonnes of certified emissions reductions, mostly from energy companies)
 - **Green Procurement** – intend to have a Green Procurement Plan in place to guide purchasing decisions
 - **Stewardship of Nature** – minimize damage during venue and infrastructure development, restore areas, and establish alternate forests; a portion of a greenbelt was released for one venue and has been replaced by designating an area 25 times as large

Beijing 2022 Winter Games (Planned)

- **Context** – selected in 2015 from only two Candidate Cities (Almaty, Kazakhstan was the second) after four cities withdrew from the bid process due to lack of public and/or government support; Beijing 2022 is first Host City selected after IOC approval of Agenda 2020 including direction to incorporate sustainability across Games planning and delivery; part of Beijing 2022 plan is to use several existing venues from the 2008 Summer Games in the Beijing area, one of three 2022 Games zones
- **Sustainable Development priorities** – Vision: deliver fantastic, extraordinary, excellent Beijing 2022 Games which are green, inclusive, open and clean; Sustainability Policy under development
- **Proposed Major initiatives:**
 - **Sustainability Management System** – establish and operate a management system compliant with ISO20121 (Sustainable Events), ISO14001 (Environment), ISO26000 (Social Responsibility); the ISO20121 certification is now an IOC requirement
 - **Sustainable Procurement Code** – applies across Organizing Committee functions, including venue development, and partners
 - **Guide on Venue Sustainability** – throughout venue lifecycle – selection, planning, design, construction, operation, post-Games restoration; 12 venues, six new (all of which are planned to proceed even without Games); target for new venues – LEED Gold; includes ecological protection, water resource conservation, air pollution control, solid waste disposal, resources conservation, post-Games sustainable use, green energy and low carbon technologies
 - **Low Carbon Action Plan** – under development

6. Recommendations for Calgary 2026 – Carbon, Waste, Transportation

The five focus areas of the IOC Sustainability Strategy, that are also reflected in the most recent Host City Contract Operational Requirements, are infrastructure and natural sites, sourcing and resource management, mobility, workforce and climate. These IOC focus areas capture the initial three important environmental topics identified for Calgary 2026 – Carbon, Waste and Transportation.

6.1 Climate Change and Carbon Management

Given the global, national and local attention on climate change, both today and long into the future, no Olympic Games could be contemplated without a comprehensive plan to manage climate-related impacts of the activities, and showcase solutions and best practices relative to carbon management. This means minimizing the emission of greenhouse gases over the life of the Games, leaving a positive climate legacy through climate-friendly infrastructure, buildings and equipment that remain after the Games, and raising the level of engagement in, and commitment to, climate action for all those associated with the Games.

Previous Olympic Games have taken, and planned Games are taking, an increasingly high profile approach in managing activities to minimize climate change impacts. These approaches have been referred to by different Organizing Committees as Low Carbon Games, Carbon Neutral Games, Climate Neutral Games, Carbon Responsible Games. These subtle but significant differences in terminology reflect variations in what carbon impacts the Organizing Committee is taking responsibility for (just the direct emissions from Games activities that the OCOG controls or also including those they do not directly control) and the degree to which the OCOG will 'offset' those impacts by acquiring credits for carbon emission reductions that have occurred elsewhere and applying them to 'neutralize' the climate impact of the Games. It is a complicated and potentially controversial process to define the level of carbon impacts, the appropriate OCOG responsibility and the extent of offsetting or compensation to neutralize impacts.

The current Host City Contract Operational Requirements for Climate specify that the OCOG will:

- ✓ Prepare a carbon management plan to measure and minimize Games carbon emissions,
- ✓ Promote low carbon solutions for and through the Games,
- ✓ Compensate for Games-owned carbon emissions,
- ✓ Integrate potential climate change consequences into infrastructure planning.

Climate Change and Carbon Management is especially significant for a potential Calgary Winter Games. Alberta and Calgary have a strong international reputation as a global energy centre, with particular focus on oil and gas exploration and development. The industry is an essential source of energy resources for the country and the world, and a strong contributor to the economies of Alberta and Canada. The province is also associated with the oil sands development in northern Alberta, a globally significant oil reserve with a reputation as a high-cost, energy-intensive source of oil with a large environmental footprint from extraction and processing. At current production levels, oil sands activities are responsible for over 9% of Canada's annual GHG emissions. Some of this negative oil sands reputation is undeserved as the companies working in the oil sands project continue to develop innovations to lower the energy required in production, decrease GHG emissions, reduce impacts on water resources and improve restoration works to maintain habitat and biodiversity values. When you combine the oil sands project with the facts that Alberta has an electricity supply with a significant component of coal-fired thermal power, and a rapidly growing population, Alberta's GHG emission profile is dramatic. In 2013, provincial GHG emissions per capita showed Alberta and Saskatchewan in a class of their own at over 60 tonnes of CO₂e per capita compared to 10.1 in Quebec, 12.6 in Ontario and 13.7 in BC. This has been tempered somewhat over the past three years with the drop in oil prices causing a reduction in oil and gas exploration and production activities. In November 2015 the Alberta government released their Climate Leadership Plan in advance of the Paris Climate Change negotiations. The Climate Leadership Plan includes numerous measures designed to

lower Alberta's GHG profile, including migrating away from coal-generated electricity, and contribute to Canada's requirements under the Paris Climate Change Agreement. Nevertheless, a Calgary 2026 Winter Games would bring a global spotlight onto Alberta's oil and gas industry and the province's climate change role in an increasingly carbon-constrained world.

