



## Sustainability in Sport-Related Studies: A Non-Systematic Review to Increase the Sports Contribution to the 2030 Agenda

### Authors' contribution:

- A) conception and design of the study
- B) acquisition of data
- C) analysis and interpretation of data
- D) manuscript preparation

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### Abstract

This paper aims to identify all of the unexploited potentialities of sports activities with regard to sustainability by answering the following question: Considering the priorities that the 2030 Agenda identified with regard to sustainability, what does sport contribute to the process of transition towards a more sustainable global scenario? According to the European Union Council, sport and physical activity play a strategic role in the global challenge toward sustainability and achieving the 17 SDGs. The contribution of sport to the 2030 Agenda is indeed strategic. However, through a non-systematic review, the authors have observed almost a complete absence of SDGs within sports literature. Discussing the results through the lens of the SDGs, the authors have identified a series of qualitative and quantitative research opportunities connected with the 17 SDGs and related targets. The authors have also identified a total of 27 research hypotheses. This evidence could support academics, sports managers, professionals, and practitioners in identifying their contribution to the global priorities towards sustainability.

**Key words:** SDGs, 2030 Agenda, sports sustainability, literature review

### Introduction

Sustainability is a pervasive topic in all sectors and research fields (Spangenberg, 2011). Since 1970, and even more so since the publication of the Brundtland Report, scholars have discussed the concept of sustainability and practitioners have integrated it with new, tailored dimensions. Starting from the triple-integrated, balanced and indivisible dimensions of sustainability, which are the social, environmental and economic aspects of global development (Elkington, 1994), experts have integrated the concept of sustainable development with more focused dimensions; in the most recent institutional efforts towards sustain-

ability, these are the 17 Goals (SDGs) of the 2030 Agenda for Sustainable Development. Currently, the 2030 Agenda plays a key role in both institutional initiatives (Tsalis et al., 2020) and business-related strategies (Rosati & Faria, 2019), and it represents a lens to deepen new opportunities of development and lines of research in sustainability-related initiatives.

Scientifically, merging literature trends with the evolution of the global institutional framework, several academic publishing companies promote special issues oriented toward sustainable development goals (SDGs) as an advance towards a more sustainable global scenario.

This paper focuses on the relationship between sustainability and sport. Academics and institutions have often

observed that sport is a driver of social values (Chalip, 2006; Hoye & Nicholson, 2009; Lee et al., 2013;), physical health (Cunningham & Beneforti, 2005), mental health (Bisset et al., 2020) and social inclusion (Bailey, 2005). Alongside its well-known social contribution (Woods & Bulter, 2020), international bodies have observed the potential positive/negative impacts of sport on the environment (European Council of the European Union, 2020; Lenskyj, 1998; Rubiana et al., 2022). According to the United Nations (UN), the impact of sport on the environment comes about through a whole set of related activities, from the construction of sports facilities to individual sports routines (UN, 2010). Understanding the sector's potential to advance sustainability is fundamental to promoting full-scale engagement of sports actors. Its transition towards sustainability has the potential to involve 2.1% of the European work force, the proportion of human resources involved in the sports sector, according to an analysis by the European Commission (Council of the European Union, 2021). Several studies have estimated the influence of the industry at national and European Union (EU) levels (EC, 2014; Milano & Celladurai, 2011; Nana et al, 2002; Shoji, 2016). These findings show the centrality of the sector and, from this perspective, the full exploitation of the potential of sport is a key issue for the advancement towards sustainability.

This contribution aims at identify all of the unexploited potential of sports activities with regard to sustainability by answering the following question: Considering the priorities that the 2030 Agenda identified with regard to sustainability, what does sport contribute to the process of transition towards a more sustainable global scenario?

To clarify the current state of sports-related studies, the authors conducted a non-systematic literature review. Using the Scopus database, the authors analysed all the documents belonging to a sports-related journal, focusing on sustainability. The authors discussed the results critically and, using the lens of the SDGs, outlined three main lines of research related to the three dimensions of sustainability, and clearly identified the potential contribution to each SDG. The analysis has indeed shown the almost total absence of SDGs within the sports-related literature and, from this perspective, the authors have identified a series of qualitative and quantitative research opportunities connected with the 17 SDGs and the related targets. Furthermore, the authors have also identified a total of 27 research hypotheses. This evidence aims to support not only academics in their research, but also sports managers, professionals and practitioners in identifying their contribution to the global priorities towards sustainability.

### **Institutional and Academic framework**

Sustainable development should ensure that current generations address their needs without compromising those of future generations (WCED, 1987). Global

awareness on the topic has increased since this definition has been shared globally. Academics have discussed the concept of sustainability from several perspectives, as it involves a multi-dimensional system composed of social, environmental and economic elements (Elkington, 1994; Fernandes & Philippi, 2017; Van Holt & Whelan, 2019). Institutionally, the UN has devoted significant resources to the achievement of a more sustainable scenario. In the 1990s, a series of summit conferences involved all UN states to focus attention on the social, environmental or economic aspects of sustainability. Only in the 2000s, with the publication of the Millennium Development Goals (MDGs), did the UN propose an integrated framework of goals that considers all three dimensions of sustainability (Kumar & Kumar, 2016). The UN's most recent effort was the publication of the SDGs, which include all of the MDGs and sharpen the focus on a higher number of aspects of human development (Kumar & Kumar, 2016; Leal Filho et al., 2019).

