©iStock/ZargonDesign

SPORTS FOR NATURE

SETTING A BASELINE

©iStock/simonkr

UN environment programme

GRID ARENDAL
A UNEP Partner

Loughborough University

Suggested citation
United Nations Environment Programme (2022). *Sports for Nature: Setting a baseline* – Handbook. Nairobi, Kenya.

ISBN No: 978-92-807-3977-0
Job No: DEP/2475/NA

Disclaimers
The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the United Nations Environment Programme or GRID-Arendal concerning the legal status of any country, territory or city or its authorities, or concerning the delimitation of its frontiers or boundaries. Mention of a commercial company or product in this document does not imply endorsement by the United Nations Environment Programme or the authors. The use of information from this document for publicity or advertising is not permitted. Trademark names and symbols are used in an editorial fashion with no intention of infringement of trademark or copyright laws.
The views expressed in this publication are those of the authors and do not necessarily reflect the views of the United Nations Environment Programme. We regret any errors or omissions that may have been unwittingly made.

Acknowledgments:
This assessment was commissioned by UN Environment, in partnership with GRID-Arendal, a centre collaborating with UN Environment. Sam Barratt, Chief, Youth, Education and Advocacy, served as commissioning editor of the project.

UN Environment would like to thank Madeleine Orr, lead author of this report, Loughborough University, as well as Lorna Little and Miles Macmillan-Lawler from GRID-Arendal, Julie Duffus from the International Olympic Committee, as well as Noémie Metais from UN Environment for their valuable research inputs.

Several people provided substantive support, including: Thierry Lucas, Stella Piipponen-Doyle, Matthias Jurek, Ansgar Fellendorf from UN Environment, Leigh Ann Hurt, Tim Badman from IUCN, James Skinner from Loughborough University, Russell Seymour from British Association for Sustainability in Sport, and Rony Epelbaum from GEO Foundation for Sustainable Golf.

Layout by GRID-Arendal.

Authors:
Lead Author Madeleine Orr,[1] Jack Pippard,[1] Ugo Arbieu,[2,3] Jonathan Casper,[4] Tim Kellison,[5] Jordan Howell,[6] Walker Ross,[7] Jessica Murfree,[8] Brian McCullough,[8] and Sylvia Trendafilova[9]

[1] Loughborough University London, Queen Elizabeth Olympic Park, The Broadcast Centre Here East, Lesney Ave, London (United Kingdom)
[2] Senckenberg Biodiversity and Climate Research Centre, Frankfurt am Main (Germany)
[3] Smithsonian Conservation Biology Institute, National Zoological Park, Washington DC (USA)
[4] North Carolina State University, Raleigh, NC (USA)
[5] Georgia State University, Atlanta, GA (USA)
[6] Rowan University, Glassboro, NJ (USA)
[7] University of Edinburgh (United Kingdom)
[8] Texas A&M University, College Station, TX (USA)
[9] University of Tennessee, Knoxville, TN (USA)

SPORTS FOR NATURE

SETTING A BASELINE

New rules of the game

How the world of sport can play its part for nature

Our planet is out of breath as a result of our unsustainable consumption and production patterns – fueling the fires of biodiversity loss, pollution and climate change. Urgent action to conserve and restore the environment is needed, providing a healthier climate for people and planet.

Outdoor sport connects us with the health of our bodies as well as that of our natural world – from the air we breathe, to the climate we train in; from the landscape we move through, to the quality of food we use to fuel our bodies. Sport is both deeply dependent and connected to nature – and thus it brings us together by reminding us that everyone has a role to play in contributing to a playing field that is in harmony with nature.

Sport is a vector for unprecedented nature-positive action with its sizable player and fan base, as well as the large spatial area it occupies. To provide some perspective, football alone is estimated to be played by 265 million participants in 5735 football stadiums worldwide, and has an estimate of 5 billion fans. To give another example, there are 6112 outdoor ski areas utilised by around 400 million people, offering a total combined piste length of 60,212 km, roughly eight times longer than the Amazon River.

The UN Secretary General on the International Day of Sport for Development and Peace, on April 6th 2021 reminded us: "Those involved in sport have responsibilities: to reduce its environmental footprint; to meet international labour standards; to fight discrimination and prejudice of all kinds; to reject corruption; and to ensure that major global events such as the FIFA World Cup and the Olympic and Paralympic Games, which bring the world together, leave a positive legacy."

In support of the UN Decade on Ecosystem Restoration, this report is an offering and resource for sport organizations to play their part for nature – and a call to action to participate in the UN Decade's movement for people and planet. Many efforts are already underway, such as the IOC's investment in a new Olympic Forest as part of the Great Green Wall in Africa. But there is always more that we can do.

To better understand sport's current place in nature and the role it could play to protect it, 109 sports organizations from 48 different countries and 30 different sports participated in an online survey, opening the way for further meaningful partnerships with and for sport, to act for nature.

The report demonstrates how sport has the potential to be a critical partner for change. It highlights the urgency and dependency of sport on nature, demonstrating the opportunities already underway – with guidance and case studies to inspire and innovate. It shows how sport can move forward positively through building a community of best practice, and setting a baseline for sport organizations to work together to adapt their games for a greener future.

Sport intrinsically involves dedication, teamwork, synergy and collaboration – it's now time to extend these values to our relationship with the natural world. May the pages of this report inspire you to get sport and nature on the same team.

Susan Gardner
Director, Ecosystems Division,
United Nations Environment Programme

©iStock/TT

SPORTS FOR NATURE

SETTING A BASELINE

Executive summary

Sport has the power to inspire, engage and set new trends globally. With an audience of billions of participants and fans, its reach is exceptional, and its ability to build connection, community and culture through collective moments of achievement or success is unparalleled. Sport also has a relationship to nature that is both intimate and intertwined. This report is a first attempt to explore how sport's dependency on nature might be leveraged for conservation and restoration efforts in the following spaces: on water, in fields, in cities, and in mountains, where sport is practiced. By outlining what sport can do for nature, this report creates a podium for sport leadership to be recognised in environmental work.

For decades, the United Nations Environment Programme (UNEP) has been working with sport as a channel to promote environmental awareness and proactively address environmental challenges. Now UNEP is re-envisioning the sport sector as a critical partner on the nature agenda, particularly as the UN Decade on Ecosystem Restoration starts to take shape and the urgency of adopting and following the Post-2020 Global Biodiversity Framework across all segments of society becomes apparent.

This effort was inspired by two complementary initiatives: the United Nations Sports for Climate Action initiative co-launched by the United Nations Framework Convention on Climate Change and the International Olympic Committee (IOC), as well as guides produced by the International Union for Conservation of Nature (IUCN) and the IOC on Sports and Biodiversity. To solve the triple planetary crisis of climate change, pollution and biodiversity loss, the interlinkages between sport and nature must be further explored to bring about change among sport organisations and the many stakeholders they engage.

To set a baseline for nature conscious work in the sport sector, focus groups were conducted with 103 sport organisations including clubs, national federations, international federations, national Olympic committees, and professional sport franchises. Participants represented 30 different sports and 48 countries. The focus groups were centered around three simple questions:

1. Do sport organisations see nature to be important?

2. What is sport currently doing to address environmental issues?

3. What capacities do sport organisations have to address environmental issues?

©iStock/SJPailkar

From the research carried out, four key insights were found:

- ***Nature is important.*** Participants agreed that nature is important but were unclear on what role their organisations might play in protecting it and what tools were available to them.
- ***Climate comes first.*** Reducing emissions is the current objective, while efforts to address wider environmental issues are piecemeal, at best.
- ***Show me how:*** While interest is high, practical knowledge among sport managers is low, and much remains unknown about biodiversity loss and pollution.
- ***This will require resources:*** The key barrier preventing further action among sport organisations is a lack of internal resources: insufficient funding, lack of dedicated human resources, and poor institutional knowledge on nature topics.

Based on these insights, and to get sport organisations on track to participate fully in the Decade for Ecosystem Restoration, this report identifies four approaches for sport to act for nature:

1 Set a baseline for nature

First, establish your dependency and critical relationship with nature and determine what natural features and species are most in need of protection and conservation in your area.

2 Align with the Mitigation and Conservation Hierarchy

Establish what role you can play to implement the Conservation and Mitigation Hierarchy. Many of these actions do not require significant resources, just due attention and consideration.

3 Work with others

Build partnerships with environmental non-profits, governmental organisations, sponsors, or other parties with expertise on nature to support existing or new initiatives on this agenda through their capabilities, and to supplement internal capacity. Utilise inclusive approaches; promote the inclusion of women and girls as well as minorities and those from historically marginalised groups to ensure nature efforts reflect the diversity of the communities in which they are taking place.

4 Educate and advocate for nature

Leverage sport platforms to educate participants and fans about the role they can play in acting for nature. Share environmental efforts and practices with partners and suppliers to encourage positive change across the sport supply chain.

PART 1
BACKGROUND

©iStock/Egor Shabanov

Since 1994, the United Nations Environment Programme (UNEP) has been working with sport, including through its relationship with the International Olympic Committee (IOC) on the CleanSeas campaign, among others. Now, a more systemic approach to engaging sport on critical issues is being explored to shift the world of sport to act for nature.