Recommendation:

A Calgary 2026 Winter Games plan must include a comprehensive carbon management strategy outlining a 'know, reduce, offset, engage' approach and profiling innovative solutions to the global climate change challenge. The carbon management strategy would:

- apply to all phases of the Games – planning, construction, organizing, delivering and decommissioning, and to all functions across the OCOG;
- include an inventory program of carbon emissions ('know') including an early forecast using internationally recognized carbon footprint methodology to be clear on what emissions occur, through which activities, at what stages of the Games (for reference, a summary of Vancouver 2010 emissions are included in the table below), and an outline for regular reporting of actual emissions over the Games period;
- outline best practices and innovative low carbon solutions for reducing emissions ('reduce') across all facilities, equipment, activities;
- define the Organizing Committee's direct carbon management responsibilities and emissions, that is, things they control, as well as indirect carbon emissions (things the OCOG does not control);
- identify strategies to engage Games partners in carbon management to help reduce emissions (e.g. Olympic Family, athletes/officials, sponsors, government partners, media, spectators);
- outline what offset approach ('offset') will be used to lower the net carbon emissions of the Games;
- determine whether 3rd party verification of the carbon program is desired;
- propose actions for educating and engaging ('engage') Games participants and the public in climate action.

Carbon Emission Sources Vancouver 2010 Games – 2003-2010			
Source	%	Source	%
Spectator Travel (Games time)	44	Olympic Family Travel (Games Time)	6
Local Transportation	13	Venues	5
Shipping	8	Partners, Workforce, Security Travel	2
Administration	7	Other (accomm, waste, torch, cerem)	2
Construction	6	Security	1
Media Travel (Games time)	6		

The Calgary 2026 team needs to carefully consider how to describe the carbon management strategy and define the OCOG scope of responsibility, but a progressive (and aggressive) approach would be important to balance the potential criticism due to the carbon-intensive economy described above.

There are literally thousands of decisions and actions the OCOG and its Partners can and will take over the 7 year period of the Games to help lower the carbon footprint. It is imperative that the carbon management plan is an early commitment of the OCOG and that all functions take an active role in pursuing carbon reduction efforts. Key contributions will be made by:

- ✓ Construction – design/construction of new and retrofitted buildings using Green Building standards – energy efficient, renewable energy
- ✓ Venue Plans – compact venue and village clusters to minimize driving distances
- ✓ Transportation – clean fleet vehicles, mass transit solutions for Games time
- ✓ Energy – energy efficiency, renewable energy choices
- ✓ Logistics – Smart Way and Fleet Smart freight solutions, intelligent logistics planning
- ✓ Administration – energy efficient buildings and equipment

- ✓ Culture and Ceremonies – low emission choices for events including torch relay
- ✓ Workforce – travel and commuting choices, Smart Driver training

6.2 Waste Management

Minimizing waste in planning and delivering Olympic Games has been a primary focus of Environment programs of the Organizing Committees for decades. It is a highly visible aspect of the Games experience and, if not done well, can attract considerable criticism from participants, including the media. In recent Games, the effort has been guided by commitments to a goal of 'Zero Waste', which theoretically means nothing goes into a landfill as a result of hosting an enormous 17-day event involving hundreds of thousands of people using dozens of venues several times per day. In absolute terms, this is not realistic. Zero Waste is an 'aspirational' goal as there will inevitably be some landfill waste, but the desire embedded in adopting a Zero Waste approach is to minimize that landfill volume by promoting thinking about how to avoid waste over the entire 7 year period and across all functions of an Organizing Committee.

Typically, an organization focused on Zero Waste adopts a '5 Rs' approach – Refuse, Reduce, Reuse, Repurpose, Recycle. This requires each purchasing decision in the Games planning and organizing phase to be viewed through a lens that asks questions like:

- Do we really need this product? Can we rent or lease rather than purchase/own?
- How much of this product do we really need?
- How is the product produced – what is the recycled content? Is it recyclable or compostable?
- What is the post-Games use for this product? Can we sell or donate it to others who will benefit when the Games are over? Can it be repurposed?

The latest thinking about production of goods, resource use and waste minimization is the concept of the 'circular economy'. It challenges the traditional 'take-make-use-dispose' approach evident in the consumption-based economy of yesterday and today. Current production systems typically use large volumes of inputs and produce considerable waste, including packaging, both by manufacturers and end users. In a world of increasing resource scarcity, the circular economy values all materials and focuses on improving product design to reduce waste by enhancing durability or disassembly, lengthening product life through reuse, remanufacture or repair, and improving end-of-life resource recovery and reuse. This concept goes beyond the '5Rs' and cradle-to-cradle thinking of Zero Waste. There is a growing belief that the circular economy is a wise business strategy as it captures lost value from products that have artificially short lives when there is demand for them by others, monetizes wasted capacity from idle products, repurposes products for extended life, and recovers wasted resources to use as inputs for new products.