Through the publication of the 2030 Agenda, the UN has outlined 17 priorities – the SDGs – and their related targets, which should guide all nations, public and the private actors in reshaping their actions to address these goals. The UN introduced the 2030 Agenda as a new institutional framework. This framework fully includes the three dimensions of sustainability and integrates these dimensions with specific goals and measurable targets (Adams & Judd, 2016; Tremblay et al., 2020).

Beyond national initiatives aimed at integrating the 2030 Agenda with national, regional and local/urban programmes (Annesi et al., 2021; Gopfert et al., 2019; Muff et al., 2017), other public and private actors have made their own contribution and shown their commitment to sustainability (Battaglia et al., 2020; Rosati & Faria, 2019). The adoption of sustainable practices and commitment to sustainability is driven by competitive opportunities and threats, internal and external pressures, and by the possibility of increasing the level of legitimacy of stakeholders (Belal, 2002; Elliot, 2013; Hahn & Kuhnen, 2013). In this context, the 2022 European Union Council resolution discussed the strategic role sports and physical activity play in achieving the 17 sustainable goals.

Sport events, according to the Council, generate significant social, economic and environmental external influences in the context in which they are organised (Council of the European Union, 2022). Lindsey and Chapman (2017) have outlined a series of contributions that sport can make through these external influences to achieve a more sustainable scenario in accordance with the whole set of SDGs. Socially, sport can contribute to peace, health, education, human rights and social inclusion. Economically, sport is an opportunity for job creation, youth employment, local and tourism development, innovation and economic growth. Environmentally, the high visibility

of sports professionals represents a favourite channel for promoting green and sustainable practices (Council of the European Union, 2021).

In the academic scenario, Moon et al. (2021) highlighted that sustainability has also become a pressing issue for, among others, the governing bodies of the sports world (Kellison & McCullough, 2017). The literature has recorded the environmental dimension of sustainability during sports events (Borysova & Krasilshchikov, 2021; Van Wynsberghe et al., 2021), in the activities of sports federations (Mallen et al., 2017) and in terms of consumed resources (Lucas et al., 2017). Socially, the spotlight has been shone on the implementation of Sport for Development and Peace Initiatives (SDP) in local and third country communities (Knott & Tinaz, 2021; Schulenkorf, 2010), and on the contribution of sports activities to well-being and health (Cunningham & Beneforti, 2005). From an economic perspective, scholars have observed the role of the sports industry in the local and regional economy as an important opportunity in terms of generated financial flows (Cortsen, 2013; Krasnoporoshin et al., 2017; Manzenreiter, 2013).

It is not easy to understand the real contribution of studies related to sports in achieving a more sustainable scenario. The last academic review published in sports-related journals that focused on sustainability was conducted in 2011 (Mallen et al., 2011). This research focused on “environmental sustainability” and highlighted a series of research opportunities for sports studies. However, 12 years have passed, the political agenda has changed, and the concept of sustainability has developed to include a more complex system of priorities than those covered by the Agenda 2030 and its 17 SDGs (UN General Assembly, 2015). Therefore, increasing the potential contribution of the sports sector to sustainability represents an opportunity for society and for the sector itself. Defining new potential research opportunities for sports-related studies is, moreover, a way to guide researchers and practitioners towards an updated vision of sport as a promoter of change.

## Method

According to the Scopus database, there are more than 120 sources that focus on sports issues. In this cluster, approximately 79 sources have published a paper that at least includes “sustainability” as a keyword.

To explore the academic contribution of sports journals to sustainability, the authors conducted a non-systematic review of the published literature. The authors built an algorithm that includes all journals containing the word “sport” in the title and all contributions with the word “sustain\*” in the title, abstract or keywords. This study only considered

the contributions related to business, social sciences and decision-making areas.

The algorithm found 321 articles. Considering the high number of contributions, the authors first conducted an overview of the results using NVivo software. Using a deductive approach, the authors ran two queries, (Kyngäs & Vanhanen, 1999). First, the titles and abstracts were analysed to identify the most relevant words. The authors considered the first ten most cited words as relevant. Secondly, “sustainability” as the first most cited word after “sport” was analysed within its textual context. With this second query, the authors verified if the word sustainability was used to address just one of the sustainability dimensions – i.e., environmental, social or economic – or to address the whole concept including all three pillars of sustainability. These steps led to the exclusion of non-relevant papers. Finally, the authors analysed each relevant paper to give a full overview of the academic debate on sustainability in sports studies in relation to its social, economic and environmental dimensions. In this phase, the authors observed the possible presence of references to the “SDGs” or the “2030 Agenda”.

The analysis verified: (1) if the papers effectively discussed sustainability; (2) if all three pillars of sustainability were analysed or if just one or two were discussed; (3) which sports discipline was involved; (4) the research topic; and (5) the reference to SDGs and the 2030 Agenda in general.

The results of this analysis are: (1) a classification of sports that have been studied in relation to their impact on sustainability, (2) an analysis of social, economic and environmental aspects observed and (3) literature gaps to be filled in line with the potential contribution to SDGs and the 2030 Agenda in general. In this sense, the authors consider the interpretation of the 2030 Agenda by the Stockholm Resilience Centre (Schultz et al., 2016).

## Results

The three levels of analysis led to identification of the evidence highlighted below.

Results of the two queries are coherent with each other and show a significant interest in sustainability, development and the environment (Tab.1). In this context, the word search of the same sources that focused on “sustainab\*” as the second most cited word after “sport” showed the word’s strong connection with “environment”. This analysis showed a significant connection between sports-related studies and environmental sustainability. Considering the three pillars of sustainability, the word search query did not show other significant connections with the economic or social aspects. In general, it emerges that events such as the Olympic Games, tourism and football are the most commonly found topics when it comes to sports-related studies discussing sustainability.