This report is intended to serve as an introduction to the many opportunities that await sport organisations on the nature agenda, and an invitation for sport to engage with the UN Decade for Ecosystem Restoration.

Putting nature in context: The triple planetary crisis

In 2020, the United Nations introduced the concept of the triple planetary crisis, referring to three interconnected crises – climate change, pollution and biodiversity loss – which put humans at risk of irreversibly changing our relationship with the natural world.

Climate change refers to long-term shifts in average global temperatures which will alter the ecosystems that support life on the planet. Climate change is driven by increasing emissions related to almost everything we do, but resource extraction, transport, agriculture, industry, and energy use represent the largest contributors. Sport's contribution to climate change – through associated travel, energy use, construction, catering, and so on – is worth addressing. Sport is also already facing the impacts of climate change in various ways, such a damage to its playing surfaces and participant health.

The solutions to climate change include mitigation (i.e. reducing emissions to prevent worsening climate conditions) and adaptation (i.e. developing response strategies to alleviate harm caused by climate change in the present and future). Efforts to reduce sport's contributions to climate change are already in motion, led by the United Nations Framework Convention on Climate Change's (UNFCCC) Sports for Climate Action Framework, which has been signed by more than 350 sport organisations globally as of 2022.

The Sports for Climate Action Framework

Signatories to the Sports for Climate Action Framework commit to five principles:

1. Undertake systematic efforts to promote greater environmental responsibility;
2. Reduce overall climate impact;
3. Educate for climate action;
4. Promote sustainable and responsible consumption; and
5. Advocate for climate action through communication.

At the COP26 Summit in Glasgow, UN Climate sport sector engagement leader Lindita Xhaferi-Salihu announced new ambitions for the Framework, namely that signatories are now requested to commit to achieving the Race to Zero goals of halving emissions by 2030 and aiming to achieve net-zero by 2040.

Pollution, particularly air pollution, is an invisible threat and the largest cause of disease and premature death in the world according to the World Health Organisation [WHO](2014), leading to more than seven million premature deaths annually. For athletes, as their air intake is higher, they risk inhaling greater volumes of polluted air and having those pollutants enter their respiratory tracts (Salonen, Salthammer, and Morawska 2020). The most recent estimates suggest nine out of ten people worldwide are breathing air that contains unsafe levels of pollutants (WHO 2018), and thus, sport participation is impacted in most parts of the world.

World Athletics champion air pollution research and advocacy

Launched in 2018, the World Athletics Air Quality project is part of a broad campaign to raise awareness on air pollution around the world and the harmful impact it has on elite athletes and recreational runners. The research project monitors air quality during athletic events, seeking the best solutions to combat pollution with local authorities and other partners.

The advocacy component of the Air Quality project is perhaps best exemplified by the 2022 'Every Breath Counts' campaign, which calls on governments to take action on air pollution and galvanizes the global athletics community around the importance of addressing poor air quality.

Plastic pollution is also critically important to address, as the accumulation of plastic is choking our waterways and oceans. Considering many sport products are made with plastic (e.g. shoes, nets, balls, swim lanes, etc.), and items associated with consumption at sport events are often single-use plastics, there is a role for sport to play in reducing plastic consumption and redirecting waste. To date, however, while some sports and champions are taking action, much more needs to be done by the sport sector to address pollution issues.

Case 1. Big Plastic Pledge

In 2019, Olympic gold and silver medalist Hannah Mills founded The Big Plastic Pledge to encourage reduction in plastic consumption and single use plastic use in the sports community. The campaign aims to educate sports fans and participants about plastic pollution and encourage them to take a pledge to reduce their single-use plastic consumption.

©Big Plastic Pledge 2020

Biodiversity loss refers to the decline or disappearance of species (e.g. plants, animals, microorganisms), ecosystems, and genetic diversity (e.g. chromosomes, DNA) that make up the building blocks of life on this planet (Secretariat of the Convention on Biological Diversity [CBD] 2000). The five main drivers of biodiversity loss are changes in land and sea use; direct exploitation of organisms; climate change; pollution; and invasion of alien species (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services [IPBES] 2019). As our ecosystems offer the water, air, food, and materials that support all life on Earth, biodiversity loss is a critical threat to all activities, including sport. In fact, without a healthy natural environment, sport simply cannot function. And yet, despite the availability of some guidance on biodiversity actions in sport, little has been done to address these issues on a systematic scale.

Guidance on biodiversity and sport

The International Union for Conservation of Nature (IUCN) in partnership with the International Olympic Committee (IOC) produced a series of guides on how sport can act for nature. This report and subsequent efforts will build on this guidance.

Predictions are dire – the world's reefs could disappear by the end of the century (UNEP 2020), 100 million hectares of forest are at risk of deforestation or degradation (Food and Agriculture Organisation [FAO] and UNEP 2020), and upwards of 1 million plant and animal species are threatened with extinction (IPBES 2019). Given the interconnected nature of climate change, pollution and biodiversity loss, it is important that these problems are tackled together. Action needs to be taken now and importantly, positive action is within our grasp. Sport can play an important role in normalising behaviors and practices which see humans living in harmony with nature.

Sport's dependency and responsibility

Sport plays a critical role in enhancing people's relationship with natural spaces and fostering environmental awareness and concern (Brymer and Gray 2016; Fox, Marshall and Dankel 2021). Outdoor sports immerse the participant in the natural environment and rely on clean air, clean water, and healthy spaces for safe play. For many generations, sport managers and participants have taken the natural environment for granted (Orr and Inoue 2019), developing complex dependencies in their supply chains, schedules, and systems which assume the natural environment will go unchanged. The full enjoyment of the environment is also not equal for everyone as other factors such as disability, gender, race, socio-economic status and geographical location also impact to what extent one interacts with the environment. This report reviews how sport's intimate relationship with nature might be leveraged for actions to address nature loss, and how sport organisations can become central partners in supporting nature-based work in their communities.

This report further details the findings of the first comprehensive global study of current practices on nature action in sport and opportunities for greater impact in the future.

A harmonious future for sport and nature

Imagine a future with

- Cleaner air near sport sites, due to reduced car traffic, more trees, and strong air quality guidelines among sport organisations.
- All-natural and native grasses for sport turf, which could mean safer conditions for play (turf causes more lower-extremity injuries, Mack et al. 2016) and lower reliance on chemicals for maintenance.
- No plastic pollution left behind where sport is played.
- No natural spaces lost for new sport facilities, meaning all new facilities are built on brownlands, upcycled urban spaces, or existing sport sites.
- New trees and shrubbery planted at every sport stadium to improve air quality, capture carbon, and provide habitat.
- Sport participants living in harmony with wildlife, respecting their boundaries, and creating feeding and resting grounds for animals.
- Strong partnerships between sport organisations and conservation organisations, to grow awareness of the risks of biodiversity loss and rally sport fans around nature.

©iStock/kodachrome25

For years, negative narratives have dominated the environmental communications landscape. The message for nature and sport can be different: forward-looking, positive, hopeful. A bolder and more courageous future is attainable, if only we can visualise it and work quickly and collaboratively towards its realization. After all, striving towards positive goals is more motivating than avoiding negative outcomes. The importance of nature cannot be overstated. A considerable number of sporting facilities and opportunities will be lost if environmental degradation continues unchecked. By helping sport organisations to improve their stewardship of biodiverse natural environments, a sizeable positive impact can be achieved.

Sport organisations aspiring to become nature positive need to address the triple-planetary crisis on all fronts, by taking action that could include:

- Signing the Sport for Climate Action Framework and commit to the Race to Zero targets.
- Reducing consumption, eliminate single-use plastics, ensure clean spaces where sport is played, and minimize contributions to landfill.
- Monitoring air quality and communicating with participants and fans about the risks associated with air pollution.
- Advocating for clean air policies.
- Conserving and restoring at-risk ecosystems in areas where sport is played, advocate for nature conservation, and partner with nature non-profits and universities on this agenda.
- Educating fans, participants, sponsors, partners, and suppliers on the triple planetary crisis and solutions.

PART 2

THE SPORT AND NATURE LANDSCAPE IN 2022

©iStock/Egor Shabanov

Before getting to work on the ambitious vision put forth in the pages above, we must understand sport's current place in nature and the role it plays in helping (and harming) the natural world.

To set a baseline for current nature efforts in sport, the perspectives of sport managers from a range of sports were solicited to understand:

1. Do sport organisations see nature to be important?
2. What is sport currently doing to address environmental issues?
3. What capacities do sport organisations have to address environmental issues?

Study design: To ensure rich descriptive data was collected in a fast, economical, and efficient manner, focus groups were held with managers within sport organisations at all levels of sport ranging from small community clubs to national sport federations and high-profile professional teams (Onwuegbuzie, Dickinson, Leech and Zoran 2009). The literature review around the relationship between sport and nature appeared to be limited, so additional data collection through focus groups was necessary. In total, 20 online focus groups were held over Microsoft Teams, including 16 in English, 2 in Spanish and 2 in French between January and April 2022. Each focus group was facilitated by an experienced qualitative researcher working in their native language and accompanied by the lead author. The average length of a focus group was 54 minutes, with 3-6 participants in each to ensure all participants had sufficient opportunity to contribute. To accommodate issues with internet access and multiple time zones, some email participation was accepted, wherein respondents answered the same questions used in the focus groups by email.