An effective, and leading-edge Olympic Games waste management approach needs to integrate:

- product decision-making processes by functions in the construction, planning and fit-out stages (what products, how many, own/rent, recyclable, compostable, end-of-Games use plan, etc.),
- procurement processes to acquire products with the required attributes,
- negotiations for goods provided by official Games sponsors and suppliers;
- end-of-use product handling processes during construction, at Games-time and during post-Games decommissioning (including the traditional multi-bin separation tactics of waste handling evident in venues).

The Host City Contract Operational Requirements for sourcing and resource management specify the OCOG will:

- ✓ integrate sustainability considerations into each stage of the procurement process, with mechanisms to ensure the requirements are effectively met;
- ✓ treat products and materials as valuable resources and optimize their lifecycles;
- ✓ execute a detailed waste scoping exercise and develop a waste reduction plan.

Raising the bar for waste management in a Calgary Winter Games would resonate well with both the IOC and with Host City and Provincial residents. A 'beyond Zero Waste' approach deployed over the seven year life of the Games and embedded in the decision making processes for all functions, and negotiations with official sponsors/suppliers, would demonstrate a respect for both efficient use of resources and conservation of the natural world. A theme for the environmental sustainability aspects of the 2026 Games could be Resource Efficiency – wise and efficient use of materials, energy, water, food, etc. It reflects the hard-working, resource based culture of Alberta and the leading-edge thinking of a progressive City like Calgary to showcase tomorrow's technical and systems innovations to the world.

Recommendation:

A Calgary 2026 Winter Games plan must incorporate a waste management strategy that raises the bar for use of materials and products linking planning, procurement, construction, waste handling and decommissioning efforts to set a new Games standard for minimizing materials ending up as true 'waste' in a landfill. The waste management strategy would:

- incorporate the Zero Waste concept as the strategy foundation and add relevant innovations from the latest 'circular economy' approaches;
- be established early in the Games organizing phase to guide product and material decision-making during construction and functional planning;
- apply across all functions;
- be an important driver for all procurement decisions and negotiations with official sponsors and suppliers;
- set stretch goals for recycling and landfill diversion rates;
- guide the design of waste collection systems across Games facilities during all phases – construction, fit-out, test events, Games-time source separation front-of-house and back-of-house, and decommissioning.
- outline annual tracking and reporting systems for internal and external audiences

6.3 Transportation

Transportation is one of the most complex aspects in planning and delivering a successful Olympic Games. The most visible component of Transportation is the need to move tens of thousands of people (athletes, coaches, officials, workforce, volunteers, media, Olympic family, spectators) every day during Games-time to dozens of locations, using multiple modes of transport, at different times in varying weather conditions. And to move these people safely, efficiently, on-time, cost-effectively with minimal disruption to the normal traffic flows in the Host City. However, that challenge only covers Games-time transportation of people. There is also Games time transportation related to moving goods and equipment to venues and villages, and providing essential services such as catering, housekeeping, security, venue cleaning, waste removal and snow clearing. And then there is the transportation related to all the work in planning, building, testing, fitting-out and decommissioning the various venues before and after the Games. As well, there is a significant transportation component in delivering the torch relay and other ceremonies and events. Another transportation consideration is the movement of goods by freight companies to supply all the products necessary to host the world at the Games.

All of this Transportation activity has implications for the environment – specifically emissions related to greenhouse gases and air quality. Past Olympic Games have identified a wide range of practices to meet the reliability, quality, safety and cost requirements while also lowering the environmental impact. These practices include:

- Compact venue clusters to lower the driving distances
- Athlete villages located near venue clusters to shorten time and distances
- Media and broadcast centres near venue clusters
- Mass transit solutions for people movement at Games time, particularly for media, workforce, volunteers, spectators
- No parking zones near venues

- Active transport promotion – walking, cycling
- Public transit integrated into ticket prices (travel free on public transit with ticket)
- Maximum number of fuel efficient hybrid and clean electric vehicles in fleet
- Cleaner fuel choices where possible – natural gas, biodiesel
- Fleet Smart freight companies – vehicle/fuel choices, route planning, driver behaviour
- Containerize products and ship by rail rather than truck
- Efficient route planning for logistics transport

Transportation, including air travel before and especially during the Games, is the largest contributor to GHG emissions and climate impacts. Therefore, to be successful in achieving a low carbon or carbon neutral Games, it is immensely important that the Games Transportation plan incorporate as many low carbon solutions as possible.

The Host City Contract Operational Requirements for Mobility specify that the OCOG will:

- ✓ adopt sustainable mobility solutions for moving people and goods;
- ✓ promote sustainable tourism in host cities/regions.