**Table 1.** Word frequency query concerning titles and abstracts

Word frequency on titles		Word frequency on abstracts	
Words	Count	Words	Count
Sport/s	178	Sport/s	771
Sustainab*	121	Sustainab*	466
Development	53	Development	216
Environmental	53	Study	186
Olympic	28	Environmental	182
Social	28	Research	169
Tourism	27	Social	167
Event/s	27	Management	162
Games	25	Event/s	141
Football	21	Olympic	121

Later, a more in-depth analysis led to the identification of thematic clusters relating to the specific use of the term sustainability.

The clusters identified were those where the paper focused on sport and: (1) environmental sustainability, (2) economic sustainability, (3) social sustainability, (4) all three dimensions of sustainability, (5) the combination

of economic and environmental sustainability, (6) the combination of economic and social sustainability, and (7) temporal sustainability, which is related to a generic concept of “durability” of analysed phenomena or issues. A last cluster includes all of the papers not entirely focused on the relationship between sport and sustainability (Tab. 2).

**Table 2.** Thematic cluster of analysed paper

	Environ.	Social	Econ.	ESE	Environ. Econ.	Econ. Social	Temporal	Out of topic
%	27%	9%	6%	14%	0,5%	0,5%	10%	33%
No. reference to SDGs or to 2030 Agenda	0	1 (+2 MDGs)	0	3	0	0	0	-

The last line shows that only four papers (less than 1.5% of the detected papers) include a reference to Agenda 2030 or SDGs and two more papers cite MDGs, both discussing the social sphere of sustainability.

Within each specific cluster, the authors identified a series of sub-clusters in line with the principal detected topics analysed in the literature. Therefore, each specific sub-cluster may or may not appear in all the macro-clusters.

Looking at the analysed sports, the largest part of the papers (50%) do not deal with a single or a specific sport. The second largest cluster of papers focuses on football (7.78%). Other research has detected papers on outdoor sports (5%) and motor sports (including Formula E) (2.5%). Cycling, golf and elite sports cover around 1% of the contributions. A final cluster includes all those sports that have been addressed by only a single sustainability-related paper (Tab. 3).

**Table 3.** Sports disciplines analysed in the detected papers

Sports disciplines	% of detected papers
Transversal	50.0
Football	7.78
Outdoor/nature sport	5.0
Motor sport	2.5
Cycling	1.2
Golf	1.2
Elite sport	1.0
Other	7.4 (1 paper per sport)

Overall, looking at the three dimensions of sustainability, 27% of the contributions focus on the environmental sphere of sustainability, 29 papers, which cover 9% of all the studies related to sustainability and sport, discussed the social aspect of sustainability. 18 articles, which cover 5% of all the analysed literature, discussed

the economic aspect of studies related to sustainability and sport. The ESE cluster, with 44 papers, is the second largest cluster of the analysed literature. In fact, it covers 13% of the whole set of analysed papers (Tab. 4). Only a few papers deal with a bi-dimensional concept of sustainability.

**Table 4.** Distribution of papers according to the three dimensions of sustainability

Sustainability dimension	Sub. Topic	No. of papers	Coverage	Sports
Environmental	Events Awareness/education Other	87	27%	Sport in general
				Outdoor sport
				Football
				Golf
Social	SDP Events Health	29	9%	Motor sports
				Sport in general
				Football
				Hunting
				Cycling
Economic	Sport industry Events	18	5%	Motor sports
				Sport in general
				Football
				Outdoor
				Skiing
				Rugby
ESE	CSR SDGs Other	44	13%	Wakeboard
				Sport in general
				Football
				Outdoor sports
				Motor sports
				Elite sports
				Cycling
				Baseball
Surfing				
Cricket				

### Environmental sustainability

27% of the contributions focus on the environmental sphere of sustainability.

#### Events

These papers focus on sports events and, in particular, the Olympic Games. The Olympic Games (OG) is one of the most commonly addressed topics, as the ‘greening’ of mega-sporting events has become a priority in the sports-event industry (Samuel & Stubbs, 2013). These contributions focus on the reduction of the environmental impact of sport events through the creation of environmental legacies (Borysova & Krasilshchikov, 2021; Horton & Zakus, 2010; Preuss, 2014; VanWynsberghe et al., 2021; Viehoff, 2016), unsustainable legacies (Kietlinski, 2021) and through the prescription of

environmental programmes (Pentifallo & VanWynsberghe, 2012). The impact of the OG is also evaluated through the introduction of specific tools, such as the OGI Study – the Olympic Games Impact Study (Vanwynsberghe, 2015).

Academics also analyse the environmental aspect to find a balance between the need to be more appealing through the presence of a sports event and the impact of the sport event at the local scale (Jensen, 2021). Daddi et al. (2021) analysed the special attention given to specific adopted practices to tackle environmental issues in football events, highlighting the adoption technologies and operational practices characterised by short-term economic returns, which has an impact on the environmental aspect of sports events. In the same vein, the literature has analysed the potential impact of environmental sustainability efforts as

a way of saving money and increasing revenues (Greenhalgh & Drayer, 2020).

This branch of the literature describes other topics, like the role of managers (Mallen et al., 2017) and the potential of shared leadership (Jones et al., 2018) in identifying strategies and practices to improve environmental performance in sports events (Mallen et al., 2010).

Academics also consider the role of sports federations in defining strategies and initiatives aimed at implementing social-environmental practices (Moon et al., 2021), or the heterogeneity of the effort to implement sustainability in the same sports sectors (Trendafilova et al., 2021) or the same kind of events (Lienhard & Preuss, 2014).