Sampling strategy: In total, 356 organisations were contacted through a mix of purposeful sampling and snowball sampling, prioritizing outdoor sports organisations. In additional, open calls for participation were posted in online forums for sport managers in the Americas, Europe, and Asia.

Sample: 109 sport managers took part in the focus group sessions, including 43% female, representing 103 different organisations from 48 countries and 30 sports.

Analysis: Two researchers skilled in focus group analysis conducted two rounds of classical content analysis using Morgan's (1997) method which involves 1) thematically coding the data, 2) extracting themes from the coding patterns, and 3) counting the frequency and distribution of each code's use. The first round of analysis was completed using the video recordings of the focus groups and a second round of analysis was done on the transcripts, wherein French and Spanish transcripts were translated to English)

109 sport managers from **103 organisations** took part in the focus group sessions:

43% female participants

48 countries worldwide

30 different sports

to facilitate a round of analysis in a singular language. All analysis was completed using NVivo (Onwuegbuzie et al. 2009),

Triangulation: To triangulate the findings, an early copy of this report was shared with six participants to ensure the results reflect their recollection of the focus groups. In addition, an online survey was distributed to fifteen international sport federations to garner their perspectives on sustainability practices in their sport, and to assess the extent to which the international sport federations' perspectives matched those of sport organisations working on the ground in communities around the world.

The paragraphs below detail the findings from the three research questions, in order, followed by a discussion of additional themes that emerged in the thematic analysis of focus group transcripts.

1. Do sport organisations see nature to be important?

Consensus among sport stakeholders: Nature is important

Sport managers agree: Nature is important and worth protecting

Participants showed an appreciation for the natural synergy between sport and nature, conscious not only of sport's impact upon the natural environment, but also aware of the impact nature has on playing conditions. Insofar, sport organisations are already experiencing disruptions related to degrading environmental conditions. Participants were concerned that in the absence of eco-conscious solutions, conditions could worsen.

Top 3 concerns among respondents regarding nature impacts on sport

- Poor air quality impacting athlete health and performance
- Pollution in waterways and the ocean
- Extreme heat, and the impact of the heat island effect on sport surfaces and in urban facilities

We participate on all sorts of bodies of water… and the conditions are super critical for us at all levels of our sport. So whether it's water quality, algae blooms, pollution, air quality issues from wildfires and smoke pollution, or other factors like water temperature, all sorts of factors play into that… a healthy environment is super critical for us.

❝ Canoe/Kayak organisation in North America

Representatives of outdoor sports, especially those played on snow, water, or in the mountains, were most concerned with nature's wellbeing and easily able to identify reasons for protecting nature.

2. What is sport currently doing to address environmental issues?

"We're not doing enough… yet."

Among the respondents, a meagre 32 had formal environmental sustainability plans or strategies with some of those organisations (n = 19) working toward (or achieving) certifications for their environmental efforts (e.g. ISO20121, LEED or equivalents). Few (n = 13) have signed the Sport for Climate Action Framework though many were aware of the initiative. Some (n = 19) specifically said they are doing nothing, while another segment (n = 9) specified their only action is running cleanups.

Although there are examples of sport organisations reducing their negative impacts on the natural environment, there is a consensus that more can and should be done to proactively restore nature.

©iStock/ajaykampani

3. What capacities do sport organisations have to address environmental issues?

Capacity is limited

Several barriers to action were identified, the most common being a perceived lack of resources and capacity. Nearly every participant (n = 89) said their organisation lacks the resources to address environmental issues. Many (n = 71) either pointed to lack of financial resources or said funding would be the most helpful form of support to advance environmental work, while others (n = 55) highlighted knowledge gaps.

Promisingly, more than two dozen organisations explained their structures are being altered to add new sustainability-focused roles or amend existing roles to incorporate responsibilities linked to environmental work. However, most such changes in sport are only recently appointed and thus haven't had time to activate their full sustainability plans.

A majority of respondents pointed to an abundance of sport volunteers who are interested in protecting the environment and thus might be willing to support this work. However, sport volunteers typically lack the influence and control to exert change and thus await guidance from the organisation's leaders.

There simply are no resources at our organisation to do this. So, it becomes something we do off the side of our desks as a passion project.
" Cycling organisation in North America

One barrier commonly cited was the COVID-19 pandemic which affected the financial viability of most sport organisations, thus crippling the organisations' capacity to take on new initiatives or address any agenda other than their financial viability post-pandemic. However, the outlook for the coming years is bright: 70% of respondents in PricewaterhouseCoopers' (2021) Sports Transformed survey expect the industry to fully recover to pre-COVID-19 levels of play and business by 2022-2023.

Importantly, many nature-positive practices do not require resources (e.g. leaving behind no waste, reducing night-time disturbances, lowering noise). As such, sport organisations need to be sensitized to the full breadth of actions that can be taken, to disrupt assumptions about the high cost of engaging with this agenda.

©iStock/umdash9

A sizeable opportunity

Whilst difficult to quantify the exact proportions of the overall land mass sport uses globally, a few examples can provide perspective on its capacity to be a key player in the conservation and restoration of nature.

It also important to identify the number of people who utilise these facilities, which provides another impression upon the potential impact of sport on nature, by accounting for the behaviours of players, coaches and fans who interact with the environment while playing.

5 735
football stadiums in the world

(The Sporting Blog 2020)

115 584
tennis clubs with

578 681
tennis courts worldwide

(International Tennis Federation 2021)

6 112
outdoor ski areas offering

60 212 km
total piste length, roughly **8x** longer than the Amazon River

(Skiresort.info 2022)

38 081
golf courses around the world

(The Royal and Ancient Golf Club 2021)

Importantly, sport has a tremendous platform to inspire change through its fans. The 2019 Sports Around the World Report by Global Web Index (2019) surveyed 575,000 internet users globally and found that 83% of people aged 16-64 watch at least one sport on TV. It is thus helpful to quantify the global sport fanbase in some of the more visible and popular sports.

Global Fanbase

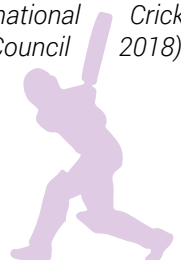
565 million
(Ernst & Young n.d.)

735 million
(Badminton World Federation 2019)

3.05 billion
(Tokyo 2020) (IOC 2021b)

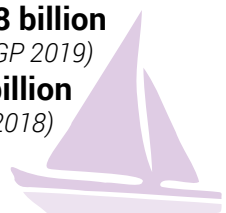
405 million
(Asia Rugby 2019)

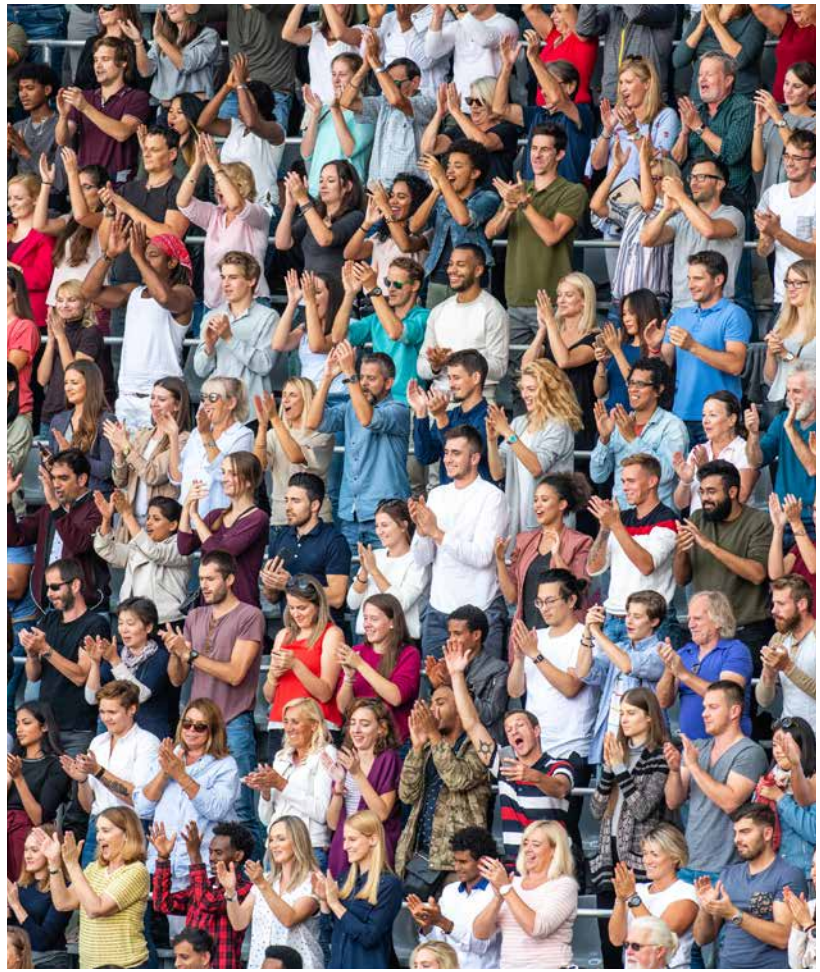
1 billion
(International Cricket Council 2018)



5 billion
(Federation Internationale de Football 2021)

1.8 billion
(SailGP 2019)
2.2 billion
(The Ocean Race 2018)





©iStock/simonkr

Collaborators on common playgrounds

Sport can be played in a variety of settings: water sport athletes compete on rivers, lakes, and oceans, while most field sports (cricket, rugby, football) are played on turf or grass. Rather than segmenting out solutions for each sport individually, it may be beneficial and timely to organise sport into categories based on common settings: for instance, water-based sports might work together to share ideas and solutions, and those which use turf and grass fields can do the same.

