Navigating Green Waters: A Qualitative Exploration of Environmental Management in European Canoe and Kayak Federations

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Abstract

This paper examines the operational and managerial praxis reported by executives to adopt environmental sustainability practices in four national canoe and kayak national federations. The aim is contributing to the increase of the knowledge by exploring how canoe-kayak managers tackle environmental issues. The authors conducted a multiple case study analysis of 28 in-depth semi-structured interviews. Operational and governance categories identify best practices. Future initiatives proposed by canoe kayak managers are grouped per thematical sections.

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The study findings indicate that the fragmentation of practices stems from a lack of maturity in the governance structures. Implemented best practices and future proposed initiatives focus on planning, implementing, and partnering. While governance-level practices pertain to the systemic allocation of environmental roles and responsibilities within the management structure underlying canoe-kayak national federations and events, operational practices address environmental aspects directly linked to canoe-kayak events.

Keywords: sport; management; environmental sustainability; canoe-kayak; sport federations

1. Introduction

Environmental sustainability (ES) has become a critical consideration for sport organizations as they strive to reduce their environmental impact and promote eco-friendly practices (Thormann & Wicker, 2021; Vrondou et al., 2019). In the context of canoe and kayak (CK) national sport federations (NFs) in Europe, understanding the approaches to ES management is essential to identify effective strategies and best practices (BPs) in ES management.

The CK sports often take place in pristine natural settings, therefore it is particularly well-suited to explore sustainability initiatives due to its strong connection to nature and the environment. As such, the CK community has a vested interest in protecting the environment. The European Union (EU) Erasmus+ sport funded DECK (Developing Environmental Circular Knowledge in Canoe and Kayak) project has highlighted the need for sustainable practices within the CK sector.

This study represents a significant contribution to the field of sports management research as it is the first qualitative study to explore the environmental management perspective on governance within the CK sector.

This study employs a qualitative research approach to delve into governance and operational management. As a pioneering study in this field, a qualitative approach is particularly well-suited to explore the complex and context-specific sustainability initiatives within NFs. Moreover, a qualitative approach allows for the exploration of emerging themes and unforeseen insight.

In line with other industries' approach (Daddi et al., 2015; Moon et al., 2023), international federations (IFs), initially under the pressure of international governing bodies, such as the United Nations, the International Olympic Committee (IOC), and the EU, have assumed voluntary commitment to environmental sustainability. However, despite growing adoption of ambitious environmental policies, targets and programs, the actual level of the environmental performance NFs events reached was often well below expectations (Mallen et al., 2017). Moreover, only few organizations share their experiences in sustainability management, which hampers the identification and replication of BPs even on basic aspects like waste management. The challenge in quantifying the environmental impacts of CK events and organizations is also due to the lack of studies that investigate the types of ES initiatives encompassing both governance and operational aspects. This leads to limited data availability.

ES governance in events have been under-explored in the sport management literature (Booth et al., 2015; Daddi et al., 2022) until in the recent years some studies started. For example, leading to a convergence in governance models and increased focus on accountability and transparency in Canadian CK NF (Parent et al., 2018). These studies emphasize the importance of integrating multiple areas of knowledge to optimize sports

training and athletic performance in CK disciplines, while also addressing the evolving landscape of sport organizations' governance (Hums et al., 2023; Chatzigianni et al., 2018). Few studies investigated the management of CK NFs. Marsac et al. (2016) explored tourism management within the French CK NF, and Guevara Pérez et al. (2022) explored the success of Spanish Regional Federations. None of previously published studies consider the potential impacts that CK NFs have on the natural environment, the state-of-the-art and potential initiatives to mitigate it.

Additionally, there is a need to examine the impact of environmental change on sport and the ES of current sport management practices (Dingle, 2020). This paper aims at filling these gaps by investigating how sport managers tackle environmental issues for CK NFs and CK events at the governance and operational level**.** **I**dentifying future initiatives proposed by sport managers can increase environmental conservation awareness, though its impact on environmentally friendly actions is limited (McKenzie et al., 2008). Multi-day CK experiences have been shown to develop pro-environmental behavior and environmental advocacy through experiential learning (Hines & Zwart, 2024). Paddle trails can contribute to sustainable rural tourism development and economic regeneration, with women and recreational paddlers more likely to support funding mechanisms for trail development (Kline et al., 2012). Nonetheless, despite the potential of CK activities for promoting environmental awareness and sustainable tourism, studies highlight the need for a more global perspective and collaborative approaches between researchers and practitioners (Cury et al., 2022). Research suggests investigating factors influencing environmental behavior in NFs, as current commitment to sustainability is low (Hugaerts et al., 2022). Hugaerts et al. (2022) raised a call for future studies focusing on developing comprehensive strategic approaches for environmental initiatives. Moreover, Rubiana Cury et al. (2022) claimed

for expanding existing managerial and environmental education contributions, as well as exploring new theoretical terrains to advance knowledge on environmental policy and innovative approaches. Another hustle to the implementation of environmentally conscious sport management is due to the lack of a holistic approach (Daddi et al., 2022). Scholars suggest the integration of actions covering both governance and operational aspects, rather than focusing on one operational or governance challenge.

By examining the governance structures, decision-making processes, and NFs and frameworks of CK NFs, this research provides valuable insights into how NFs can effectively address environmental challenges. The following research questions (RQ) are formulated:

RQ1. How do CK NFs managers relate with environmental issues at the governance level? What are the governance BPs?

RQ2. How do CK NFs managers tackle environmental issues at the operational level? What are the operational BPs?

RQ3. According to the CK NFs managers, what are the future challenges and initiatives for operational and governance environmental management?

By focusing on CK NFs, this study aims to contribute to the broader goal of promoting sustainability in the sport industry and specifically within the CK sector.

2. Materials and Methods

A multiple case study approach was selected as the research methodology. This method is appropriate for investigating "how" questions (Yin, 2009) and for studying contemporary phenomena within real-life contexts (Yin, 1981), both central to this study. Confronting different approaches from CK managers across Europe, allows higher

generalizability of our results. Qualitative methods are considered more suitable to provide more substantive and reliable evidence to inform practice.

Following the collection of evidence, the classification and discussion of findings have been done through an approach “per topic”, as the unit of analysis were the environmental governance and operational management BPs (Table 1). While a “per case study” analysis supported the interpretation phase, the description of the outcomes does not follow a “per case study” structure (Nije et al., 2014).