Similar to the role of sport managers, federations, politicians and local administrators cited above (Viehoff & Poynter, 2016), the literature focuses attention on the behaviour of spectators and their attitude towards recycling practices (McCullough, 2013; McCullough & Cunningham, 2011).

#### *Awareness and education*

The literature of sports-related studies has also discussed environmental issues in relation to awareness and education. Outdoor sports play a significant role in promoting the human connection to nature and sustainable practices (Cosgriff, 2011).

The literature has analysed the role and the awareness of responsible, sustainable practices in sports organisations to detect the disconnection between the level of concern and level of action in organisations (Casper et al., 2012). Scholars have observed professional sports teams in terms of institutional forces affecting environmental sustainability within corporate social responsibility (CSR) initiatives (Trendafilova et al., 2013).

Academics have analysed the coherence of environmental sustainability topics and sports management in higher education programmes and the significant absence of stand-alone courses devoted to sustainability (Graham et al., 2018). In the same vein, academics have explored the area of Health and Physical Education learning to achieve sustainability via cross-curriculum priorities (Olive & Enright, 2021).

Under the umbrella of SDP, several contributions have analysed outdoor recreation programmes as an opportunity to promote the reconnection of young people with nature, and their engagement in environmental sustainability (Halsall & Forneris, 2019).

#### *Other topics*

Other contributions focus on:

- sport and tourism (Boukas & Ziakas, 2013; Mascarenhas et al., 2021; Newland et al., 2021);
- sports facilities and their impact on the environmental performance of sports activities (Lucas et al., 2017; Mallen et al., 2010);

- change of perspective of operational and governance practice of sport federations and businesses (May & Parnell, 2017; McCullough et al., 2016; Sartore-Baldwin & McCullough, 2018; Todaro et al., 2022).
- the responsibility of sport for the current environmental crisis and its potential in terms of carbon impact (Miller, 2017).

#### **Social sustainability**

##### *Sport for Development and Peace (SDP)*

Institutional theories and neoliberal ideologies have been discussed in the literature, talking about the ability of sports enterprises or associations to address their social SDP mission within the financial and political environment in which they operate (McSweeney et al., 2021). The role of partnerships appears strategic for the survival of SDP organizations (LeCrom & Dwyer, 2015). Their partnerships should include local actors, and their competences should include a series of business skills, i.e., human resource management, as well as financial and strategic planning (Collison et al., 2017; Peachey et al., 2017; Svensson & Seifreid, 2017).

Disadvantaged communities and emerging nations might benefit from sports development programmes by taking part in processes that can reduce the distance among local groups, stopping racism, promoting peaceful communities and increasing local empowerment (Henhawk & Norman, 2019; Knott & Tinaz, 2021; Schulenkorf, 2010). In this context, long-term viability, the role of local governments, and traditional sports clubs are key factors in delivering social inclusion programmes based on sports activities and in achieving social outcomes (Skinner & Zakus, 2008).

SDP programmes have also been identified as a tool for achieving the MDGs faster (Beulter, 2008). Indeed, SDP programmes contribute to public health, education, gender issues and, more generally, peace and development (Blom et al., 2015).

Within this framework, a single article cites the SDGs, explaining that sport supports the achievement of some of these goals (McSweeney et al., 2021).

##### *Events*

A second important cluster focuses on events and mega-events, i.e. the Olympic Games, due to their ability to generate different kinds of social value (Walzel & Eickhoff, 2021) and social outcomes like urban regeneration, urban equity, socialisation and human capital (Taks, 2013; Smith, 2009).

Mega-events are the perfect context for promoting and advancing international human rights (McGillivray et al. 2022), also in terms of lesbian, gay, bisexual

and transgender rights (Van Rheenen, 2014). Within the OGI Study framework, the literature has also observed the absence of a baseline that could define the properties of sports events in terms of social legacies (VanWynsberghe & Pentifallo, 2014).

### *Health*

The literature also analyses sport in terms of organisational practices that can facilitate the development of programmes for the promotion of health (Casey et al., 2012; Huffman & Hilyer, 2014) or wellness programmes aimed at increasing the social inclusion of immigrants (Forde et al., 2015). In this context, it is possible to facilitate the inclusion of vulnerable people by creating partnerships between sports organisations and public health organisations and by focusing on the communication aspect of achieved results (Hermens et al., 2019). The literature also identifies local networks as strategic tools for the social inclusion of homeless or disadvantaged people through sports programmes (Claes et al., 2020).

### **Economic sustainability**

#### *Sports industry*

The design and production of sports equipment and sports centres, and sports tourism, are some of the aspects of the sports industry that can generate significant economic flow in the local and regional economy (Cortsen, 2013; Krasnoporoshin et al., 2017; Manzenreiter, 2013).

The literature has analysed the financial sustainability of youth and amateur sports (Mourao & Gomes, 2017) and of cliques and the key factors that can facilitate their formation (Meiklejohn et al., 2016).

In this cluster, scholars have observed the financial performance of sports activities. The literature has also examined the financial performance of private fitness centres in terms of cost reduction deriving from the adoption of a cost leadership strategy (Vieira & Ferreira, 2020). The economic performance of sports clubs has been evaluated in relation to the introduction of the Economic Control Regulation (Fernandez-Villarino & Dominquez-Gomez, 2021). The literature has also discussed the possibility of managing sports heritage attractions as profit-making operations (Frost, 2013). Focusing on the practitioner perspective, an article has observed the ability to make sports practice a real professional activity capable of making practitioners economically independent (Parris et al., 2014).