For a Calgary 2026 Games, a smart, efficient, low carbon transportation plan is imperative given its potential impact on achieving success relative to the carbon management strategy. The emerging venue and village plan of two clusters is a good foundation for a smart Transportation plan. There is no legacy rationale for a new rapid transit line linking the two clusters so traditional bus transport solutions will be required. There is an opportunity during the Games to showcase leading edge vehicle and fuel solutions, including electric, hybrid and possibly hydrogen choices. Those decisions are linked to negotiations with corporate sponsors. A set of principles for smart Transportation could be established during the Bid stage and carried into the early phases of the Organizing Committee to get Transportation activities launched on the right trajectory.

Recommendation:

A Calgary 2026 Winter Games plan must integrate key principles for smart, low carbon transportation solutions that align with the carbon management strategy and guide the development of the Games mobility plans for people and goods, ensuring that transportation reliability, safety, efficiency and cost outcomes are also achieved. The principles would:

- apply throughout the Games period and across all functions
- align with the carbon management strategy outcomes
- be considered in venue planning
- guide people mobility solutions and discussions with public transit authorities
- guide negotiations with official sponsors and suppliers for transport related services and products (both people and goods)
- guide decisions related to movement of goods, both to/from and within the Games venues
- influence transportation decisions by Games partners (Olympic Family, government, sponsors)
- encourage smart decisions regarding air travel
- influence workforce commuting choices

7. Additional Environment, Sustainability Recommendations for Calgary 2026

7.1 Sustainability Strategy

Sustainability has been adopted as one of three pillars of the IOC's Agenda 2020 and the ambitions related to that pillar are more fully described in the IOC's recently approved Sustainability Strategy. As part of that Strategy, Olympic Games organizers are encouraged to pursue contributions to five focus areas in addition to environmental, social and economic outcomes relevant to the Host City, region and country. The Host City Contract Operational Requirements specify that the OCOG must develop, in coordination with Host Country authorities, a sustainability strategy and an Olympic legacy plan indicating how sustainability and legacy will

be embedded across the Games project and how that serves the Host City in the future. The Sustainability Strategy and Legacy Plan must take into account the views of all relevant stakeholders, and is a detailed refinement of the Candidature plans and commitments.

Recommendation:

Calgary 2026 must establish a Sustainability Strategy that provides organization-wide Sustainability objectives, strategies and outcomes related to the IOC's five focus areas as well as additional goals, objectives, strategies and outcomes for sustainability issues relevant to the Host City, region and country. The Calgary 2026 Sustainability Strategy should link to, or be integrated with, a Legacy Plan identifying how the Games will contribute to lasting improvements for the Host City, Region and Country. The views of relevant stakeholders should be considered.

7.2 Sustainability Implementation Plans

It is necessary to translate the objectives, strategies and outcomes defined in the Sustainability Strategy into implementation plans for each of the issues identified to define the actions, responsibilities, resource requirements, risk assessment and measurable results. This provides clarity to the various groups responsible for delivering Sustainability results and informs the Sustainability Management System what needs to be managed, tracked and reported. The Host City Contract Operational Requirements specify that the OCOG will:

- ✓ In coordination with Host Country Authorities and other delivery partners, establish specific sustainability implementation plans that address all matters described in the Sustainability Strategy, as well as all matters that are material to such entities' particular roles and responsibilities, and include resource needs, issues and risks, and a clear program of actions.
- ✓ Submit the sustainability implementation plans to the IOC for comments and approval before publication.

Recommendation:

Calgary 2026 must establish Sustainability Implementation Plans for each priority topic in the Sustainability Strategy to translate the Strategy into action. The Implementation Plans must be reviewed with the IOC before publication.

7.3 Sustainability Management System

An important element in successful delivery of sustainability related objectives is to have in place a management system that defines those objectives in terms of measurable performance results, provides clarity in responsibilities for delivery, regularly tracks and reports progress ensuring opportunities to adjust activities and transparency to internal and external audiences. Such a management system ensures that cross-organizational sustainability objectives and responsibilities are clear to all functions to improve collaboration, teamwork and efficiency. The Host City Contract Operational Requirements specifies that a sustainability management system needs to be in place, and certified under ISO 20121.

Recommendation:

Calgary 2026 must establish a Sustainability Management System, linked to the corporate Sustainability Strategy, to define desired sustainability objectives, performance measures and responsibilities, and reporting practices. The SMS must be certified under ISO 20121 – Event Sustainability Management System.

7.4 Sustainability Governance

Sustainability objectives and plans will be important components of the Games. Successful implementation of Sustainability plans will require collaboration across OCOG functions, among sport and government partners and with Games sponsors. To ensure that the various parties understand responsibilities and accountabilities, that timely, integrated decisions are taken, that sufficient resources are deployed, that progress is regularly monitored and adjustments made as needed, the OCOG needs to put in place an effective Sustainability governance structure.