A total of 18 in-depth qualitative interviews were conducted involving 14 managers (5 women, 9 men) from four (Croatia, Italy, Greece, and Slovenia) European CK NFs (from which one includes also surfing sports). The interviews, conducted between January 2024 and April 2024, were carried out in English by two researchers online and one interviewee at a time.

Interview participants held various roles within their respective NFs: managers, communication officers, event coordinators, consultants, and coaches. The diversity of roles allowed for a comprehensive view of the sustainable practices in NFs (Table 1). The interviewees were assigned a number from 1 to 14 to provide continuity and at the same time maintain anonymity. Interviews are assigned a letter in alphabetical order (A to R). One researcher performed the interview, the second researcher takes notes and eventually supports the first researcher. Interviewees 1, 4, 5 and 9 were interviewed for two different thematic sections (Table 2). Two interviewees (respondents 2 and 6) could not speak English, therefore a mother tongue professional simultaneously helped interpreting their answers to the interviewers. In some cases, Italian interviewees (7, 8 and 9) spoke Italian, due to the immediateness to communicate with Italian researchers. In this case quotes and excerpts were translated by a professional interpreter.

Table 1 – Classification rational into governance vs operational BPs (adapted from Daddi et al., 2020).

<table>
<tr><td colspan="4">Governance BPs include all the actions and strategies that must be adopted and developed at the organizational and decisional level, i.e., practices relating the overall organization of the event such as the appointment of an environmental management system, the development of a sustainability strategy, etc.</td></tr>
<tr><td colspan="4">Operational BPs are more directly connected with the event phase and can be divided into 5 categories:</td></tr>
<tr><td>Context of the event all the aspects related to the location of the event (i.e., presence of green accommodation, water treatment facilities, etc.)</td><td>Event management all the actions necessary to carry out the event (e.g., waste management, volunteers training, on-site communication means, etc.)</td><td>Organization management all the aspects related to the management of offices and ordinary activities (e.g., use of paper, sustainable practices, trainings, and educations, etc.)</td><td>Mobility and logistics all the solutions that can be adopted to encourage fans to reach the stadium with more sustainable means of transport and to limit the logistics impact (e.g., combo tickets, usage of electric or hybrid cars, etc.)</td></tr>
</table>

Table 2 – Details of the interviewees, the NF's Country, their role within the organization and the thematic section of the interview

Interview ID	Interviewee ID	Country	Function of the interviewee within the CK NF	Thematic section of the interview
A	1	Croatia	Head coach of wild water canoeing	Roles, responsibilities, and training
B	1		Head coach of wild water canoeing	Organization of event
C	2		Local sports club executive member	Operational management

D	3		Administrative manager	Mission, strategy, and policy
E	4	Greece	Director	Roles, responsibilities, and training
F	4		Director	Mission, strategy, and policy
G	5		Administrative officer	Operational management
H	5		Administrative officer	Procurement and selection of facilities
I	6		Supervisor	Organization of event
J	7	Italy	Local sports club executive member	Organization of event
K	8		General secretary staff	Operational management
L	9		Communication manager	External communication
M	9		Communication manager	Sales and sponsorships
N	10	Slovenia	External contractor	Organization of event
O	11		Operative manager	Operational management
P	12		Director of Sales and Sponsorships	Procurement and selection of facilities
Q	13		Manager	Mission, strategy, and policy
R	14		External consultant	External communication

The interview focused on exploring the participants' perspectives, initiatives, and experiences on sustainability in their organizations. The interview protocol was pilot tested with 10 sport managers, representative of the study population to refine question wording, flow, and identify potential biases, thereby maximizing data quality and minimizing participant burden. The semi-structured interview approach provided the necessary flexibility to explore the relevant themes and conduct the subsequent qualitative data analysis. The open-ended nature of the questions facilitated discussions that allowed for the emergence of topics related to sustainable practices and their evolving role within the organizational identity.

The interview protocol included eight sections. The first one is the same for every participant, functioning as breaker and introduction to explain the procedure, the objectives of the interview, and asking the professional background of the interviewee. Seven thematic sections deal with: external communication; mission, strategy, and policy; roles, responsibilities, and training; procurement and selection of facilities; operational management; organization of the event; and sales and sponsorship. Each is composed of eight, four, six, five, six, thirteen and four semi-structured questions respectively. Further clarification questions might have been asked. After every interview, data were considered, and extra questions were planned to be asked. The interviews were recorded in English or Italian and transcribed to English and analyzed using thematic analysis to identify key themes.

Some excerpts are provided to support the analysis, for the sake of brevity, the remaining quotations supporting the results are not included in the manuscript.

Each author individually analyzed each document applying a common protocol to identify pieces of information on BPs. The need for coding is because "Text data are dense data, and it takes a long time to go through them and make sense of them" (Creswell, 2015). Coding is one of the significant steps taken during analysis to organize and make sense of textual data. Audio and video recorded online interviews were transcribed verbatim. The coding process involved open and axial coding combined with constant comparison to identify overarching themes.

Coherently with the RQs, the multiple case study analysis of the interviews aimed at assigning codes to the identified BPs and at classifying them based on their relevance to the governance or operational categories. The applied codification was then jointly discussed by the authors to achieve an agreement on the classification of each BP as governance or operational. The initial coding attempted to adhere closely to the terms

used by the informants, representing themes and grouped into 6 codes. The analysis process consisted of six phases. In the first phase, the first author regained familiarity with the data by thoroughly reading a re-reading all transcripts. In the second phase, initial codes were generated by the first and second authors who independently coded the first interview using an open coding approach followed by axial coding. In the third phase, the same two researchers independently collated codes into themes and subthemes, thus creating two independent coding schemes. These coding schemes were extensively discussed and adapted until a preliminary coding scheme was agreed upon. The construction of this coding scheme was mainly data driven. To conclude the third phase, all remaining interviews were coded by the first author using the initial coding scheme. In the fourth phase the initial coding scheme was reviewed and refined. Constant comparison was used to check the data for emerging themes and to verify a good fit with the coding scheme. The coding scheme was adapted throughout the coding process until a final coding scheme was constructed in the fifth phase. To ensure clarity of the themes, the final coding scheme was discussed with the third author. In the sixth and final phase, descriptions of themes and subthemes were provided along with quotes to illustrate their conceptualizations. Two categories (governance management and operational management, included four sub-categories) functioned as aggregate dimension to help explain the observed phenomena. An iterative approach was employed, cycling back and forth between the key themes. This entailed revisiting the codes and concepts multiple times as data collection progressed, incorporating new insights gained from the investigator triangulation or re-examining the collected data.