#### *Events*

In this cluster, academics observed events as an opportunity to increase the financial capital, economic activity (Spaaij, 2009; Byrne, 2014) and reputational capital (Schulenkorf et al., 2019) of the local economy. In this context, scholars have also discussed annual sports events (Mc-

Cartney, 2005) and sports tourism (Kuscer & Dwyer, 2019) as new tourist market segments for local communities.

### **Environmental – Social – Economic (ESE)**

#### *Corporate Social Responsibility*

Academics have analysed the CSR of sports-related activities and organisations (S-CSR), mainly from a qualitative perspective (Wazel et al., 2018). Sporting organisations mainly focus on the legal, social, philanthropic and environmental dimensions of S-CSR (Francois et al., 2021; Adapa, 2018).

Scholars and practitioners have studied the stakeholder perspective of S-CSR as a company strategy to identify their expectations across different countries and cultures (Mamo et al., 2021). Indeed, sponsors are a CSR strategy able to create a connection between the brand and environmental and social sports values. Furthermore, the media power of sports events represents an opportunity for companies to attract fans as new customers and can facilitate their relations with local stakeholders (Djaballah et al., 2016). The literature has also observed the power of CSR funds to guide or orientate SDP programmes (Holmes et al., 2016).

Finally, academics have connected organisational learning to the strategies by which it is possible to institutionalise and implement CSR within sports organisations as a whole framework in which the environmental, social and economic aspects of sustainability are discussed and respected (Zeimers et al., 2019).

#### *SDGs*

Within the ESE cluster, three papers cite SDGs. Scholars have analysed Formula E sponsorships to compare the environmental impact of company activities and the narrative strategy/approach of companies in relation to sustainability. A better narrative strategy should include SDG benchmarks, not only to account for companies' commitment, but also for companies to be protected against green-washing issues (Naess, 2020). By framing the issue within the educational system, Baena-Morales and Gonzalez-Villora (2022) give a different perspective to increase the contribution of sport to sustainability. According to their study, holistic Health Physical Education could contribute to the faster achievement of SDGs. From the perspective of the educational system, sports management academic programmes are observed to evaluate how they fare in providing expertise in terms of sustainability management (Licen & Jedlicka, 2022).

#### *Other topics*

Within the ESE cluster, a few contributions focus on:

- events as opportunities to generate impacts on hosting communities (Fredline, 2005);

- the opportunity to assess the economic, environmental and social aspect of sports events to ask for public funds (Fairley et al., 2011);
- the media power of the Olympic Games to communicate and transfer sustainability values (Horton & Saunder, 2012);
- small events as opportunities for sustainable tourism attractions for the benefit of local communities (Gibson et al., 2012);
- sports tourism as an opportunity to discuss the economic, sociocultural, environmental, policy and technological opportunities for small and medium businesses operating in this sector (Carneiro et al., 2016);
- sports initiatives as opportunities to trigger transformative processes of urban spaces and the possible involvement of citizens who can generate human capital (Wasche et al., 2021);
- the construction of large-scale infrastructure for sports events as a possible threat to urban sustainable development (Dickson & Zhang, 2020);
- the use of an assessment tool to evaluate the impact of sports-event infrastructures to guide specific technical choices (Yuce et al., 2020).

### Bi-dimensional perspective

Few papers – only four, to be precise – deal with a bi-dimensional concept of sustainability. Two papers discuss the relationship between the environmental and economic dimensions, and two papers discuss the relationship between the economic and social dimensions of sustainability.

Articles on both the environmental and economic dimensions of sustainability focus on sport in general. The literature discusses the evaluation method of the economic and environmental impact of sports events. This discussion takes place to highlight the need to increase and improve the quality of environmental impact assessment compared to the economic impact assessment. Sports organisations and businesses have occasionally improved their CSR practices, but an analysis of the negative environmental externalities is still lacking (McCullough et al., 2019). In this context, the literature critically analyses the impact of mega-events on rural hosting communities in terms of ecological and economic outcomes, and highlights the unsustainability of development and recovery plans to be applied in the post-event phase (Lee, 2021).

Papers on the economic and social aspect of sustainability focus on skiing and sport in general. Scholars have examined environmentally responsible actions by studying communication strategies to verify how ski resorts have cited/presented the connection between the environment and the economy (Spector et al., 2012). The

literature has also examined communication and CSR strategies to compare the environmental impact and the economic influences of sports events, such as the Olympic Games, on the tourism industry and the economy in general (Kim, 2013).

### Results: future research opportunities

This study presents a non-systematic literature review on sport and sustainability. The number of papers detected shows that the environmental effect on and by sports represents a central topic for sports literature (Mallen & Chard, 2011). However, a lot of integration still needs to take place when it comes to the impact of sports activities – and, more generally, to the impact of the sports industry – on all three dimensions of sustainability.

In line with the European Council's conclusion regarding the contribution of sport to the 2030 Agenda, this paper examines the strategic role of sports in achieving SDGs, as the literature has not stressed this topic (only four papers cited it). None of the analysed papers focused on the potential contribution of sport towards a single SDG. This paper therefore suggests avenues for future research along the following lines in order to integrate the sports research gaps concerning sustainability in the context of SDGs and targets.

### Environmental sustainability research opportunities

The largest cluster of analysed papers discusses environmental sustainability. Agenda 2030 deals with the environmental aspect of sustainability through SDGs 6, 13, 14 and 15.

The literature has partially analysed the impact of sport on the environment, both in terms of events and daily sports activities. The analysed papers have not explicitly mentioned any of the environmental SDGs.