As a result of the conversations held in the focus groups, six unique communities of practice emerged. Specifically, participants' representing sports working in similar spaces had similar responses to the question of whether nature is important, and what environmental work they are currently doing and might consider doing. These responses reflect current communities of practice being built around sports which operate in similar spaces, such as the IOC's Mountain Alliance which brings together mountain sport organisations and brands, and the Clean Seas initiative which does similar work with ocean-based sports. There are 4 main outdoor spaces where sport is played and where there is a defined dependency on nature, and a further 2 which are either indoor or mixed where nature plays a different role for sport to be sustained.

- #1 Water: Outdoor, on water or surf
- #2 Fields: Outdoor, on turf or grass
- #3 Snow and mountains: Outdoor, on snow or ice, or in the mountains
- #4 Urban: Outdoor, on roads or in urban (paved)
- #5 Indoor
- #6 Combined: Mixed settings

Using this typology represents one way of building community around nature efforts with other sport organisations and stakeholders. This ought to be explored further to determine the utility of such a categorization.

Feeling the pressure: Growing demands for accountability

The disruptions induced by changes to the natural environment are not the only reasons for greater awareness among sport managers. Twenty of the larger sport organisations in the study (e.g. regional sport organisations, global sport federations, professional sport teams) expressed that there is pressure being exerted on them to act and be accountable for the environment by powerful influences in the form of government regulations, and industry pressures such as published league tables (e.g. Sport Positive League Tables) and sponsor interests.

Water

16
organisations

Sailing; Rowing; Canoe and Kayak; Surfing.

Snow and mountains

22
organisations

Skiing; Snowboarding; Luge; Bobsled; Skeleton; Mountaineering, Climbing; Mountain biking

Fields

32
organisations

Equestrian; Cricket; Rugby; Football; Golf; Field Hockey; Baseball; Softball.

Urban

19
organisations

Road Cycling; Running; Touring; Tennis; Athletics; Motorsport; Basketball (outdoor)

Indoor

4
organisations

All indoor sports.

Combined

10
organisations

Organisations that oversee multiple sport types such as Olympic committees.

Several participants (n = 27) pointed to mounting player and fan expectations (especially those of the younger generation) for sport organisations to become accountable for the spaces they occupy and to align their daily operations to meet the requirements that enable the natural environment to prosper.

Smaller community sport organisations and youth sport organisations experienced less pressure from governments and governing bodies, but nonetheless experienced mounting pressure from participants to be environmentally sustainable and accountable, particularly adolescent and young adult

©iStock/Beau Lark

In 2020, the LifeTACKLE project surveyed European football fans and learned more than 90% agree or strongly agree with the importance of (1) protecting the environment and natural resources, (2) preventing pollution, (3) respecting the Earth and living in harmony with other species and (4) fighting climate change.

Fans care

The 2021 FIS Snowsports Community Survey found that addressing climate change is where FIS can gain the most credibility with fans.

A 2021 study by Global Web Index surveyed 9763 sports fans aged 16-24 in 15 markets and found that 69% of Gen Z fans support environmental action and want to see sport stakeholders do more on this agenda.

Athletes care

A 2021 survey by the International Biathlon Union found 75% of their athletes are concerned or very concerned about climate change, and 90% feel their sport has already been impacted.

In 2021, World Athletics surveyed their athletes and found 77.4% are concerned or very concerned about climate change.

More than 150 flag bearers and medalists from Tokyo 2020 participated in a video organized by Athletes of the World, urging governmental leaders to act on climate during the COP26 meetings in Glasgow.

populations. In each focus group, there was some discussion around the mounting public awareness of environmental issues.

We do some local cleanups with the kids. We actually do a lot of that now. And then in the areas that we host grassroots events, or tournament events … we started to do some tree planting in some of those communities where we visit. So that started to happen because the kids were passionate about it.
Football (soccer) organisation in Africa

Nature and biodiversity loss is misunderstood

The severity of biodiversity loss is not well understood among sport organisations and their potential contributions are unclear. Confusion between climate-focused efforts and nature restoration and conservation is exhibited: most sport organisations engaged in environmental sustainability work focused on climate change (e.g. reducing emissions, achieving net zero), whilst not understanding the twin crises of biodiversity loss and pollution. This singular and siloed focus means that the interdependency and critical reliance that sport has on nature is in many cases unknown.

We're already doing a lot in sustainability, but in the other areas of sustainability like climate … There is a growing conversation among our younger players and also among our tournaments which is around how we need to do more on the ecological aspect, and also listening to society and also listening to brands, now that more brands are focusing on sponsoring sport properties that are purposely led with a bigger cause, with a bigger purpose.
Global sport league

©Wikimedia Commons/Bob Ramsak CC BY-SA

What's needed to get sport organisations on track

The final question in the focus groups asked participants to consider what might help their organisation to act on nature. Their responses are summarised below.

A shared framework and a support network. Common language and clear pathways for how sport organisations can address the nature agenda should be established to ensure clarity and consistency across this work. Establishing a network of engaged parties might also provide much needed support to sport organisations as they navigate nature work.

Additional resources. Participants in the focus groups expressed a need for additional

resources which would enable them to effectively design and implement nature-based plans and meet sustainability goals. Whilst there is awareness that the United Nations and their own governments may not be able to supply this to all, participants asked for more information-sharing on existing grant funds from public and private sources.

Sport-specific, translated guidance. Whilst some participants highlighted innovative techniques for nature restoration and conservation from contexts outside of sport, such as music festivals, there is an overwhelming need for sport-specific information and guidance. Not only must this be actionable, with clear 'how-to' guidance attached, but participants in non-English speaking countries expressed a desire for information specific to their region and/or sport and translated to their native tongue.

Forums and assemblies. To ease information-sharing across sports and languages, forums, assemblies and meetings with live translation were seen as a key opportunity to drive action and collaboration.

Build partnerships. Working with universities, nature non-profits, governmental offices, charities, sponsors, and others equipped with knowledge on sustainability to expand capacity and collaborate on larger initiatives. For example, Oxford University currently host the Nature Positive Alliance of some 400 Universities across the world who are working to refrain, reduce, restore and renew nature in their supply chains, estates and within their cities. This could also be an asset to support sport on this agenda.

Improved legislation. A desire for improved legislation and intervention from governments and the United Nations was expressed. This was seen to be a key driver responsible for initiating change and ensuring organisations adhere to the same standards of practice, by increasing their accountability.

©iStock/travenian

PART 3

A GAME PLAN FOR SPORT

©iStock/Egor Shabanov

The designation of 2021-2030 as the "Decade on Ecosystem Restoration" by the United Nations General Assembly and the ongoing work by the Convention on Biodiversity and other parties to agree and apply a Post-2020 Global Biodiversity Framework across all sectors provides an ideal context within which the sport sector can step up and play a decisive role in conservation efforts. Sport's potential to enact this agenda is significant, owing to (i) its reliance on the built infrastructure, (ii) its dependence on nature, and (iii) its links to multiple diverse stakeholder groups, from policy-makers to professional and amateur sport practitioners as well as youth groups and other marginalised groups.

The following section describes a process by which sport organisations can begin considering their impacts on nature and conceptualizing strategies to reduce their impact. This guidance is preliminary and non-exhaustive, representing just some of the many opportunities that exist to address nature issues in sport. Further guidance is under development by UNEP and other institutional partners (e.g. IUCN, IOC) and will become available in the coming months.

1 Set a baseline for nature

Ahead of launching any new nature efforts in an organisation, it is helpful to set a baseline for current dependencies on nature, impacts on nature, priority species and ecosystems which share the spaces where your organisation operates, and to grasp the current landscape of nature work already happening in your community. Here are a few questions which might assist baselining efforts:

Where are our dependencies?

The entire sport sector is dependent on the natural environment, to varying extents. Beyond the obvious reliance of outdoor sports on their natural environment for the field of play and tenable conditions, all sport relies at least indirectly on nature for the natural materials needed to produce the clothing, equipment, and goods used in the game, and for fresh air and clean water.

Tatyanna McFadden, six-time Paralympian and 20-time Paralympic medalist, has been a vocal advocate for sport addressing climate change. In an interview with UN News, she highlighted how her health and wellbeing may be compromised by climate change and issues linked to extreme heat conditions during Tokyo 2020: "This is directly related to hydration. As athletes we need to stay very hydrated. Having a disability, being paralyzed from the waist down causes circulation issues and for us hydration is already a very hard thing. You could get a heat stroke and die because you're not getting enough water".