The classification between governance and operational BPs has been adapted by Daddi et al. (2020).

3. Results

A total of 24 hours of recorded interviews were transcribed, translated (if that was the case) and analyzed. The results derived from the data analysis procedures represent the participants' collated responses. The results are distinguished two categories: environmental governance and environmental operational management, the latter distinguished in four sub-categories. Environmental governance category encompasses 11 BPs, while environmental operational management, organized in context of the event, event management, operational management and mobility and logistics, respectively includes four, ten, five, and three BPs, for a total of twenty-two. Table 3 reports thirty-three environmental BPs identified.

The same categories and sub-categories that emerged during the multiple case study analysis performed on secondary data guided the analysis of the interviews, with operational results organized in subcategories: context, event management, organization management, mobility, and logistics.

3.1 Environmental governance BPs and their emergence in interviews

Environmental governance. The multiple case study analysis highlighted that governance BPs were very often implemented to prepare major sports events, rarely to deal with ordinary NFs' operations. The case of the 2022 European CK Championships in Ljubljana (Slovenia) has been supported by the collaboration with an external agency, and not directly from the NF. In preparation for and during major sport events, a person is appointed as responsible for managing environmental issues, with a wide range of functions from keeping the relationship with local authorities, to communicating to athletes, coaches and fans rules and responsibilities on the playground as well as taking care of the site from an infrastructural point of view. The person appointed for

environmental protection and issues is often the competition' organizer. In the case of club-organized events, trainings, and activities, Italian and Slovenian NFs support environmental-wise actions by providing communication campaigns directed to club users. They also include some rules and regulations to be followed by affiliated clubs, most of them are about safety and security, the use of materials and the ethical conduct of club coaches and managers. Recently, the Italian and Slovenian NFs added some rules regarding environmental protection and the promotion of sustainability practices. Nonetheless, these rules and regulations are not supervised or assessed by the NF at local level, nor a professional is appointed to regulate and follow the implementation of abovementioned practices.

"Sustainability is part of our strategy […], it includes the environmental harm. […] Is quite important because we want to build our marketing strategy" (Q13 – Slovenia).

Environmental policies. An upstreaming dynamic may be upskilled from ordinary contexts to major CK sport events. In fact, when regional or national CK events are organized by one club, the event follows the rules set by the local organizing club. The local organizing club receives environmental governance practices by integrating local natural protected areas or local authorities' laws (such as the reduction of the number of parking slots by the natural competition sites, or the need to collect and dispose waste following recycling streams). The Italian NF economically rewards clubs clustering and sharing their boat's transportations. The Croatian NF promotes the possibility to receive a new boat to the club, by giving from the club to the NF a damaged boat. The boat is then refurbished or renewed and often repurposed from racing boat to the use of development-of-sport purpose. The boat is then given back to a club in need for boats to be used for sport development groups. In the case of the Croatian National

Championships, a free public transportation system from the event village to the event site has been provided for participants. This agreement has been taken by the Championships organizers with the local authority. Agreements of partnerships with environmental NGOs has also been signed by the Italian and Slovenian NFs. Interviewees highlight that the adoption of environmental-oriented governance is not a priority. Some interviewees suggest adoption of environmental guidelines: "Could be helpful to receive from the NF some procedure or some management system that helps us in managing environmental aspects and have some tool to monitor this aspect, so that we are aware of our performance." (2C - Croatia). Moreover, interview 2C reports the preference for a different kind of support from the NF: "[…] seminars or presentations instead of a guideline, to explain us how to manage these aspects, could be very helpful" (2C - Croatia).

Mission and strategy. The Italian NF included one article in their Strategic ES Plan. The Croatian NF Statue includes environmental protection as a value. In the other cases, there is no explicit declaration elaborated by the governing body (board of directors or general assembly) to include ES strategies or policies in their statues or body of rules. Interviewers often report that side discussions within the NF governing body often predicted the willing to define an environmental protection commitment or sustainability policy, but a formal and explicit document hasn't been released so far.

"We comply, including environment, our Statue to the Ministry of Sport and to the National Olympic Committee indications" (Q13 – Slovenia).

Waste management. During events, waste management emerges as a significant challenge for managers, because of two major causes. First, waste management is not consistent among events (colors, bins, modalities, recycling modalities, disposal, transportation to the collecting points, etc.) within the same country and this may cause confusion among participants and workers:

"Each club organizing the events is implementing the practice from their own perspective, without guidance or coordination" (C2 - Croatia). Moreover: "We promote recycling, but the practice is not codified in any document" (G5 – Greece).

Second, participants' sensitivity to environmental issues is pivotal. The events are mostly run outdoors, and often bins are not sufficient or not designed to prevent waste leakage or incorrect disposal in the natural environment:

"The challenge we face is the high demand for single use water bottles by athletes, provided by the NF during summer events. The bottles risk to go wasted in the environment." (G5 – Greece).

Waste production reduction has been implemented: some event organizers (G5 – Greece and J7 – Italy) are working on the realization of a potable water refilling points. Moreover, a local club organizing events in Croatia, expands its training practice of collecting plastic flowing in the rivers to competition and event time (C2 - Croatia). Also, the collaboration with local authorities within the event perimeter can solve the leakage problem: "[…] the installation of large separate waste collection containers, provided by the Municipality was effective" (K8 – Italy).

Some event organizers focus on waste prevention measures, like the adoption of reusable cups, tableware, and plates:

"On the event site is not possible to prepare food, so the athletes get it delivered by restaurants in big boxes to the camp and every athlete brings its own tools for eating. In this way we do not produce any garbage, but the big plastic tank in which the service provider brings potable water and that's the only garbage they produce" (B2 - Croatia).

"We ask external contractors to bring food for athletes, and to use pottery dishes. So that they can be given back to the contractor and reused" (H5 - Greece).

The overall picture highlights a high heterogeneity of initiatives depending on site-specific enabling conditions, pooled by the orientation to short-term wins.

Event management. Interviewees competencies do not include energy and water management. They often indicate the necessity to ask to local providers for information regarding the renewable source of electric energy. Moreover, no energy or water management plans are implemented autonomously by the organizations. It often happens that locally implemented rules and regulations, determine energy and water management of CK events and NFs.