The literature could analyse access to clean drinking water and sanitation (SDG 6) by linking the infrastructure development of events and the positive (or negative) effect on the hosting community. The analysis should be developed both for urban and rural areas and for mega/small events. This aspect could clarify the contribution of sport to targets 6.1 and 6.2, and it could include an analysis on the restoration of water-related ecosystems (target 6.6) as a compensation measure of sport events.

The literature should integrate the analysis of the impact of sport on water quality (i.e., using chemicals or pesticides for managing sports facilities) to quantify the problem and propose solutions to overcome or reduce the observed impact. It would be possible to address target 6.3 and to quantify the communities exposed to sports water pollution. Considering the interrelated nature of the SDGs, this analysis could contribute to the goal concerned with sustainable cities and resilient communities, too (SDG 11).



**Table 5.** New research hypotheses on the impact of sports on the environment

	SDG	Target	Hypothesis	Other impacted targets
Environmental	6	6.1	H.1 – Small/mega sport events contribute to SDG 6 expanding access to clean drinking water in hosting communities.	11.3
		6.2		
		6.3	H.2 – The presence of sports infrastructure means that communities are more exposed to chemicals and pesticides.	3.9 11.6 12.4
		6.4	H.1 – The application of water engineering solutions to sports facilities contributes locally to target 6.3	4.7 8.4 12.2
			H.2 – Awareness-raising processes aimed at athletes and sports operators contribute to target 6.4 by reducing the water consumption of sports facilities.	
		6.6	H.3 – Small/mega sports events can contribute to the restoration of water-related ecosystems.	15.1
	13	13.1	H.1 – National sports policies and club plans consider climate change and include it in long-term strategies to ensure the sustainability of sports activities and the sports industry.	12.6
		13.2		16.6
		13.3		12.8
		13.3	H.1 – The sport sector’s communication power increases the level of awareness on the issue of climate change.	12.8
	14	14.1 14.3	H.1 – Water sports have an impact on marine and coastal ecosystems.	-
		14.6	H.2 – Fishing sports contribute to the diffusion and promotion of sustainable fishing practices.	2.4 12.6
	15	15.1	H.1 – The use of environmental indicators can support the quantification of the impact of sports events on the environment.	12.6
		15.2		
		15.3		
15.4		H.2 – The inclusion of environmental indicators in the accounting systems of sports companies, taking the environment into consideration, contributes to the reduction of sports activities.		
15.5				

Studying sport as an industry sector, research should consider the efficiency of the related activities, structures and infrastructures (target 6.4). Scholars should study the management of sports facilities to improve their resource efficiency. At a local level, sports facilities are often public structures managed by private owners who, given the temporary nature of their role, do not invest in the property. Research should therefore find solutions to link the temporary nature of these structures with a sustainable management model.

Sport is vulnerable to climate change pressure (Orr & Inoue, 2019). However, the authors of this paper did not find any references to the integration of climate change measures into sports strategies and planning. Research studies could introduce this topic to investigate if national sports policies or club plans consider climate change and include long-term strategies to ensure the sustainability of sports activities and the sports industry. The collection and diffusion of the adopted best practice could represent a tool

to improve the whole sector and increase its sensitivity to the theme by contributing to targets 13.1, 13.2 and 13.3

The willingness to improve awareness of climate change (target 13.3) could be analysed in depth by considering the strong media power of stakeholders (Djaballah et al., 2016) and by developing the communication and CSR strategies of sports industries and clubs (Kim 2013; Spector et al., 2012). The willingness to contribute to target 13.3 could also be achieved through the connection of sustainability aspects within sports educational programmes. The existing literature (Baena-Morales & Gonzalez-Villora; 2022; Licen & Jedlicka, 2022) should be expanded to include elementary schools, middle schools and high schools. Research on these aspects would also have an impact on SDG 4 in terms of knowledge acquisition to promote sustainable development (target 4.7).

The analysed literature did not discuss adverse impacts of sports activities on marine and coastal ecosystems, in relation to either water sports or water motor

sports. A quantitative and qualitative study of marine pollution associated with sports activities could help the sector reduce its impact, thereby contributing to targets 14.1 and 14.3. The potential impact of fishing sports promoting sustainable fishing practices could contribute to the conservation of seas and marine resources, as highlighted by target 14.6.

Sports research should integrate the impact on life on land (SDG 15) by quantifying and qualifying how sport in general, and specific disciplines, have an impact on the environment. The implementation of sustainable practices and conservation measures in sports events should be supported by indicators able to compare different scenarios. The study and the proposal of environmental indicators could represent a tool to verify the contribution and commitment to targets 15.1, 15.2, 15.3, 15.4 and 15.5.

Overall, sport's potential contribution to environment-related SDGs is significant. Sports-related studies should expand the analysis and monitoring processes with regard to the overall impact of sports activities, products and events.

The use of life cycle assessment (LCA) might be an unexplored solution for a full analysis of the impact. According to the research evidence, scholars have partially studied the carbon impact of sport (Baena-Morales & Gonzalez-Villora, 2022; Langseth & Vyff, 2021). Future research should integrate the literature, analysing the whole life cycle impact of sports activities. From this perspective, LCA could represent the tool to fill this gap and quantify the full impact on the environment. In this way, LCA can be used to monitor the full impact on the environment and define compensation and reduction strategies (Rebitzer et al., 2004).

In light of the research opportunities mentioned above, the authors of this paper have developed a set of 11 research hypotheses to guide researchers on the topic (Tab. 5).