What are our impacts?

The first major opportunity for sport organisations to address nature is to review their site (or the places they play, if not directly managed by the organisation) and operations and take stock of any pollution caused by their activities, plastic pollution, outdated or unkempt facilities that may be having negative impacts on nature, any particularly run-down or overused areas of terrain affecting existing ecosystems, and use of synthetic pesticides, herbicides and other chemicals on site, and impacts caused by their activities. The table below offers an overview of some of the ways sport activities and operations can harm nature.

What priority ecosystems and species need our attention?

The IUCN maintains the Red List of Threatened Species™. The Red List is widely recognised as the most comprehensive, objective global approach for evaluating the conservation status of plant and animal species, and can be used as a reference for identifying animals and plants that may be at risk of extinction in the area (or in the brand, if the sport organisation uses animal or plant mascots and imagery), and serves as a useful starting point for conversations around conservation on your site.

Impacts sport organisations and activities may have on nature

Light pollution: Light pollution refers to artificial, or unnatural light, that disrupts human views of the night sky and threatens biodiversity. In essence, the light flooding into outside areas is wasted light and it adversely impacts the biodiversity surrounding the event or venue by disorienting migratory birds and reptiles and can disrupt feeding patterns (Longcore and Rich 2004; Schoeman 2016).

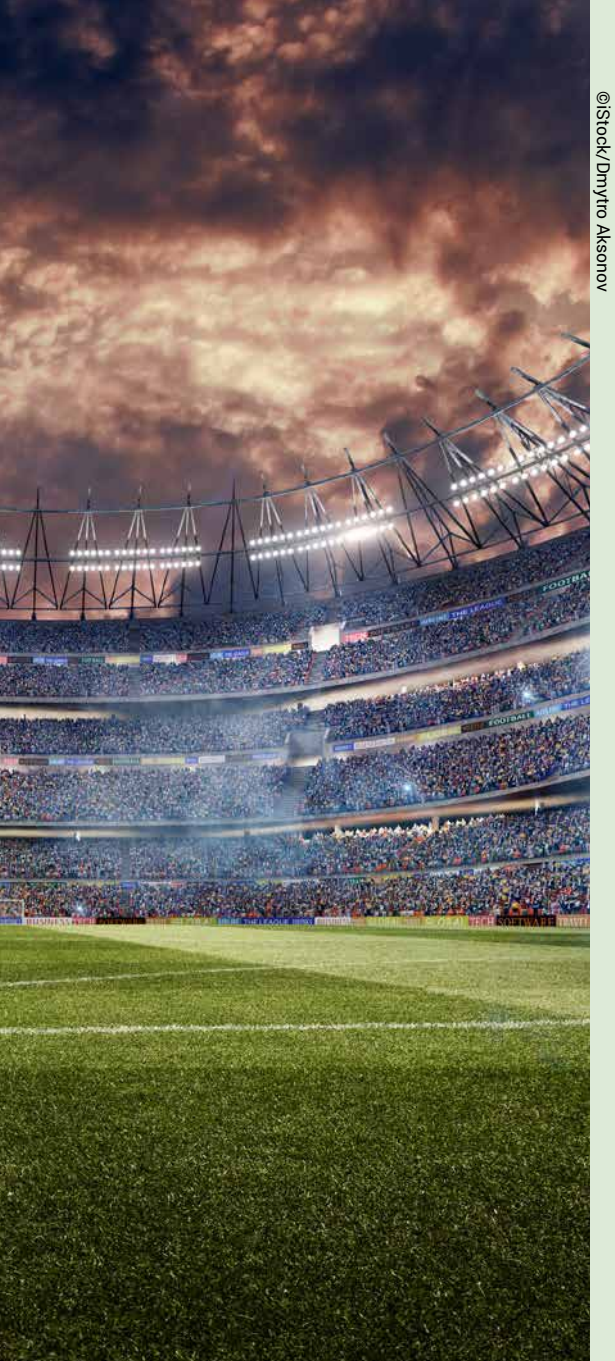
Noise pollution: Loud noises are taken-for-granted aspects of the sport experience which can adversely impact the surrounding community and nature (Hammer, Swinburn, and Neitzel 2014). For example, loud noises can muffle birdsong, which is a key mechanism for communication between birds (Nemeth et al. 2013), and can reduce animals' ability to hear approaching predators (Chan et al. 2010; Slabbekoorn 2019).

Plastic pollution: Plastic pollution simply refers to the accumulation of whole or pieces of plastic in the environment. As plastic collects in the environment, it becomes harmful to plants, animals, humans, and habitats (Lim 2021; Rillig 2020). Because plastic is a synthetic material, it does not decompose in the environment and must be properly disposed of. When plastics reach waterways, they can cause lethal and sub-lethal effects in whales, seals, turtles, birds and fish as well as invertebrates such as bivalves, plankton, worms and corals. The effects can include starvation, drowning, entanglement, smothering, toxicological harm, and physiological stress (UNEP 2021). It is imperative to reduce the amount of plastic seeping into natural environments by reducing plastic consumption and waste across all sectors, including sport.

The sport industry contributes a significant amount of plastic that pollutes land and water biomes. For example, sport equipment like cones and nets, artificial turf, and cleats are often plastic-based. Further, items associated with consumption at sport events are often single-use plastic like food and drink containers, shopping bags, and promotional giveaways. Lastly, microplastics can be found in athletic apparel made from synthetic fabric like polyester, and when these fabrics are washed, tiny pieces of plastic are washed into waterways (Boucher and Friot 2017).

Air pollution: Sport events and facilities have been shown to increase air pollution near the site due to increased levels of traffic (Bunds, Casper and Frey 2019). In cases where gas generators are used, these can also affect air quality near the generator. To assess this, sport organisations should measure air quality before, during, and after events.

Addressing air pollution is critically important not only for preserving nature, which can be negatively impacted by polluted air, but also for ensuring athlete and spectator health. In parts of the world that experience poor air quality, sport participation opportunities may be hampered.



©iStock/Dmytro Aksonov

Land development: Many current forms of sport inherently require land development practices (which may lead to degradation) that transform natural spaces into tightly regulated ones that are suitable for sanctioned competition. This can have deleterious effects on the plants and wildlife that occupy that space.

For instance, considering the needs of sport competition areas (e.g., open playing areas fit for sanctioned competition), spaces with varied vegetation are typically not suitable. Clearcutting is a practice emanating from the logging sector which involves clearing a parcel of land of its trees and other vegetation (Helms 1998). As an example, ski and snowboard runs must be clearcut to create space for alpine sports to compete. This practice is one of the more destructive in sport from a biodiversity standpoint.

Pesticide and herbicide use: For turf sports that require a uniform grass playing surface, the use of pesticide and agricultural chemical products (e.g., fertilizers, herbicides) is widespread. Managers and technicians use these products to control insects, weeds, and species which are not desirable on a sport field. However, these substances can cause serious harm to both humans and non-human species (Bekken, Schimenti, Soldat and Rossi 2021; Strandberg, Blombäck, Dahl Jensen and Knox 2012).

Disrupting and displacing wildlife: The increasing footprint of sport and recreation infrastructure entails habitat fragmentation, degradation and destruction that negatively affects animal movements and impacts important ecosystem processes (Tucker et al 2018). For instance, ungulates species like red deer (*Cervus elaphus*) respond to mountain biking trails by avoiding them and adjusting their home ranges (Scholten, Moe and Hegland 2018).

The stress generated on wildlife by human activities is an increasing conservation issue (Arlettaz et al. 2007). Frequent noise associated with the practicing of sport interferes with species' abilities to communicate, to detect threats or prey, and can be perceived as a threat itself (Francis and Barber 2013). In fact, the disturbance caused by outdoor sports practitioners like mountain bikers, hikers, cross-country skiers and more, is analogous to predation and is therefore perceived as such by wildlife (Frid and Dill 2002; Marion et al. 2020).

Temporary sport structures including event stadia, staging areas, semi-permanent fencing, and so on, can have negative impacts on biodiversity as these can disrupt habitats, preventing species from accessing sources of food, water, and breeding grounds.

Outdated or unmaintained infrastructure: Several building features that were commonplace in decades past have since been identified as having detrimental impacts on nature. For instance, squirrels and birds which ingest flecks of lead-based paint that have fallen off the walls of buildings can suffer devastating health effects (Pokras and Kneeland 2009). Unattended buildings which get damp can develop black mould which has been shown to negatively impact animals such as horses (Kentucky Equine Research 2014) and small mammals.

Beyond threatened species, it's important to consider and conserve keystone species, which are central to maintaining the integrity of the ecosystems they belong to. Without keystone species, ecosystems are at risk of collapse, leading to biodiversity loss.

Which communities of practice can we join or engage with?

Several communities of practice can be tapped for partnership, guidance, campaign development, or insight into current nature issues and best practices for your sport or your geographic area. For instance, it may be helpful to identify environmental non-profits, charities, local park and water authorities, and other stakeholders which might already be working on nature solutions in your area. Alternatively, sport organisations and participants which play in the same natural spaces can work collaboratively toward nature goals, where these are site or context-specific (e.g. the Mountain Alliance which brings together mountain sport organisations and brands to collaborate on nature restoration efforts in the mountains). In other cases, lessons learned and best-practices are more easily shared across sports and spaces (e.g. solutions for reducing the impact of sport-related travel).