The consumption of water is not considered in most cases, even if competitions are organized around bodies of water. Water is used to rinse crafts and sport equipment. "We do not have an initiative to optimize water consumption, but we would be interested in carrying out a feasibility study to assess the possibility to collect and reuse rainwater from the roof of our infrastructures" (K8 – Italy).

“We have not implemented any specific measure for water-efficient management. We may enhance our knowledge about water management, also to reduce costs” (P12 - Slovenia).

The implementation of energy and water efficiency measures is often hurdled by conflicting relationships between the different organizations that respectively own, manage, or use NFs infrastructures and interact during CK events. In other words, the ownership model of the infrastructure influences the capacity to implement resource efficiency actions. These relationships generate an agency problem that affects investment planning for resource efficiency. In fact, most of the times, owners pay bills (energy, water, etc.), but do not have the authority to decide which provider choose. “We rely on external local contractors, ruled by an agreement with the local public authority. We do not know if their energy production is from renewable sources” (E4 - Greece).

In the reported events, energy and water management are poorly considered. Energy savings, as often happens in manufacturing firms, are more attractive because of the related savings in terms of operating costs.
“Our financial plan is our sustainability plan” (F4 – Greece).

When managers cover the energy and water costs, there is a low incentive for improvement. On the other hand, the sports of CK are often practiced and events organized in public and natural spaces. This contributes to a constant relationship with local authorities. From local, regional, or national governments funding opportunities may arise to optimize use of resources and environmental impacts.

A long-term perspective, promoted by public EU post-pandemic investments, is reported: "We recently installed solar panels that only provide hot water. Our biggest energy consumption is gas, and we try to reduce it. Through EU post-pandemic public investments, we plan to implement an energy redevelopment plan aimed at introducing renewable energy" (K8 – Italy).

Partnering and sponsoring. Other to sustainability commitment and power of choice on supply, potential barriers to the implementation of energy and water efficiency measures are related to sponsors attractiveness. In fact, event managers must consider infrastructural requirements that are imposed by contracts (e.g., overnight events or big LED screens).

"The club has installed a fixed lighting system in the river for evening competitions and organize cultural events and rock concerts. […] The focus is to secure support from a variety of sponsors to sustain the club's activities" (P12 - Slovenia).
Event and club managers, to improve water and energy efficiency, should mediate different interests and pressures from various stakeholders. From this perspective, possible support might derive from the collaboration and partnership with public institutions for promoting sustainability and environmental management: "We cooperate with UTRA, the national agency for the protection of flora and fauna". (O11 – Slovenia).
Those institutions can mediate with local authorities.
Also, applying to national/international initiatives or partnering with NGOs can increase the involvement and coordination of multiple stakeholders and then, by overcoming agency problems, collect the resources (also financial) and abilities that are necessary to benefit at a systemic level from energy and water efficiency measures and other sustainability management issues.

Nonetheless, conflict may arise from partnerships: “We collaborated with an organization that works to save to European rivers, but a conflict has arisen because this organization is against hydropower plants, and our major sponsor is a hydroelectric power plant” (O11 – Slovenia). In this case the financial aspect overcomes the NF’s will to promote environmental protection: “What guides the NF’s choices in the organization of competitions are the economic aspects” (O11 – Slovenia).
Some CK events are organized in wildlife natural areas and therefore the installation of tents and shelters is allowed only with certain restrictions defined by the local authorities. “Every event or competition must take into account the Park’s rules on the protection of the local flora and fauna” (K8 – Italy).
In these areas the installation of removable tents, toilets, and bleachers is the common practice. In other cases, the event is organized in artificially built waterbodies or in anthropized spaces, where facilities are permanent. Also, locations and perception of environmental protection is diffident in different areas: “Many areas do not have a sense of environmental responsibility, and this is an aspect where the NF should intervene.” (K8 – Italy).

Thus, the organization of CK events in natural areas presents a complex challenge, requiring careful consideration of environmental regulations and the potential impact on local ecosystems.
Mobility and logistics. Mobility and logistics represent a crucial aspect of CK events, because of the amount of GHG emissions, as well as for biodiversity impacts when transporting people and crafts in natural spaces. Unfortunately, event managers report significant structural constraints that prevent the implementation of sustainable mobility programs. The peculiar case of the Croatian National Championships reports free public

transport means as BP. On the other hand: “It is largely up to the decision of each individual whether to take the car or the public transport. […] The federation can only suggest and create awareness.” (J7 – Italy).

NFs’ role is determinant in communicating to participants and staff the best modalities to reach the competition venue.

“For the 2022 European CK Championships in Ljubljana we tried to communicate our mobility plan as much as possible and promote public transport and cycling, in collaboration with the Municipality of Ljubljana” (M10 – Slovenia).

External communication. External communication is mostly directed to NF’s affiliated clubs, coaches, local managers, athletes, and potential athletes. The final objective is to increase the number of people practicing CK.

“In the past, the CK Federation mainly targeted people above 45 with families […] the Federation is now developing a completely new marketing strategy that mainly focuses on under 18 and families with kids” (R14 – Slovenia).

Also, external communication is to attract new sponsors and the environmental topic and reporting is recognized as added value, when attracting and drafting agreements between the federation and sponsors.

“Our NF does not draft a sustainability report, but they plan to do so as it would be useful for the Federation also to attract sponsors” (M9 – Italy).

“The Federation aims to become a leading sustainability NF […] and the companies that care about sustainability are going to be the Federation’s future sponsors” (R14 – Slovenia).

Being a NF leader in sustainability is considered as a strategic positioning in the market. By interacting with sponsors, NFs can drive the market and contribute to a higher and more direct message towards environmental sustainability, by leveraging on NFs activities developed in the environment.

“Our current sponsor never made specific requests on environmental or sustainability topics. In some cases, the Federation proposed the environmental topic to sponsors, but it has never been an initiative of the sponsors” (M9 – Italy).

Victories and visibility are still the greatest and more appealing characteristic of NFs. NF often intermediate between sponsors and athletes and this appears to be the strongest communication asset of the NF. By involving environmentally engaged athletes, the sustainability message can be part of agreements.

“Usually companies and the Italian NF get in touch involving collaborations with athletes (such as documentaries or media appearances). This obviously depends on the visibility of the sport and competition victories” (M9 – Italy).

From our analysis, it is evident that governance BPs are not widely adopted and implemented in the cases considered among CK NFs and events.