### **Social sustainability research opportunities**

Agenda 2030 deals with the social aspect of sustainability through SDGs 1, 2, 3, 4, 5, 7, 11 and 16. Social SDGs have been addressed mainly through SDP programmes. However, according to Blom et al. (2015), the contributions of SDP programmes have not been systematically implemented and evaluated.

Even if the analysed literature does not explicitly state it, such programmes contribute to the eradication of poverty (SDG 1) and food shortage (SDG 2), to the promotion of good health (SDG 3) and education (SDG 4), and to the reduction of the gender gap (SDG 5). These programmes have an impact on peace and justice priorities (SDG 16) and have been mainly analysed within developing countries (Henhawk & Norman, 2019; Knott

& Tinaz, 2021; Schulenkorf, 2010). A line of research should also consider the impact on developed countries and vulnerable communities within developed countries.

The overall social impact of sports products and services requires the use of a consolidated method, such as that included in social-LCA. Whilst the literature has examined the role of human rights in the whole life cycle of sports events (McGillvray et al. 2022), the use of social-LCA could increase the social impact of sport through the identification of hotspots to be improved and/or by enabling policy-makers and managers to compare choices or products related to sports activities or businesses (Benoit et al., 2020). The use of social-LCA could support the definition of a baseline related to the social legacies that the literature has discussed in relation to sports events (VanWynsberghe & Pentifallo, 2014).

Even though Baulter analysed the potential contribution of SDP towards MDGs in 2008, no papers have analysed the same impact on SDGs. Future studies should, therefore, quantify and qualify the impacts cited above to monitor the factual contribution of associations, specific programmes, or sports industries and clubs to the 2030 Agenda. This action could represent a narrative strategy to communicate CSR actions. In this context, social reporting or sustainability reporting could be integrated with tailored indicators to quantify the impact of SDP programmes.

Considering the social impact that sport generally produces, an important aspect is the role of volunteer activities (Hassan & Harding, 2018; Koutrou & Kohe, 2021; Rogerson et al., 2021). Even if the 2030 Agenda does not cite the role of volunteers, scholars should study the quantification of the activities of sports volunteers in terms of sustainability impacts to assign a value to their role.

Within social SDGs, the issue of affordable and clean energy (SDG 7), including the level of modernity and the utilisation of renewable energy systems of the energy service (Target 7.1 and 7.2), should be analysed in relation to the environmental performances of sports facilities. The results of such studies could help communities to reduce the overall impact on their human settlements (SDG 11), and a proper implementation of the results could help reduce the waste from sports activities and events (target 11.6). Sport and sports event impacts on urban development (Smith, 2009; Taks, 2013; Wasche et al., 2021) could have an effect on sustainable urbanisation and gentrification phenomena. Therefore, these aspects need to be studied in future sports-related studies.

In light of the research opportunities mentioned above, the authors have developed a set of seven research hypotheses to guide researchers towards unexplored topics (Tab. 6).

**Table 6.** New research hypotheses on the social impact of sport

SDGs	Target	Hypothesis	Other impacted Targets
Social	1 2 3 4 5 16	All H.1 – SDP programmes generate significant social impact, also in the case of developed countries.	10.2 11.b
		H.2 – SDP programmes generate significant social impact, also in the case of vulnerable communities within developed countries.	All
		H.3 – SDP programmes can be accounted for through the use of Agenda 2030 as an institutional framework.	
	12	12.6 H.1 – Sports products and services produce social impacts.	8.3 8.5 8.7 8.8 10.2
	12	12.6 H.1 – The utilisation of social-LCA increases the social impact of sport by enabling policymakers and managers to compare choices or products related to sports activities or businesses.	8.3 8.5 8.7 8.8
	All	All H.1 – The activities of sports volunteers can be qualified and quantified according to their specific contribution to each SDG.	All
	7	7.1 7.2 H.1 – Innovative technology solutions reduce the energy consumption of sports activities.	9.4 11.6

### Economic sustainability research opportunities

The 2030 Agenda addresses the economic aspect of sustainability through SDGs 8, 9, 10 and 12.

Academics should examine the job creation capacity of the sports industry to quantify its contribution to the promotion and diffusion of decent work and economic growth (SDG 8). It would be interesting to analyse, from a long-term perspective, how formative courses offered to volunteers impact their rate of employment within the sports sector (target 8.5). Scholars could also study youth employment in relation to their sports activities (target 8.6). Academics should also evaluate the impact of sport on human rights, decent work, and safe and secure working environments by applying specific assessment tools (e.g., the social-LCA) (targets 8.3, 8.7 and 8.8).

Within SDG 8, the literature has analysed the exploitation of sport tourism as an economic opportunity without quantifying or qualifying this impact in relation to target 8.9. Focusing on the economic perspective, future researchers should investigate potential income growth connected to sports activities (target 10.1), analysing both individuals and communities as a whole.

The sports equipment industry is permanently subject to innovation (Gerke, 2016). However, none of the analysed papers has observed the sustainability impact or the potential impact reduction of this activity within

sports studies (SDG 9). The enhancement of scientific research on the sports equipment industry (Target 9.5) could contribute to the environmental impact of sport in general. Future researchers would be able to disseminate, through the literature, the collection of good practices and experiences with regard to sports innovations, as promoted by the European Council (2021).