2 Align with the Mitigation and Conservation Hierarchy

Dozens of research institutions worked collaboratively to develop the Mitigation and Conservation Hierarchy for addressing the impacts of development on biodiversity. This approach can be applied by any group, organisation, or individual at any level, and seeks to mitigate future negative impacts, and create additional conservation potential. The Hierarchy calls for aligning nature efforts with the following actions:
Avoid: Avoiding negative impacts on nature.
Reduce: Minimizing the harm caused by any unavoidable impacts.
Restore: Working to improve damaged ecosystems.
Renew: Contribute to proactively creating ecosystems, such as artificial reefs.

IUCN has provided guidance on how sport organisations can minimize their negative impacts on biodiversity by applying an approach aligned to the Mitigation and Conservation Hierarchy. The IUCN recommends, and has

©iStock/bernie_photo

Recent innovations in sport products to reduce plastics and synthetics

- American footballs made from non-toxic and biodegradable materials such as thermoplastic polyurethane
- Biodegradable golf balls
- Wetsuits made from renewable natural fibers such as material from hueva trees
- All-natural, biodegradable waxes for skis, snowboards, and surfboards
- Skis made from wood and recycled fibers, instead of carbon or glass
- High performance sportswear using waste collected on coastlines, remote islands and in coastal communities

Case 2. The Milwaukee Bucks of the NBA have the most bird-safe stadium in America

Fiserv Forum, located in downtown Milwaukee near the shore of Lake Michigan, earned the Bird Collision Deterrence Credit from the U.S. Green Building Council as part of its LEED Green Building Certification. The credit reflected the stadium's design considerations for minimizing see-through glass, as well as implementing strategic lighting techniques that reduce the number of migrating birds crashing into buildings. Scientists estimate that upwards of 600 million birds die from building collisions in the U.S. and Canada every year.

©iStock/Anthony Jackson

©Acceso PanAm

Case 3. Montaña Limpia, an App to restore Latin America's mountains

The NGO Acceso PanAm is dedicated to promoting access to and the protection and conservation of all appropriate climbing and mountaineering areas in Latin America. The organisation has created a mobile application (app), with the support of the European Outdoor Conservation Association, to work on cleaning up Latin America's mountains. "Montaña Limpia" (clean mountain) records information about garbage collections through data entries on waste gathered. The data generated by the app helps to better understand the problem of waste in different (mountain) parts of Latin America and to find and design future solutions. The gaming approach used may encourage the collection of more waste and litter, and the "citizen science" approach involves people in the conservation of the environment.

On International Mountain Day 2020, different communities were invited to organize clean-up days in nearby areas. Thirty-four clean-up days were organized through the application, in six different countries (Argentina, Brazil, Chile, Ecuador, Guatemala and Mexico) and two workshops were held. During these events, 306 kg of waste were collected and 3 630 pieces of garbage were recorded. Over 70 volunteers covered an area of 146 kilometres, with the participation of 25 organisations.

©Matt Dunbar/World Surf League

provided examples, of the following features:

- Ensuring adequate patch size (reserve and conserve existing natural vegetation within sport venues; create venues in areas where little green space exists)
- Creating connections between patches of habitat (improve green infrastructure to facilitate movement of animals and insects; develop green active mobility corridors around venues)
- Diversify the plant life to improve quality (install native plants around sport venues and fields; add green roofs and living walls)
- Diversify habitats (include multiple habitat types around venues, such as water features, meadows and shrubs; develop vegetated patches with multiple layers, such as grass, shrubs and tree canopy)
- Choose native vegetation (choose native plants for outdoor landscaping; organize education events to connect fans with native species)
- Offer special resources (install bird feeders; create rain gardens, wildflower meadows, gardens for pollinators)
- Manage the site eco-consciously

Case 4. World Surf League x Coral Gardeners protect the corals in French Polynesia

WSL and Coral Gardeners first partnered in 2019 to raise awareness about the crisis facing coral reefs and to take action to restore the coral reefs of French Polynesia around the Tahiti Pro surfing event. In August 2019, WSL surfers Michel Bourez, Lea Brassy, Matahi Drollet, and Koa Smith, joined the Coral Gardeners to learn more about the coral reef ecosystem, coral restoration, and planting corals.

The group teamed up with reef restoration pioneer Dr. Austin Bowden-Kerby, from Fiji, who trained the Coral Gardeners to improve their methods. With his help, the Coral Gardeners learned to identify and propagate "super corals," which are species more resistant to rising temperatures and more resilient to bleaching events. Together with the WSL, ropes of super coral micro-fragments were created and placed in a new coral garden nursery. Two years later, in 2021, the Coral Gardeners team transplanted the micro-fragments onto degraded areas of reef to bolster its chances of survival.

3 Work with others

Environmental knowledge is already plentiful among eager stakeholders waiting to be activated by sport organisations and events. These stakeholders may include: local governments, sponsors, volunteers, environmental non-profit organisations, consultants, and academics, among others. For example, a sport event new to its host community that wishes to achieve a low environmental impact goal might work with local governments to meet regulations and planning desires, sponsors to provide the resources needed to achieve the goal, and a local environmental non-profit organisation with knowledge on the local ecosystem. Additionally, social inclusion is a crucial goal in sport, hence ensuring that both women and men including those from marginalised communities are part of the stakeholder engagements is crucial.

©Andy Wayro/All England Lawn Tennis Club

Case 5. Wimbledon – conserving sport spaces for Biodiversity Net Gain (BNG)

The AELTC Wimbledon Park Project proposals, for which a planning application was submitted in July 2021, are shaping the future of The Championships by introducing an extensive parkland setting for the event, bringing the Qualifying Competition to the main site, and creating a new 9.4 hectare publicly accessible parkland available to the local community outside of the event period.

This project can't be achieved alone: The AELTC site is a part of a larger and important ecological network which extends across much of south-west London. The project is on track to achieve a Defra Biodiversity Net Gain (BNG) score of over 10% by enhancing and creating several priority habitats, including the creation of acid grassland, extension of reedbeds and aquatic marginal planting, and the introduction of several new ponds and swales.

Case 6. Several sport federations partner with university and technical research center to innovate on carbon fibre recycling in sporting goods

Led by the World Sailing Trust, an alliance formed by the International Biathlon Union, the International Tennis Federation (ITF), Union Cycliste Internationale (UCI), and sports equipment manufacturers Wilson Sporting Goods, Starboard, SCOTT Sports and OneWay are collaborating to support an innovative and disruptive programme based on the reuse of carbon components within the sports sector.

The alliance is working with Technical Lead Lineat Composites with assistance from researchers at the University of Bristol, on a demonstration project to show how it is possible to reclaim broken or failed carbon components from a particular sport through a novel reclamation process that realigns the fibres into uni-directional prepreg tapes. These new technical carbon tapes will then be supplied to component manufacturers within the alliance to be integrated into new components. A typical example would take a broken carbon fiber bike component and use the fibres to make new tapes that would find a second life in a ski pole, a sailing component, or a tennis racket.

4 Educate and advocate for nature

Perhaps the most significant opportunity for sport to take action for nature is to educate its vast audience of sport fans and participants, its partners, and its broad supplier network on nature issues. It's also critical for sport organisations to leverage their position to support awareness-raising campaigns that will galvanize their network to advocate for solutions with governments and decision-makers.

Educate fans and participants

Sport has an unparalleled global platform which can be leveraged to educate fans and participants about nature. It is also a highly visible sector, with billions of participants and fans who consume sport products and engage regularly with sport brands and media. Increasingly, sport organisations are sharing their commitments to carbon neutrality and demonstrating the potential for sport to activate its global fan base around environmental issues.

Fan and participant education can happen through several avenues. For instance,

- on-site nature-based activities (e.g. plogging, which is an activity that sees participants run while collecting rubbish along their route),
- social media campaigns on the importance of nature
- athlete activism campaigns for nature protection
- waste reduction efforts which involve fans
- clean transport campaigns; encouraging fans and participants to travel sustainably to your site

Case 7. #WorldWithoutNature: Using sports brands to raise awareness of biodiversity loss

On World Wildlife Day (3 March 2021, 2022) World Wildlife Fund teamed up with some of the world's best-known companies, NGOs and sports teams by inviting them to remove images of nature from their branding, in a bold effort to highlight the emptiness of a world without nature. Using the #WorldWithoutNature hashtag, the campaign highlighted the dramatic loss of biodiversity globally and the social and economic risks it poses. In 2022, 330 brands took part in the campaign, among them, nearly 50 sport brands with animal mascots. The campaign reached more than 100 million users on Twitter. Sport brands were especially high-performing in the campaign, delivering 16 of the top 20 tweets in terms of engagement.