3.2 Environmental operational BPs and their emergence in interviews

Environmental operations. Operational BPs are split into four sub-categories: the context of the event, event management, organization management, mobility, and logistics. Context of the organization focuses on the presence of green accommodations, waste treatment facilities and all the green structures or infrastructures. The event refers to the actions that are necessary to carry out the event. Organization management is associated with all the dimension related to the structure of the NF's management. Mobility and logistics include all the solutions that can be implemented to allow fans to reach the stadium with more sustainable means of transport and to limit the logistics' impact.

Context of the event. Our interviews point out that, regardless of the geographical context, environmental issues are largely neglected at the governance level in CK. They also highlight that managers are fully aware of the improvements they could and should achieve in their environmental performance by adopting environmental policies or guidelines, which points to the need to strengthen their commitment to meet environmental goals.

Despite that, appointing specific personnel to environmental management duties (i.e., environmental manager or sustainability coordinator) is not common practice in CK. "We do not have a person in charge of taking care of the impacts of the organization on the society and environment […] We do not have a specific policy about it" (F4 - Greece). Regarding barriers, the results highlight the relevance of agency issues, which are frequent in CK since event organizers owners often differ from CK NFs. More specifically, conflicting interests between local clubs and event organizers and CK NFs that make use of the infrastructures and services during sports events can limit the possibility of effectively implementing environmental criteria in governance

mechanisms. According to interviewees, agency issues ground on cultural barriers, on the necessity of educating and training sports organizations to change existing practices and adopt new procedures and on the event, organizers limited control over sports organizations. The example is particularly relevant for green procurement, that has never been implemented in CK events and organizations.

"After the COVID period, we have introduced employees' policies that are good for the environment too. I think it would be good for the environment too to have a policy for procurement" (E4 - Greece).

"We cannot have a wide green procurement policy for sport equipment because we only have a small number of good manufactories selling technical crafts and equipment. We prioritize athletes' choice and preferences" (A1 - Croatia).

Similarly, cultural-related agency issues emerge concerning supporters' and event attendees, who are both target beneficiaries and direct multipliers of the outcomes of environmental governance initiatives. According to most interviewees, increasing supporters' environmental awareness is thus crucial for improving their behaviors during sports events and, therefore, for effectively improving the environmental performance of sports events.

"Our protocol is mainly to raise awareness among event organizers. We do not supervise that they implement all the practices we suggest" (J7 - Italy).

"Spreading the message of ES through NFs communications is fundamental to raise

awareness in our sport movement. We decided to only focus on environment, not on social or governance aspects of sustainability" (Q18 - Slovenia).

Orchestration of priorities among the priorities for sports organizations and local stakeholders is thus a pre-condition for replicating the environmental governance BPs already demonstrated in large events.

These findings are unsurprising, considering the challenges and obstacles to integrating environmental criteria into governance practices. Event organizers and club owners often seek external validation from stakeholders who can endorse their environmental initiatives through eco-conscious actions. Given the limited influence over suppliers and broader sports organizations, focusing on athlete behavior at the local level is perceived as a more expedient strategy for achieving short-term gains and catalyzing broader systemic change.

Event management. In few cases, where some elements of environmental operational management are in place, it seems they stem from local necessities of local rules and regulations requests to adapt.

A cascading dynamic that originates from large events is effective in raising awareness on environmental issues but is not sufficient for spreading environmental governance through role modeling. In fact, environmental governance is rarely driven only by NF governing bodies. Instead, interestingly, in one case study, the adoption of environmental criteria in the modality of reaching the competition venue has been imposed by the local authority as a mean to build the relationship with the local community and preserve the environment, as well as comply to rules and regulations put in place.

"When we organize a competition, for example, for waste collection, we have a contractor there on site" (F4 – Italy).

This reveals that turning awareness into practice requires more direct pressures. As an alternative, easy and short-term win emerge as a preferred driver of environmental governance. In fact, despite the scarce adoption of environmental governance practices, besides coercive regulations (such as the one above) and clubs' or managers' culture and values, economic opportunities (e.g., energy cost reductions) emerge as potentially effective drivers of their adoption.

"We have recently installed a water heating plant from solar energy on the roof of our training center" (K8 – Italy).

"The economic part is the most important now. This is another reason why we are committed in reducing the use of plastic bottles and promote the use of potable water refilling stations during the events" (H5 – Greece)

"The hosting organization the event must comply to some basic rules such as waste collection for recycling, according to local practices, reuse of ropes, buoys, and mooring posts. We don't want to have them abandoned in the rivers or lakes" (J7 – Italy).

Organization management. NF operations are mostly made of administrative and secretary activities. NF operations register peaks during events, often supporting local clubs organizing events. In these occasions, sustainability is rarely an issue, as they are more focused on administrative and organizational aspects which are more under direct

their control. Despite that, in some cases, sustainability is a driving force for internal core communications.

“This year the Federation is putting much effort in the organization and communication of the European Championships. Six months ahead of the event, they are already informing teams that this is going to be a sustainable event, through emails and invitations. Later on, the plan is to communicate the sustainability of the event through social media, emails, website. They are going to reach out also local authorities to get more funds and support” (R14 – Slovenia).

At organizational management level, most of the times no accounting system is used. “We do not currently have a system for monitoring and evaluating performance related to strategic objectives” (Q13 – Slovenia).

The same approach is reflected for environmental management. “The Federation does not have any environmental procedures or practices for organizing events, to reduce their environmental impact” (O11 – Slovenia).

In some cases, green behaviors and practices are implemented. “We implement the use of recycling paper, separate waste collection and the digitalization of documents. We also have a program that allows clubs to give back used or damaged boats to the Federation, then the Federation gives the renewed boat to another club in need and a brand new one for the club donating” (I6 – Greece).

From a human resource management point of view, sustainability managers or

coordinators are still lacking. Internal resources taking care of sustainability aspects are often associated with brand and marketing managers or they are identified as external contractors, appointed during events.

"The Federation collaborates with external marketing agencies to help with communication and management on sustainability, and for branding and social contents" (R14 – Slovenia).

Green procurement or ethical supply code has not been reported by any of the interviewees.

"We do not have green criteria or procedure for the selection of suppliers" (H5 – Greece).

Although information is still delivered using physical supports.

"The Federation promotes its events and activities through leaflets, billboards, and big banners made of plastics placed throughout the venues" (R14 – Slovenia).

Internally, NFs do not have any specific environmental policies or protocols to manage environmental issues, some of them have a general commitment to sustainability.