Host City Contract Operational Requirements specify that the OCOG must, in collaboration with Host City and Country Authorities, put appropriate governance structures in place to ensure sustainability and legacy commitments are met and incorporate the following principles:

- ✓ transparent mechanisms to resolve any potential breaches of policies, strategies and plans;
- ✓ appropriate audit and assurance program to monitor compliance with sustainability policies, strategies and plans; and
- ✓ coordination of communications and responses to issues.

Recommendation:

Calgary 2026 must establish a Sustainability governance structure that ensures accountability for Sustainability performance is clearly defined and progress monitored at the governing Board level. This reflects the significance and cross-organizational nature of anticipated Sustainability commitments. The OCOG should collaborate with Host City and Country authorities regarding Sustainability governance and ensure principles of transparency, accountability and coordination are embedded in the governance policy and procedures. It may prove valuable to establish a Board advisory committee of external Sustainability experts to provide advice and feedback on Sustainability performance.

7.5 Stakeholder and Public Engagement on Sustainability

There is an expectation inherent in the IOC's Sustainability Strategy that the OCOG will have public engagement processes to understand and manage expectations. This can involve sharing plans and proposed activities through public forums, listening to suggestions and concerns, and considering those as plans and activities are further refined. This is a relatively narrow form of engagement as it does not commit the OCOG to involve the public in future decision making. There is a long list of stakeholders affected by the Games who will be looking for a deeper level of engagement with the OCOG including ongoing participation in advisory groups. There is significant merit in considering how key stakeholders can be engaged, particularly during the planning phase, as they can submit valuable suggestions, serve as a source of information about community concerns, provide support and validation for proposed activities, and even reduce the risk of legal challenges or reputational damage.

Recommendation:

Calgary 2026 should develop a stakeholder and public engagement strategy, early in the Games organizing phase, outlining the level, subject matter, timing and mechanism of engagement on the sustainability program by stakeholder groups and the public.

7.6 Bid Phase Sustainability Advisory Committee

The IOC has identified sustainability as a very significant component of their future. It is one of three pillars in their strategic direction document, Agenda 2020. The IOC's expectations regarding sustainability and Olympic Games are articulated in their recently approved Sustainability Strategy and in the 2024 Host City Contract Operational Requirements. Prospective candidate cities aspiring to host an Olympic Games must demonstrate a strong understanding and clear implementation plan for sustainability and legacy concepts in any future Host City bid. Calgary, Alberta and Canada is well positioned to demonstrate this understanding given the experience gained through the Vancouver 2010 Games and the depth of sustainability expertise available in corporate, government and not-for-profit organizations. Calgary 2026 should draw on this experience and expertise if the decision is made to submit a host city application.

Recommendation:

Calgary 2026 should establish a bid phase sustainability advisory committee to provide expert sustainability input into the bid planning process should Calgary decide to proceed with an application to host the 2026 Olympic Winter Games.

7.7 Sustainability Reporting

Achieving credibility in delivering sustainability results within Olympic Games requires ongoing communication within the organization, with key partners and stakeholders, and with the public. Accurate, honest, transparent and regular communication will provide the diverse sustainability

audiences with information about accomplishments, challenges and necessary adjustments as the organizing committee moves through Games planning to delivery. The Host City Contract Operating Requirements specify that the OCOG, in coordination with Host City and Host Country authorities, should prepare and publicly release at least two sustainability reports on progress towards sustainability objectives prior to the Games and one post-Games report on accomplishments, each conforming to internationally recognized reporting standards for sustainability.

Recommendation:

Calgary 2026 must prepare annual sustainability reports using recognized international reporting standards (Global Reporting Initiative or equivalent). The annual sustainability reports should begin a minimum of three years out from the Games and include a post-Games report issued within six months of the Games conclusion.

7.8 Green Buildings

Calgary 2026 has the important benefit of using legacy facilities from the 1988 Winter Olympic Games, including two challenging Winter Games facilities, the long track speed skating oval and the bobsleigh/luge/skeleton track. Other legacy sport venue facilities will require significant renovation and upgrading, and some venues will need to be new. In addition, two new athlete villages and a media centre will be required. Each of the facilities must have a legacy plan outlining a long-term use beneficial to the Host City and other stakeholders. Given that these buildings will be in place for decades following the Games, Calgary 2026 needs to commit to building high environmental performance structures that minimize material use, water consumption, energy use, carbon emissions, waste generation, and ensure optimum internal air quality, heat and light, access and natural surroundings while lowering annual operating costs.

Recommendation:

Calgary 2026 should commit to pursue a minimum of LEED (Leadership in Energy and Environmental Design) Gold building rating for all facilities involving new construction and major renovation. This commitment will reduce the environmental impact of the Games, showcase Canadian and Albertan architectural, engineering and technical expertise, plus provide legacy buildings for communities offering better indoor air quality and light, a smaller environmental footprint, and lower operating costs.