Case 8. Plogging takes off in Moscow parks and forests

In 2019, the RHR Plogging series launched regular 5-10 km runs, combined with picking up trash in Moscow parks and forests. Plogging is an environmental trend to pick up litter while jogging. The term is a combination of two words -Swedish “plocka” (”to pick up”) and “jogging” (“running”). Over 1000 people joined these eco-friendly runs and helped to clean the parks from trash and dirt. Over the course of the series, runners visited Meshersky, Bitsevsky, Setunand, and the park in Krasnogorsk. Through their efforts, more than 4000 kg of waste were collected, including car tires, radiators, and even a TV set.

©RNR Plogging 2019

©National Festival of School Sporting Games, 2017

Case 9. Mozambique’s federal ministries leverage school sports for conservation awareness

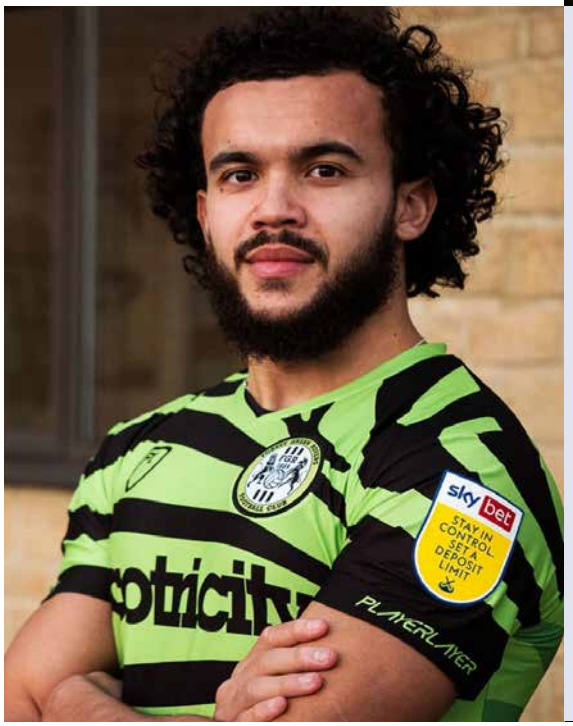
Only 20 wild rhinos remain in Mozambique which is struggling to curb poaching and the destruction of their habitat. Amid hopes of re-introducing rhinos and ensuring their protection, the government has launched an ambitious public-awareness campaign which is being delivered largely through school sports.

At the 2017 National Festival for School Sporting Games, a mascot was revealed named Xibedjana, which is ‘rhino’ in the local Chagana language. Students were captivated by the dancing rhino and seemed to quickly recognize its significance: the animal has strong emotional appeal in the country.

Engage suppliers and partners

The sport supply chain is a hopscotch across the continents and the table of elements. Many items of sport equipment and many consumables in sport are made from materials that are harmful to nature. Consider for instance the number of sport products made from plastic: shoes, nets, balls, whistles, swim lanes, bottles and cups, artificial turf grass, goggles, and the list goes on. Sporting goods are an area fit for improvement in terms of their impacts on nature, and education is a good place to start.

©Forest Green Rovers 2022



Case 10. Forest Green Rovers partner with kit maker PlayerLayer to craft sustainable jerseys

In line with the club's environmental ambitions, the PlayerLayer Forest Green Rovers 2021-2022 home jersey is made from waste coffee grounds and recycled water bottles – as tested in a prototype earlier this season. A lower-priced fan edition made from the club's existing sustainable bamboo fabric is available as well.

In a press release, club Chairman Dale Vince said: "Our adventure in alternative materials continues... It's time the world of football wakes up and smells the coffee about the future of the planet. If nothing else, this prototype kit will bring new flavour to that old cliché of grinding out a result."

Conclusions and next steps

Given the reliance of sports on nature, sport organisations are in a unique position to become key role-players in the global strategy to address the triple planetary crisis.

Many opportunities exist for sport to directly restore and conserve nature and to educate and engage their participants to act. This report sets a sectoral baseline on the work that sports are doing to conserve nature. To build on the current examples, it finds that sport organisations need additional support, including:

- a shared framework for action across the sports community, with clear and achievable expectations and accountability,
- sport-specific, translated guidance on how to act for nature,
- opportunities to meet and collaborate with others working on nature and sports
- the provision of additional and accessible technical and financial resources to support sports aspirations and capacities to act,
- new partnerships with the nature conservation community, including non-governmental and government organisations, universities and others equipped with knowledge on sustainability topics,
- and improved legislation that will support nature work.

In response to these findings, UNEP is engaging with the IOC, and IUCN, and, crucially, with sports partners to meet the challenges outlined in this report with the following actions to be taken forward as priorities:

1 Co-create a new framework for action with sport

IUCN, in collaboration with UNEP, IOC, CBD and sports partners will be designing a new sport-focused framework to inform, activate, support and inspire sports to act to become nature positive.

2 Convene working groups to implement action for nature

Action by sports for nature will be accelerated by sharing experience, and practice in a shared process with the nature sector. This could include networks to facilitate knowledge-exchange between organisations operating in similar spaces, such as the Mountain Alliance established under the IOC. Working groups must be diverse and ensure women and minoritized groups are included. These working groups can share best-practice guidance including at individual level and evidence for what works on the nature agenda so that common challenges can be addressed with common solutions.

3 Share, translate and coordinate information

Existing guidance on restoration and conservation, including case studies, research, 'how-to' guides, and reports should be curated in a freely accessible virtual platform to ensure easy access and searchability that could be also used by other stakeholders, e.g. from the private sector. Also, existing guidance on restoration and conservation (and related environmental sustainability topics) in sport should be translated to multiple languages, to bridge language barriers and activate new sport organisations to engage in this work so that all sport in all locations are supported on this agenda.

For sport organisations, the recommended first step is to assess your dependency on nature and to determine how current operations may be impacting nature (see Section 3). This will serve as an organisational baseline which will guide future work and position your organisation to engage with the forthcoming framework, resources, networks, and support. We look forward to working together to make a difference.

References

Arlettaz, R., Patthey, P., Baltic, M., Leu, T., Schaub, M., Palme, R., and Jenni-Eiermann, S. (2007). Spreading free-riding snow sports represent a novel serious threat for wildlife. Proceedings of the Royal Society B: Biological Sciences 274(1614), 1219-1224

Asia Rugby. (2019, November 2). New report highlights global rise in rugby interest in 2019. https://www.asiarugby.com/2020/11/02/nielsen/ Accessed 5 March 2022

Badminton World Federation. (2019). A year in review. Retrieved from: https://bwfbadminton.com/news-single/2019/12/31/a-year-in-review#:~:text=According%20to%20the%202018%20Global,in%2021%20badminton%20markets%20globally. Accessed 5 March 2022

Bekken, M., Schimenti, C., Soldat, D.J., and Rossi, F.S. (2021). A Novel Framework for Estimating and Analyzing Pesticide Risk on Golf Courses. The Science of the Total Environment 783: 146840.

Boucher, J. and Friot, D. (2017). Primary microplastics in the oceans: a global evaluation of sources. Gland, Switzerland: International Union for Conservation of Nature. 43 pp.

Brymer, E. and Gray, T. (2009). Dancing with nature: Rhythm and harmony in extreme sport participation. Journal of Adventure Education & Outdoor Learning 9(2), 135-149.

Bunds, K., Casper, J., and Frey, H. (2019). Air Pollution at College Football Games: Developing a Methodology for Measuring Air Pollutant Exposure in a Sport Event Microenvironment. Event Management 23, 399-412.

Ernst & Young. (n.d.) How to use IoT and data to transform the economics of a sport. https://www.ey.com/en_uk/digital/how-to-use-iot-and-data-to-transform-the-economics-of-a-sport Accessed 1 March 2022.

Federation Internationale de Football Association. (2021). The football landscape. https://publications.fifa.com/en/vision-report-2021/the-football-landscape/ Accessed 1 March 2022.

Fox, N., Marshall, J. and Dankel, D.J., 2021. Ocean literacy and surfing: Understanding how interactions in coastal ecosystems inform blue space user's awareness of the ocean. International Journal of Environmental Research and Public Health 18(11), 5819.

Frid, A., and Dill, L. (2002). Human-caused disturbance stimuli as a form of predation risk. Conservation Ecology 6(1), 11.

Global Web Index (2019). Sports around the world. https://www.gwi.com/reports/sports-around-the-world Accessed 1 March 2022.

Hammer, M. S., Swinburn, T. K., and Neitzel, R. L. (2014). Environmental noise pollution in the United States: developing an effective public health response. Environmental Health Perspectives 122(2), 115-119.

Helms, J. A. (1998). The dictionary of forestry. Bethesda, MD: Society of American Foresters.

International Institute for Race Medicine. (2019). The State of Running 2019. https://racemedicine.org/the-state-of-running-2019/ Accessed 2 March 2022

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (2019). Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. E. S. Brondizio, J. Settele, S. Díaz, and H. T. Ngo (editors). IPBES secretariat, Bonn, Germany. 1148 pages. https://doi.org/10.5281/zenodo.3831673

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (2019). Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. S. Díaz, J. Settele, E. S.