"We do not have any specific policy for managing environmental issues" (E4 – Greece).

Mobility and logistics. In particular, the coordination among CK events and urban mobility is a key challenge to target the reduction of impacts of hundreds of supporters traveling to and from the event area. In fact, to reduce the use of private cars, the event site should be served by public transports and well connected to the city with bike lanes or alternative means of transport.

Also, NFs organized carpooling and carsharing to reach the event sites. Although no green criteria are applied to the selection of mobility, such as preferring electrically powered cars or vans.

"The employees and judges share cars to go the events – to save on fuel costs primarily. During big events we rent buses or vans and share to go all together" (I6 – Greece).

"I try to promote carsharing informing all clubs and families of the athletes to share cars. The local or national competition usually have only parents spectating, and they can support athletes' mobility" (B2 – Croatia).

The analysis confirmed that a certain number of operational BPs has been adopted in the context of major CK events and NF operations. Despite that, there are some BPs emerging from minor events or clubs, not necessarily primarily and only related to CK, which show that also some NFs and clubs are demonstrating a commitment towards sustainability. For instance, the promotion of alternatives to single-use plastic water bottles or the promotion of recycling on the events sites or in the NFs offices. The Greek NF prefers external contractors for catering which provide non-single-use cutlery and plates, for practical reasons rather than for environmentally ones. The Croatian NF sporadically runs courses for employees about topics of general interest, including environmental protection.

However, these experiences are quite heterogeneous and apparently not linked to an overall and long-term environmental strategy, vision, or programme. Overall, more holistic approaches to environmental management in CK are still rare actions in response to cotangent problems or opportunities largely prevail.

3.3 Future initiatives for operational and governance environmental management

NFs face several future challenges and initiatives to enhance their environmental sustainability. Interviews did not include any explicit question regarding the suggested initiatives and BPs for operational and governance environmental management to be implemented in NFs or events. Researchers identified future initiatives spontaneously wished and expressed by interviewees, during their commentaries to questions or side talks. Twenty future initiatives are listed per seven thematical section in Table 4.

Table 3 - Environmental best practices identified per category

Category	**Sub-category**	**Best practices**
Governance practices		Waste management planning
		Waste recycling planning
		Environmental footprint analysis
		Economical rewards for shared interclub transportation of boats
		New for damaged-to-refurbish boat program
		Circular use of boats
		Mobility plan
		Environmental awareness raising campaigns
		Stakeholder engagement
		Partnership with local authorities and public transportation companies
		Implementing local authorities' environmental protection rules and regulations
Total number of governance best practices: 11		
Operational practices	Context of the event	Natural environmental assessment
		Free shared transportation for participants
		Compliancy with local authorities' rules and regulations
		Engagement of high-level athletes in environmental protection promotional campaigns
	Event management	Reusable temporary structures
		Promotion of circular use of sport equipment
		Low environmental impact food
		Separate waste collection
		Recycling program
		Engage participants in waste collection operations
		Reusable cutlery and plates
		Operating with generators

		Collection of plastic found flowing in the rivers
		Potable water refilling stations
	Organization management	Dematerialization of paper documents
		Use of recycling paper
		Solar energy water heating system
		Waste collection operations
		Club to federation stream of communication regarding environmental awareness
	Mobility and logistics	Reduction of parking slots to incentive shared transportation
		Provide containers to transport crafts from metropolitan areas
		Promotion of carpooling and carsharing
Total number of operational best practices: 22		
Total number of best practices: 33		

Table 4 – Future challenges and initiatives for operational and governance environmental management, according to CK European NFs managers, per thematical section.

Thematical section	**Proposed initiatives identified during the interviews**
External communication	Design and implementation of an engagement and awareness plan including testimonials, challenges, and educational activities on environmental issues for stakeholders
	Design and implement specific communication strategies on ES topics, identifying channels (e.g., a specific section on NF's website), macro-topics and a program/plan to make this communication periodic
	Draft the NF Sustainability Report to share and make visible organization's commitment to the ESG issues.
Mission, strategy, and policy	Draw up an environmental policy
	Elaborate a sustainability strategy, with specific environmental goals and performance indicators
Operational management	Draw up some environmental procedures/guidelines for clubs on how to manage environmental aspects and monitor them (e.g., water, waste, mobility, etc.)
	Draft a procedure that facilitates the communication and cooperation with local authorities and NGOs for managing environmental aspects
	Draft a procedure for clubs that facilitates the communication and cooperation with local authorities for managing environmental aspects
Organization of event	Create a databank to export good practices for fore coming events
	Drawing up an event Environmental Action Plan

	Definition of a venue selection procedure, considering biodiversity, local community engagement, safety and security, mobility and transportation, water, energy, and waste management
	Quantify the environmental footprint of the events and possible initiatives that organizing committees of the event can implement to mitigate these impacts
	Appoint a sustainability coordinator for the event
Procurement and selection of facilities	Develop a green procurement procedure, applicable for the NFs and affiliated clubs
	Elaborate a minimum requirement checklist to select events' host venues
Roles, responsibilities, and training	Appointment of a sustainability officer or committee within the NF
	Development of an internal environmental training and awareness-raising plan for employees, including workshops, webinars, testimonials, challenges, and educational activities
Sales and sponsorships	Sign environmental purpose-driven sponsorships
	Partner with environment NGOs and research centers or universities to corroborate NFs image to stakeholders
	Define a sustainability and inclusion or ethical criteria procedure to select sponsors
Total number of thematical section: 7 *Total number of future challenges and initiatives: 20*	

4. Discussion

The results of the multiple case study analysis of the interviews highlight a wide range of BPs to reduce environmental impact of CK events. The present study is contributing at filling the gap of scholarly research on sustainability management in CK sport events and organizations management and governance. Unlike previous research on sustainability in sport, this study investigates the environmental dimension of sustainability through the lens of a qualitative, exploratory approach - based on interviews with managers of European CK NFs.

Research on environmental sustainability management in CK events and organizations is at its infancy, with several gaps identified that need to be addressed to enhance sustainability practices effectively. For more comprehensive measurements and evaluations of environmental sustainability within is needed in general sport events (Mallen et al., 2010) and specifically in CK events, to promote pro-environmental behavior among participants. Research on environmental education and strategic planning for sustainability are needed by both sport industry and researchers (Cury et al., 2022; Hines et al., 2024). The current study relies on a stream of research on environmental sustainability qualitative studies on operations and governance of sport organizations and events (Daddi et al., 2022; Huang et al., 2024; Martins et al., 2024; Piller et al., 2024).