7.9 Ecosystem and Habitat

There is a strong emphasis within the IOC's Agenda 2020 and Sustainability Strategy to use existing infrastructure and facilities whenever possible to avoid over-building or introducing unnecessary facilities to meet Games requirements. As part of this policy, there is also a priority placed on conserving existing natural and cultural heritage areas and minimizing impact on ecosystems, habitat and species. There are many examples from past and planned Winter Games where venues were introduced into sensitive sites, including protected areas. Even though Games organizers have endeavored to minimize impacts and compensate for removed areas by designating equal or larger protected sites, intrusion into special sensitive areas has created controversy. A strong preference exists to avoid either introducing new facilities into, or removing land from, protected areas.

The OCOG must undertake environmental impact assessments for each planned venue to determine what impacts may occur on biophysical resources such as habitat, biodiversity, flora and fauna, fisheries, surface and sub-surface hydrology, soil and air as a result of the proposed development. The environmental assessment will identify potential design or management avoidance and mitigation strategies that can be deployed.

The Host City Contract Operational Requirements for Infrastructure and Natural Sites specifies that OCOGs must:

- ✓ make maximum use of existing infrastructure, as well as temporary and demountable venues;
- ✓ deliver long-term benefits to local communities and contribute to development of sustainable cities;
- ✓ assure viability and minimization of environmental footprint if construction takes place;

- ✓ conserve biodiversity and cultural heritage;
- ✓ conserve water resources and protection of water quality;
- ✓ use renewable energy and resource efficient infrastructure.

Recommendation:

Calgary 2026 should avoid proposing any new facilities in existing natural or cultural protected areas. If Games activities are planned for existing facilities in protected areas (for example, alpine skiing at existing ski areas in national or provincial parks) the OCOG should undertake an extensive consultation with stakeholders, develop a venue plan that minimizes potential impacts, undertake an environmental impact assessment, identify potential mitigation and avoidance strategies to further reduce impacts and consider compensation efforts that lead to a net positive impact on the protected area as a result of the Games activities (e.g. add protected area or invest in habitat improvements that align with the master plan of the protected area).

Calgary 2026 must undertake environmental impact assessments for each major venue to define potential biophysical impacts and identify avoidance and mitigation strategies.

7.10 Smart Procurement

As highlighted in the recommendations in Section 6.2 above concerning waste management, a critical component in pursuing a Zero Waste strategy is ensuring that all products needed for the Games are subjected to review through a lens that considers how they will ultimately, and ideally, avoid the landfill at end-of-use. This should occur at the functional planning stage where the specifications for required products are defined prior to procurement through either purchasing requisitions or sponsor/supplier negotiations. Each required product should be reviewed against a set of environmental criteria linked to minimizing waste, minimizing carbon impacts, and optimizing resource efficiency. These same criteria can be incorporated into official sponsor/supplier negotiations. If appropriate with respect to Sustainability Strategy objectives, the procurement criteria can also consider social, labour and ethical issues and be used by other Calgary 2026 partners to help meet desired Games outcomes. The Buy Smart procurement program used by Vancouver 2010 is a good example.

Recommendation:

Calgary 2026 should implement a smart procurement approach to help meet environmental Sustainability objectives concerning carbon and waste management, as well as potential social objectives. The smart procurement criteria should be defined and initiated early in the organizing phase to guide venue and construction decisions, functional planning specifications and sponsor negotiations.

Appendix 1

IOC Sustainability Strategy – A Summary

3 Spheres of Responsibility and 5 Focus Areas

Spheres of Responsibility

1. **IOC as an Organization** – as a role model of sustainability
2. **IOC as an Owner of the Olympic Games** – ensure Olympic Games are at the forefront in the field of sustainability and Host Cities can leverage the Games as a catalyst for their sustainable development
3. **IOC as a Leader of the Olympic Movement** – inspire and assist Olympic Movement stakeholders in developing sustainable sport worldwide and leverage the inspirational power of athletes and Olympic symbol for promoting sustainability through sport

Focus Areas

Scope	Strategic Intent
Infrastructure and natural sites	
Development and operation of indoor and outdoor sites whenever sports activities take place, including support and administrative infrastructure such as non-competition venues at the Olympic Games and offices of the Olympic Movement organizations	<ul style="list-style-type: none"> • Use of existing infrastructure is maximized and temporary and demountable venues are used where no long-term venue legacy need exists or can be justified • If built, infrastructure is viable and has a minimal environmental footprint • Sites have a net positive impact on local communities • Sites respect protected natural areas, and urban green spaces are promoted • Sites respect protected cultural areas • Sites conserve water resources and protect water quality
Sourcing and Resource Management	
Sourcing of products and services by organizations within the Olympic Movement and management of material resources over their lifecycle	<ul style="list-style-type: none"> • Sourcing of products and services takes account of environmental and social impacts • Products and materials are treated as valuable resources and their lifecycle is optimized
Mobility	
Mobility of people and goods associated with the Olympic Movement's activities, at the local and global level	<ul style="list-style-type: none"> • Mobility solutions are environmentally and socially responsible • Freight operations are environmentally and socially responsible • Sustainable tourism is promoted
Workforce	
Working conditions and opportunities offered to employees, volunteers and contractors of the Olympic Movement	<ul style="list-style-type: none"> • Working conditions of employees and volunteers are safe and healthy, and active lifestyles are promoted • Workforce exemplifies diversity, inclusivity and gender equality • Quality educational and skills development opportunities are offered to young professionals • Working conditions across the supply chains comply with applicable local, regional and national legislation and international agreements and protocols
Climate	
Management of direct and indirect greenhouse gas emissions associated with the Olympic Movement's activities, and adaptation to the consequences of climate change	<ul style="list-style-type: none"> • Effective carbon reduction strategies are in place for operations and events, and are aligned with the objectives of the Paris Agreement on climate change • Adaptation to the consequences of climate change is taken into account in the planning of sports facilities and events