International Basketball Federation - FIBA. (n.d.) Presentation. https://www.fiba.basketball/presentation Accessed 1 March 2022

International Cricket Council. (2018) First global market research project unveils more than one billion cricket fans. https://www.icc-cricket.com/media-releases/759733 Accessed 5 March 2022

International Hockey Federation. (n.d.) Hockey invites. http://www.fih.ch/hockey-invites/ Accessed 2 March 2022

International Olympic Committee. (2021a). Five things you need to know about sport climbing. https://olympics.com/en/news/five-things-you-need-to-know-about-sport-climbing Accessed 2 March 2022

International Olympic Committee. (2021b). Olympic Games Tokyo 2020 watched by more than 3 billion people. https://olympics.com/ioc/news/olympic-games-tokyo-2020-watched-by-more-than-3-billion-people#:~:text=The%20Olympic%20Games%20Tokyo%202020,International%20Olympic%20Committee%2-0(IOC).&text=A%20total%20of%203.05%20billion,linear%20TV%20and%20digital%20platforms Accessed 5 March 2022

International Tennis Federation. (2019). Global Tennis Report. http://itf.uberflip.com/i/1169625-itf-global-tennis-report-2019-overview/1? Accessed 2 March 2022

International Tennis Federation. (2021). Global Report 2021. Retrieved from: http://itf.uberflip.com/i/1401406-itf-global-tennis-report-2021/0? Accessed 2 March 2022

Kentucky Equine Research. (2014). Air quality for stabled horses. https://ker.com/equinews/air-quality-stabled-horses/ Accessed 9 March 2022

Kuntz, M. (2007). 265 million playing football. FIFA Magazine. https://documents.pub/document/265-million-playing-football-fifa-3-23-11-10-10-265-million-playing-football-.html?page=1 Accessed 5 March 2022

Lim, X. (2021). Microplastics are everywhere – but are they harmful? Nature 593, 22-25.

Longcore, T., and Rich, C. (2004). Ecological light pollution. Frontiers in Ecology and the Environment 2(4), 191-198.

Mack, C. D., Hershman, E. B., Anderson, R. B., Coughlin, M. J., McNitt, A. S., Sendor, R. R., and Kent, R. W. (2019). Higher rates of lower extremity injury on synthetic turf compared with natural turf among National Football League athletes: epidemiologic confirmation of a biomechanical hypothesis. The American Journal of Sports Medicine 47(1), 189-196.

Marion, S., Davies, A., Demšar, U., Irvine, R. J., Stephens, P. A., and Long, J. (2020). A systematic review of methods for studying the impacts of outdoor recreation on terrestrial wildlife. Global Ecology and Conservation 22, e00917.

Morgan, D. L. (1997). Focus groups as qualitative research (2nd ed.). Thousand Oaks, CA: Sage.

Nemeth, E., Pieretti, N., Zollinger, S. A., Geberzahn, N., Partecke, J., Miranda, A. C., and Brumm, H. (2013). Bird song and anthropogenic noise: vocal constraints may explain why birds sing higher-frequency songs in cities. Proceedings of the Royal Society B: Biological Sciences 280(1754), 20122798.

Onwuegbuzie, A. J., Dickinson, W. B., Leech, N. L., and Zoran, A. G. (2009). Toward more rigor in focus group research: A new framework for collecting and analyzing focus group data. International Journal of Qualitative Methods: ARCHIVE 8(3), 1-21.

Orr, M., and Inoue, Y. (2019). Sport versus climate: Introducing the climate vulnerability of sport organizations framework. Sport Management Review 22(4), 452-463.

Pokras, M. A., and Kneeland, M. R. (2009.) Understanding lead uptake and effects across species lines: A conservation medicine approach. In R. T. Watson, M. Fuller, M. Pokras, and W. G. Hunt (Eds.). Ingestion of Lead from Spent Ammunition: Implications for Wildlife and Humans. The Peregrine Fund, Boise, Idaho, USA.

PricewaterhouseCoopers. (2021). Sports transformed: Winning strategies against COVID-19 challenges to survive and thrive in the new world. Retrieved from: https://www.pwc.com/sg/en/publications/assets/page/sports-transformed.pdf Accessed 2 March 2022

Rillig, M.C. (2020). Plastic and plants. Nature Sustainability 3(11), 887-888.

Ross, E. (2019). Get on board: why there's never been a better time to take up surfing. National Geographic. https://www.nationalgeographic.co.uk/travel/2019/10/get-board-why-theres-never-been-better-time-take-surfing Accessed 2 March 2022

SailGP. (2019). SailGP attracts an audience of 1.8b billion in season 1. Retrieved from: https://sailgp.com/news/season-one-in-review/ Accessed 5 March 2022

Salonen, H., Salthammer, T., and Morawska, L. (2020). Human exposure to air contaminants in sports environments. Indoor Air 30(6), 1109-1129.

Schoeman, M.C. (2016). Light pollution at stadiums favors urban exploiter bats. Animal Conservation 19(2), 120-130.

Scholten, J., Moe, S. R., and Hegland, S. J. (2018). Red deer (Cervus elaphus) avoid mountain biking trails. European Journal of Wildlife Research 64(1), 1-9.

Secretariat of the Convention on Biological Diversity (2000). Sustaining life on Earth. https://www.cbd.int/doc/publications/cbd-sustain-en.pdf Accessed 30 July 2022

SkiResort.info (2022). Ski resorts worldwide. Retrieved from: https://www.skiresort.info/ski-resorts/ Accessed 17 January 2022

Slabbekoorn, H. (2019). Noise pollution. Current Biology 29(19), R957-R960.

Strandberg, M., K. Blombäck, A. M. Dahl Jensen, and J. W. Knox. (2012). Priorities for Sustainable Turfgrass Management: A Research and Industry Perspective." Acta Agriculturae Scandinavica, Section B — Soil & Plant Science 62(1): 3–9. https://doi.org/10.1080/09064710.2012.682163.

The Ocean Race. (2018). Record-breaking results from 2017-18 Volvo Ocean Race. Retrieved from: https://www.theoceanrace.com/en/news/12201_Record-breaking-results-from-2017-18-Volvo-Ocean-Race.html Accessed 5 March 2022

The Royal and Ancient Golf Club. (2021). R&A Participation Report 2021. https://assets-us-01.kc-usercontent.com/c42c7bf4-dca7-00ea-4f2e-373223f80f76/f03a80da-5502-4df6-8689-36580fc5ca44/Participation%20Report%202021.pdf Accessed 17 January 2022

The Sporting Blog. (2020). How many stadiums are there in the world? Retrieved from: https://thesporting.blog/blog/sporting-trivia-how-many-stadiums-are-there-in-the-world Accessed 17 January 2022

Tucker, M. A. et al. (2018). Moving in the Anthropocene: Global reductions in terrestrial mammalian movements. Science 359(6374), 466-469.

Union Cycliste Internationale. (n.d.) The Federation. https://www.uci.org/uci-the-federation/7xhBYbVFdymwzNedJF36Wx Accessed 3 March 2022

United Nations Environment Programme (2020). Projections of future coral bleaching conditions using IPCC CMIP6 models: climate policy implications, management applications, and Regional Seas summaries. United Nations Environment Programme, Nairobi, Kenya.

United Nations Environment Programme (2021). From pollution to solution: A global assessment of marine litter and plastic pollution. https://wedocs.unep.org/bitstream/handle/20.500.11822/36965/POLSOLSum.pdf

Vanat, Laurent (2020). 2020 International Report on Snow & Mountain Tourism - Overview of the key industry figures for ski resorts. https://www.vanat.ch/RM-world-report-2020.pdf Accessed 2 March 2022

Wang, P., Zhu, Z., & Fei, Y. (2020). The environmental early warning management of water resources carrying capacity of ski resorts in China. Journal of Coastal Research 115(SI), 430-433.

Weber, A.K., Weber, M.W. and Savoca, M.S., 2019. Quantifying marine debris associated with coastal golf courses. Marine Pollution Bulletin 140, pp.1-8.

World Baseball Softball Confederation. (n.d.) Organisational Profile. https://www.wbsc.org/en/organisation/organisational-profile Accessed 2 March 2022

World Health Organisation (2014). 7 million premature deaths annually linked to air pollution. https://www.who.int/news/item/25-03-2014-7-million-premature-deaths-annually-linked-to-air-pollution Accessed 17 February 2022

World Health Organisation (2018). 9 out of 10 people worldwide breathe polluted air, but more countries are taking action. https://www.who.int/news/item/02-05-2018-9-out-of-10-people-worldwide-breathe-polluted-air-but-more-countries-are-taking-action Accessed 17 February 2022

World Rugby. (2020). Global Participation in Rugby. https://resources.world.rugby/worldrugby/document/2020/07/28/212ed9cf-cd61-4fa3-b9d4-9f0d5fb61116/P56-57-Participation-Map_v3.pdf Accessed 2 March 2022

©iStock/Richinpt

Sport has the power to inspire, engage and set new trends globally. With an audience of billions of participants and fans, its reach is exceptional, and its ability to build connection, community and culture through collective moments of achievement or success is unparalleled. Sport also has a relationship to nature that is both intimate and intertwined. This report is a first attempt to explore how sport's dependency on nature might be leveraged for conservation and restoration efforts in the following spaces: on water, in fields, in cities, and in mountains, where sport is practiced. By outlining what sport can do for nature, this report creates a podium for sport leadership to be recognised in environmental work.