Paper originality derives also from the following: first, the paper is focused on European CK NFs, an understudied sector with potential spillovers in other aquatic-based sport events and NFs. Second, the reported interviews are from different EU countries, giving an international perspective to the results. Finally, the interviewees' role and competencies are diverse; are collaborators of different CK NFs.

The evidence emerging from our study informs two directions of interpretation. On the one hand focusing on the distinction between governance (RQ1) and operational practices (RQ2), there is also evidence supporting that operational aspects (e.g., waste management, mobility, etc.) are easier to implement than interventions on environmental governance, which require a further and more structural evolution of the field: this result is partially in line with Mallen et al. (2011) results concerning ES in the sport sector, as it highlights that environmental operation performance is currently leading the early structuration of ES in the CK sector, especially in the form of "environmental countermeasures", while governance initiatives (i.e. policies, committees, education, programmes, etc.) are considerable less diffused. Insights emerging from the interviews provide support regarding the evidence that there is a prevalence of agency barriers over awareness issues. In this framework, despite a wide agreement on the importance of environmental issues in the sport sector and regardless the level of local and global pressures to go green, there is no discomfort among the actors involved in CK NFs and event management in stating that much more can and should be done to achieve more systemic and effective management of environmental issues. These results confirm previous literature focusing on other sports (e.g., Dolf & Teehan, 2015; Wall-Tweedie and Nguyen, 2018; Pelcher et al., 2023; Daddi et al., 2020) adding the more specific perspective of European CK. For instance, in light of McCollugh et al. (2016) waves of environmentalism in sport, our results suggest that, while awareness of environmental issues is present in the CK sector (as a main characteristic of the 1st wave of environmentalism), a more structured knowledge about how to strategically and systematically tackle environmental issues (as in the second and third waves) is yet to be realized, thus confirming that CK sector is still in an early phase of structuration. The relevance of the above-mentioned barriers might seem quite in contrast with the

proliferation of reports and guidelines highlighting the increasing commitment toward sustainability of central governing bodies of sport (McCullough et al., 2016). In this regard, the words of the interviewees clearly explain why external communication provides an image of the state-of-the-art of the practices in use in this industry that is more positive than the actual – self-assessed – situation. In fact, external communication emphasizes initiatives that, from a more neutral perspective, just reflect the current tendency to pick low hanging fruits. This refers to implementing measures (e.g., carpooling) that have a strong economic rationale and a favorable return of investment. Besides these initiatives, it is possible to also recognize a subset of practices that have a stronger environmental rationale (e.g., solar heating of water) that, however, have a more symbolic than holistic nature, which means that they do not follow a systemic assessment of environmental performance and, consequently, a science-based prioritization of interventions. Such evidence extends the findings from Trendafilova et al. (2013) and Breitbarth et al. (2018) by better qualifying the inner objectives of early moves in the field. In fact, in absence of an environmental and economic assessment-based rationale, they tend to be based on relation-specific image gains that might derive from demonstrating the conformity to local authorities' environmental policies. Again, this result demonstrates the limited structuration of ES in the CK sector, as conceptualized by Mallen et al. (2011) and McCullough et al. (2016): the BPs highlighted in the study appear to be mainly driven by coercive pressures or by reputational motives, rather than by normative or strategic considerations. At this regard, in contrast with findings from Mallen et al. (2011) concerning drivers of ES in the sport sector, the existence of international environmental standards for the sector does not emerge yet as a relevant normative pressures toward greening of CK.

Not surprisingly, there is a frank recognition by the interviewees that also systemic approaches are still in the wish-list, and that mature governance of ES is still far to be a standard practice among the organizations in charge of stadiums and CK event management. Despite current theory provides solid groundings for improving governance structures in CK, our findings highlight the marginal role that ES has so far in the policies of these organizations, which give instead a stronger priority to economic, social and safety standards. For this reason, a collection of future initiatives for operational and governance environmental management has been listed, as proposed by CK NF's managers.

Proposed initiatives include external communication, mission, strategy and policy, operational management, management of the event, procurement and selection of facilities, roles, responsibilities and training, and sales and sponsorships. In most cases (15 out of 20) the proposed initiatives are regarding design and implementation, drafting, elaboration and development of plans and strategies. The most of them are not implemented yet and represent a wish-list that managers believe would be important for improving ES in the CK sector. Few of them (5 out of 20) encompass quantification, appoint responsibilities, and integrate management systems, collaborate with stakeholders. None of them included monetary incentives, not even mention requirements to external partners and suppliers.

From an agency theory perspective (Eisenhardt, 1985), the absence of coherent principals is relevant to explain, as an example, the current trade-off perceived by agents between compliance to safety rules and the facilitation of separate collection through the installation of potable water refilling points or the trade-off between the adoption of a waste management protocol and the costs of the contingent - not systemic-solutions – of collecting waste differently in every location during events. While the interviewees report

that they do not feel the need to reduce agency losses and that, thus, it is not their duty to search for a technical solution to such trade-offs, they have an important role in raising awareness among suppliers about this kind of investment. Unfortunately, the analyzed cases provide evidence that the multi-staged chain of information that is fundamental for effective environmental management of CK events is often broken because NF directors, event managers, consultants and clubs have different responsibilities, interests, and priorities.

Overall, the environmental management of European CK NFs and events is still in its infancy. In fact, most of the BPs that have been implemented in other sports have only a prospective relevance for CK. Despite that, our results are not relevant only for CK. In fact, according to what emerged from the literature review, the promotion of the above-mentioned strategies to foster a cascading mechanism from large events to regular events is likely to be necessary also in other sports. Thus, the results of this paper could be useful to inform not only European CK managers, but also other sport managers, who can learn from the dynamics of the CK sector on how to identify the barriers to the dissemination of the BPs, developed in large events.

Solutions to the improvement of CK NFs structural organization and event management may pass through several actions: the development and implementation of common environmental management standards, the adoption of environmental policies and strategies at organizational level, the integration of sustainability in the overall strategy and the definition of measurable objectives and KPIs, the creation of dedicated sustainability roles and departments within the NFs, the establishment of formal communications with stakeholders, the provision of training and awareness-raising programmes for staff, the deployment of collaborative initiatives with relevant stakeholders and the integration of sustainability clauses in procurement and contractual

policies. The role of IFs and public authorities in promoting these initiatives is also crucial, because a cascading mechanism from large events to regular events would be necessary to increase the adoption of sustainability management practices among CK organizations. The IOC is already providing guidance in this direction, which can be turned into inspiration and benchmarking for many sports, including CK.