Annex 1 Requirements

Infrastructure and natural sites	<ul style="list-style-type: none"> • Maximize use of existing facilities and temporary and demountable structures, and only develop new permanent facilities that offer long-term benefits for local communities and contribute to the development of sustainable cities • Prioritize the use of previously developed or degraded land over greenfield sites for the development of new venues and infrastructure, where these can provide sustainability benefits for the local community • Maintain conservation status for any natural or cultural protected areas utilized for the Olympic Games • Use recognized 'green building' standards appropriate to the country/region • Optimize environmental performance of Olympic venues (e.g. impacts on air, water, soil, biodiversity, climate and raw materials availability) • Avoid displacement of existing homes and businesses and adverse impacts on indigenous people and land rights; where unavoidable, consult and provide fair compensation and support in accordance with local regulations
Sourcing and resource management	<ul style="list-style-type: none"> • Implement responsible sourcing practices for goods and services, including those from national sponsors and licensees • Implement effective processes to avoid waste production and to optimize the lifecycle of materials
Mobility	<ul style="list-style-type: none"> • Candidate cities and host cities to develop sustainable transport solutions as part of their Olympic Games project • OCOGs and host cities to maximize use of public transport and active travel modes at Olympic Games time • OCOGs and host cities to implement sustainable logistics solutions for movement of goods • OCOGs and host cities to promote sustainable tourism in host cities/regions
Workforce	<ul style="list-style-type: none"> • OCOGs to ensure that working conditions of employees and volunteers are safe and healthy, and that active lifestyles are promoted • OCOGs, host cities and host NOCs to take all necessary measures to ensure that development projects or other projects necessary for the organization of Olympic Games comply with internationally-recognized standards and all international agreements, laws and regulations applicable in the Host Country with regard to working conditions • OCOGs to offer skills development opportunities for young professionals • OCOGs to promote gender equality and to have a local workforce that reflects the diversity of the host country
Climate	<ul style="list-style-type: none"> • OCOGs and host cities to minimize the Olympic Games' carbon emissions • OCOGs to compensate their 'direct'/'owned' emissions. • OCOGs and host cities to promote low carbon solutions for and through the Olympic Games in the host country • Candidate cities, OCOGs and host cities to take into account potential consequences of climate change when selecting Olympic Games locations

Appendix 2

Host City Contract – Operational Requirements for Sustainability and Olympic Legacy (IOC - December 2016)

5.6. Sustainability and Olympic Legacy

Introduction

Sustainability is the foundation that ensures the Olympic and Paralympic Games deliver lasting benefits to the Host City and Host Country, such as economic growth, better transport systems, sports venues, enhanced infrastructure, environmental improvements, a more physically active population, a stronger commitment to volunteerism and a host of other positive developments.

To realize the full legacy promise of the Games project, sustainability needs to be strongly bound into the ethos and organizational structure of all bodies responsible for the delivery of the Games. Within the OCOG, it should follow a transversal approach and be implemented from the inception of the OCOG by all areas throughout the organization.

Following the Host City election, the early legacy plans will need to be developed further and put into action. The newly formed OCOG should have a key role in facilitating and enabling the legacy program, and ensuring that bid commitments are honoured. There will be a continual need for coordinated public engagement – from government, city and OCOG – to understand and manage expectations among partners and interested stakeholders.

Legacy is a fundamentally strategic theme with major implications for economic and social progress, and city/national reputation. Therefore, it is incumbent on members of senior management in the Candidature Committee, OCOG and Host City and national government partners to be fully involved in this theme and to be able to understand how best to frame their vision and commitments in relation to legacy.

For the Sustainability and Olympic Legacy areas, key success factors include:

- a well-developed sustainability strategy and sustainability management system, in accordance with the requirements of the International Organization for Standardization (ISO) 20121 standard;
- coordinated public engagement from the OCOG and public authorities to understand and manage expectations;
- development of implementation plans and governance arrangements in close coordination with the relevant public authorities and delivery partners; and
- ownership of sustainability objectives, legacy visions and Candidature Commitments by all areas from the OCOG's inception.

Close coordination and collaboration within the OCOG, and with a variety of delivery partners and external organizations from the earliest stages of the bid process onward, including public authorities from the Host City and Country; the host NOC ; community groups; and independent organizations with relevant expertise, are essential for the successful delivery of these areas.

The Sustainability and Olympic Legacy area is closely related to and interlinked with many other areas covered by the HCC - Operational Requirements. When planning and delivering the Games, it is important to consider each area in the wider context of all related requirements highlighted in the cross-reference matrix on page 17 of this document.