Moreover, scholars could address the promotion of sustainable consumption and production patterns (SDG 12) within the sports industry through the analysis of non-financial reports in order to understand how commitment towards this issue is ensured (target 12.6). Non-financial reports, if analysed, could give information about practices adopted with regard to the prevention, reduction, recycling and reuse of produced waste (target 12.5). The objective would be to select the best practices, which scholars can then disseminate through the literature, to improve the sports sector overall. Once again, the reference to the life cycle of use products (target 12.4) should push future researchers towards the use of LCA analysis within the sports sector. Moreover, future researchers should investigate if it is possible to plan CSR strategies, actions and impacts, and later account for them, through the use of Agenda 2030 as an institutional framework. Procurement practices and supply-chain dynamics, which the observed literature did not investigate, could reinforce the contribution of sport to targets 12.3 and 12.7.

In accordance with the research opportunities mentioned above, the authors have developed a set of eight research hypotheses to guide future researchers on the topic (Tab. 7).

**Table 7.** New research hypothesis on the impact of partnerships in sport

	SDGs	Target	Hypothesis	Other impacted Targets
Economic	8	8.3	H.1 – The sports industry contributes to the promotion and diffusion of decent work.	1.1
		8.5		1.2
		8.7		10.2
		8.8		
	8	8.1	H.1 – Income growth is linked to sports activities.	1.1
		8.2		1.2
		8.3	H.2 – Sports tourism increases local income growth.	10.2
		8.9		11.3 11.4
	9	9.5	H.1 – Research on the sports equipment industry can reduce the environmental impacts of sports activities.	Environmental SDGs
	12	12.5 12.6	H.1 – Non-financial reports of sports businesses include sustainable consumption and production patterns.	All
H.2 – CSR strategies, actions and impacts can be planned through the use of Agenda 2030 as an institutional framework.				
H.3 – CSR strategies, actions and impacts can be accounted for through the use of Agenda 2030 as an institutional framework.				
12	12.3 12.7	H.1 – The adoption of green procurement practices reinforce the contribution of sports to sustainable patterns of consumption and production.	Environmental SDGs	

**Partnership**

As a standalone and transversal goal, SDG 17 should be observed in relation to the impact of sports businesses on sustainability due to partnerships. Scholars have investigated partnerships, particularly in the context of SDP programmes (Collison et al., 2017; Svensson and Seifreid, 2017; Peachey et al., 2017); however, in the future, the lit-

erature can address larger, unexpressed potentials. Future research might also observe cooperation for sustainability purposes among sports-related actors. The objective would be to identify best and wrong practices or drivers and obstacles to make a contribution to one or more SDGs. The authors have developed a single hypothesis for SDG 17 (Tab. 8):

**Table 8 -** New research hypothesis on the impact of partnerships in sport

	SDGs	Target	Hypothesis	Other impacted SDGs
Partnership	17	All	H.1 – The analysis of cooperation for sustainability purposes among sports-related actors led to the identification of best and wrong practices or drivers and obstacles to make a contribution to one or more SDGs.	All

**Limitations and conclusions**

This paper has given a comprehensive overview of sports-related studies and sustainability. The research has shown the almost total absence of SDGs within the

sports literature. The authors have identified 4 research questions and 27 qualitative and quantitative research opportunities, connected with the 17 SDGs and related targets. The results have presented the potential con-

tribution of sport, in general, to each SDG. However, an integrated analysis of the positive/negative impact of sports activities on the whole set of goals represents another research opportunity and another opportunity for the improvement of the sports sector. Considering the integrated dimension, the analysis of collateral impacts or influences of sports activities on different SDGs could be interesting to guide sports managers and policy-makers towards the best solutions.

As already explored by management studies (Pizzi et al., 2021; Rosati & Faria, 2019), Agenda 2030 represents a valid accounting tool to plan sustainability-related strategies and evaluate the connected performance. The sports industry could use the 2030 Agenda as a framework to measure and compare its performances and improve them. The results should guide CSR strategies and could be included in the communication or reporting tools pertaining to CSR strategies. For instance, sports managers could start this measurement process by following the guidelines for the Global Reporting Initiative (GRI). Sports businesses that have already adopted the GRI framework to develop their sustainability reports should integrate the document using the guide in order to show the connection between GRI standards and SDGs. From this perspective, it is possible to read the 2030 Agenda as a transversal framework able to re-frame all of the sports priorities linked with their environmental, social and economic impacts.

According to the analysis, scholars have not explored the connection between social and environment; future researchers should therefore connect these two dimensions to see how social actions of sport activities can impact the environment and vice versa.

As detected, sports-related studies that focus on sustainability are related to sport in general or to football. Sports researchers should, therefore, make an effort to analyse, quantify and qualify the impact of each discipline to promote solutions for the reduction of the observed impact. Moreover, the authors suggest that academic publishing companies ought to promote the systematic integration of a few lines in the conclusion section of a scientific contribution related to the impact of the presented research on sports and sustainability. The systemic inclusion of managerial implications relating to the potential impact/contribution of the 2030 Agenda would enrich the literature and highlight the effective strategic contribution of sport to achieving a more sustainable global scenario.

The limitations of this study are related to the non-systematic nature of the developed research. However, the identified non-stringent algorithm has led to the inclusion of a significant number of scientific contributions that are likely to represent a proxy for the status of sport-and-sustainability-related studies. Second, the authors suggested the interpretation of potential research opportunities on

the basis of the evidence collected and the sensitivity/experience of the researchers involved. A large number of the analysed papers connected with published institutional documents aimed to promote sport as a driver towards SDGs. Furthermore, the authors have integrated the sustainability-related experience of researchers to develop this paper with the most comprehensive vision on the topic. However, additional research experiences and perspectives could integrate the research presented in this paper to develop additional research opportunities for the topic of sport and sustainability.

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