Implications. This research establishes a new benchmark for both academics and practitioners in the realm of ES within the CK sector. For scholars, the findings offer a robust foundation to delve deeper into the interplay between governance and operational practices, as well as to explore additional case studies across diverse geographical and cultural contexts. The findings from this study contribute to the growing body of literature in sustainability in sport organizations.

From a practical standpoint, the implications are far-reaching. Federation managers can utilize these insights to develop more comprehensive sustainability strategies, while local authorities can leverage the research to formulate policies and regulations that promote sustainable sporting events within their jurisdictions. Moreover, NGOs collaborating with sports organizations can employ these findings to design effective programs and initiatives. Event organizers can utilize this study as a roadmap for integrating ES into every phase of event planning and execution. The study underscores the need for collaboration among all stakeholders to address the challenges and seize the opportunities presented by a more sustainable approach to CK sports. For practitioners, firstly, it is important to establish a strong ES governance framework, including the development of a clear environmental policy framework, assigning specific responsibilities for ES, and integrating ES considerations into decision-making processes. Secondly, focusing on operational practices, such as waste management, energy efficiency, and sustainable transportation, can yield significant environmental and economic benefits. Thirdly,

fostering collaboration with stakeholders, including athletes, volunteers, and local communities, can enhance the effectiveness of ES initiatives. Finally, continuous monitoring and evaluation of environmental performance are essential to identify areas for improvement and measure progress.

According with CK NFs managers, and based on their contexts' description, some governance initiatives can enhance ES in CK European NFs. Those are listed in Table 4. Lessons learned in major events highlight that governance is a crucial leverage for steering sports events toward sustainability, as it comprises regulations, systems, roles, and procedures that allow achieving organizational objectives. Therefore, greening regular CK events and NFs operations requires altering existing governance mechanisms and introducing new self-regulatory and managerial tools. Similarly, voluntary self-regulation (e.g., EMSs and certification schemes) are expected to help NFs codifying mechanisms and tools supporting the overall organization of sports events in a more environmentally responsible, inclusive, and transparent way.

Limitations. The present study, while providing valuable insights into ES practices in European CKNFs, is subject to certain limitations. First, geographical, and disciplinary scope, since the study's focus on European CK NFs limits the generalizability of findings to other sports and regions, even though many of the practices discussed could be valid also for other sports (e.g., swimming, sailing, surfing, etc.). Second, gender imbalance of the interviewees (male interviewees 9 out of 14), may have influenced the perspectives and experiences shared, potentially limiting the diversity of insights. Thirdly, the governance/operational centric perspective may hinder a more comprehensive understanding to explore the role of other factors, such as organizational culture, leadership, and stakeholder engagement. Fourthly, a selection bias is present both for the included NFs, since they are selected by applying to a European-funded project on

environmental sustainability, and for the interviewees, since they are chosen and selected (upon their approval to be interviewed) directly by the NF.

Future research avenues. Future research could delve deeper into several key aspects of the intersection between sports and sustainability. Firstly, longitudinal studies could assess the long-term effectiveness of ES initiatives undertaken by NFs. By collecting both quantitative and qualitative data over extended periods, researchers can identify changes. A follow-up study can be an effort-wise solution for researchers interested in continuing their studies on environmental sustainability. Secondly, comparative analyses across different sports and countries could prove valuable in identifying cultural differences and the most effective practices in sports sustainability. A multidisciplinary approach, combining quantitative and qualitative analyses, would enable the identification of factors that most significantly influence the adoption of sustainable behaviors, also by using an agency theory lens. Furthermore, the use of technology in sports represents a promising area of research. Another crucial aspect is the intersection of sustainability and social equity: it would be possible to better understand how sustainability can contribute to reducing inequalities. Moreover, a comprehensive study on local, regional, national, and continent-wide policies, that may affect CK sports can be a great tool to start from for practitioners and contribute to the contextualization, as well as, to the development of a more interconnected vision of ES in the sport sector. Finally, studying the role of governance and leadership from the success stories of leaders who have driven the transition towards sustainability and analyzing the governance systems of NFs would be possible to identify the key competencies required to lead this change. Cross-cutting elements that should be considered in all these research areas include the use of established theories to interpret the results, a multidisciplinary approach involving

experts from various disciplines, and close collaboration with NFs and IFs to facilitate data collection and dissemination of results.

5. Conclusion

From a practical perspective, the findings of this study go beyond identifying the characteristics and initiatives of sustainability CK NFs managers, to exploring how they create, optimize, and pursue ES in their organizations. The increased requests for managerial-level support in sustainability are, in our opinion, a positive development for applied ES management, because the potential to affect change is far greater working through top leaders of NFs, rather than by solely counseling managers. For example, sustainability consultants can advise those in positions of influence on creating an environment where sustainability practices become intrinsic in the organization. This shift in emphasis would likely necessitate each practitioner of the NFs broadening their service delivery beyond their job-description tasks, to developing habits and decision-making processes more in line with those employed by sustainability managers (e.g.: sustainable procurement, environmental footprint assessment, LCAs, etc.). Indeed, the techniques used in pro-environmental organizations will likely transfer well to ES management in sport organizations.

Overall, the common thread that links the initiatives of ES governance and operational management in the case studies is the key role that the alignment of interests and needs of different stakeholders plays in the translation of the awareness of ES opportunities in practices.

Environmental management of sports events provides evidence that BPs can be adopted during event management and NFs operations. Despite that, the analysis of the case studies highlights several obstacles to the systemic implementation of BPs. A greening

wish-list from interviewees of the next actions to be implemented by CK NFs and events is included.

The interviewees might have had different challenges and drivers for sustainability management due to different national contexts. This allows the emergence of specific issues connected with geographical characteristics.

Governance is a crucial leverage for steering sports organizations toward sustainability, as it comprises regulations, systems, roles, and procedures that allow achieving organizational objectives. To increase the environmental-conscious governance in CK NFs it is required to alter existing governance mechanisms as well as introducing new self-regulatory and managerial tools. Voluntary self-regulations can help CK organizations codifying mechanisms and tools supporting the overall organizations of events and organizational practices in a more environmentally responsible way.

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