More information on the topics covered in this section is available in the Olympic Games Guide on Sustainability, the Olympic Games Guide on Olympic Legacy, and any cross-referenced documents listed within them.

Operational Requirements

In order to deliver Sustainability and Olympic legacy requirements in line with the introduction above and in accordance with the HCC - Principles, the following shall be implemented by the OCOG within the milestones and other timelines set out in the Games Delivery Plan (GDP):

SUS 01 - Sustainability strategy

- Develop in coordination with Host Country Authorities, a sustainability strategy, and an Olympic legacy plan indicating how sustainability objectives, how sustainability and legacy will be embedded across the Games project and how that will serve the Host City community in the future. The sustainability strategy and Olympic legacy plan shall take into account the views of all relevant stakeholder groups, and should be viewed as a detailed development and refinement of the commitments and plans set out during the candidature phase.

SUS 02 - Content of the Sustainability strategy

- Ensure that the sustainability strategy is aligned with the IOC Sustainability Strategy and specifically addresses the following matters:
 - a) Infrastructure and natural sites
 - i. maximum use of existing infrastructure, as well as of temporary and demountable venues;
 - ii. delivery of long-term benefits to local communities and contribution to the development of sustainable cities;
 - iii. assurance of viability and minimization of environmental footprint if construction takes place;
 - iv. conservation of biodiversity and cultural heritage;
 - v. conservation of water resources and protection of water quality;
 - vi. use of renewable energy and resource efficient infrastructure.
 - b) Sourcing and resource management
 - i. integration of sustainability considerations into each stage of the procurement process, with mechanisms in place to ensure the requirements are effectively met;.
 - i. products and materials are treated as valuable resources and their lifecycles is optimized;
 - ii. execution of a detailed waste scoping exercise and development of a waste reduction plan.
 - c) Mobility
 - i. adoption of sustainable mobility solutions for moving people and goods;
 - ii. promotion of sustainable tourism in host cities/regions.
 - d) Workforce
 - i. provision of safe and healthy working conditions for staff and volunteers;
 - ii. promotion of active lifestyles, diversity, inclusivity and gender equality among employees and volunteers;
 - iii. provision of quality educational and skills development opportunities to young professionals;
 - iv. compliance of working conditions across supply chains with internationally-recognized standards and all international agreements, laws and regulations applicable in the Host Country.
 - e) Climate:
 - i. in collaboration with the Host City, develop carbon management plan to measure and minimize the Games' carbon emissions;
 - ii. promotion of low carbon solutions for and through the Olympic Games in the Host Country;
 - iii. compensation of the emissions caused by the OCOG's owned emissions;
 - iv. integration of the potential consequences of climate change as part of infrastructure planning

- Submit the sustainability strategy to the IOC for comments and approval before publication.

SUS 03 - Sustainability implementation plans

- In coordination with Host Country Authorities and other delivery partners, establish specific sustainability implementation plans that address all matters described in SUS 02 – Sustainability strategy, as well as all matters that are material to such entities' particular roles and responsibilities, and include resource needs, issues and risks, and a clear program of actions.
- Submit the sustainability implementation plans to the IOC for comments and approval before publication.

SUS 04 - Content of the Olympic legacy plan

- Ensure that the Olympic legacy plan addresses the following matters:
 - concerns for post-Olympic use of venues and other facilities and infrastructures,
 - intangible legacies such as social development, sport development, human development, intellectual property, and innovation.
 - post-Games use of Olympic brand properties, e.g. venue naming, spectaculars, commemorative plaques, historic signage.
- Submit the Olympic legacy plan to the IOC for comments and approval before publication.

SUS 05 - Governance

- In coordination with the Host City and relevant Host Country Authorities, develop appropriate governance structures or arrangements to oversee the fulfillment of sustainability and legacy requirements described in SUS 01 (Sustainability strategy), SUS 02 (Content of the Sustainability strategy), SUS 03 (Sustainability implementation plans) and SUS 04 (Content of the Olympic legacy plan). Ensure that the governance structures are based on the principles listed below:
 - transparent mechanisms to resolve any potential breaches of policies, strategies and plans;
 - appropriate audit and assurance program to monitor compliance with sustainability policies, strategies and plans; and
 - coordination of communications and responses to issues.

SUS 06 - Sustainability Management System (SMS)

- Establish a SMS that covers the key activities of the organization that are material to delivering sustainable Olympic and Paralympic Games in line with the above-mentioned sustainability strategy (SUS 01 – Sustainability strategy).
- Ensure that this system is independently certified as being in accordance with the requirements of the standard ISO 20121:2012.

SUS 07 - Sustainability reports

- In coordination with the Host City and relevant Host Country Authorities, prepare and publicly report on progress towards delivering the sustainability strategy and sustainability implementation plans by means of at least two sustainability reports prior to the Olympic Games and one post-Games sustainability report. Each of these shall conform to internationally recognized reporting standards for sustainability.