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THEORETICAL FRAMEWORK OF CIRCULAR DESIGN STRATEGY APPLICATION FOR LOCAL AND REGIONAL SPORT ORGANIZATIONS

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Developed by: VšĮ Inovacijų akademija
VšĮ Sporto klubas "Miško takas"
Universitat de les Illes Balears

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1. Introduction

1.1. Background and rationale

The global shift towards sustainability has become an imperative across various sectors, driven by the pressing need to address environmental degradation, resource depletion, and social inequalities. The sports industry, a significant sector with widespread influence and substantial environmental impact, is increasingly recognizing its role in this shift. Traditional linear economic models, characterized by a take-make-dispose approach, have proven unsustainable, leading to the growing adoption of Circular Economy (CE) principles. In the context of sports, these principles aim to design out waste and pollution, keep products and materials in use, and regenerate natural systems.

This theoretical framework specifically targets local and regional sport organizations, including small community clubs and larger regional bodies. The framework acknowledges the unique challenges faced by both types of organizations, such as limited resources, varying levels of technical expertise, and differing access to best practices. By addressing these challenges, the framework seeks to provide tailored strategies that align with the operational realities of these organizations, whether they are grassroots clubs with limited budgets or regional entities managing multiple facilities and events.

1.2. Scope and Audience

The Circular Design (CD) strategies outlined in this framework are designed to be scalable and adaptable, catering to the diverse needs of both small local clubs and large regional sport organizations. For small local clubs, the focus is on practical, low-cost solutions that can be implemented with minimal resources. These might include community-driven recycling programs, energy-efficient facility upgrades, and the adoption of sustainable materials in sports equipment. For larger regional organizations, the framework offers more comprehensive strategies that address broader operational scopes, such as the integration of renewable energy systems, the development of region-wide sustainability initiatives, and the promotion of circular economy principles across multiple sites.

By clearly defining the audience, this framework ensures that its strategies are relevant and actionable for all types of local and regional sport organizations, regardless of their size or resources. Whether it’s a small, community-driven sports club or a larger, more complex regional organization, the framework provides tailored guidance that addresses the specific needs and capacities of each entity. For smaller clubs, the strategies emphasize low-cost, easily implementable solutions that do not require extensive resources or technical expertise. These could include simple waste reduction programs, energy-efficient practices, and community engagement initiatives that foster local support and participation.

On the other hand, for larger regional organizations that manage multiple facilities and have broader operational responsibilities, the framework offers more comprehensive approaches. These include advanced strategies such as the integration of renewable energy systems, large-scale recycling initiatives, and the development of partnerships with local governments and businesses to promote circular economy principles across a wider geographic area. The framework also considers the differing levels of access to funding, technical expertise, and

regulatory environments, offering customized solutions that can be adapted to the specific context of each organization.

Furthermore, by addressing the unique challenges that both small and large organizations face, the framework aims to bridge the gap between intention and action. It provides practical tools and resources that can be easily adapted, ensuring that all organizations, regardless of their starting point, can make meaningful progress toward sustainability. This inclusivity not only makes the framework more accessible but also more effective in driving widespread adoption of Circular Design principles across the diverse landscape of local and regional sports organizations.

Ultimately, the framework's adaptability and scalability mean that it can serve as a valuable resource for any organization looking to improve its environmental impact, enhance operational efficiency, and contribute to a more sustainable future for sports. By being mindful of the varying capacities and needs of different organizations, the framework ensures that no organization is left behind in the transition to more sustainable practices.

1.3. Key Challenges

Despite the clear benefits of adopting CD principles, local and regional sport organizations face several key challenges in implementation:

1. Resource constraints: many local and regional sport organizations operate with limited budgets and staff, making it difficult to allocate resources toward sustainability initiatives. This challenge is particularly pronounced in smaller clubs that rely heavily on volunteer support.
2. Technical expertise: implementing Circular Economy (CE) principles requires a certain level of technical knowledge and expertise, which may not be readily available within smaller organizations. The lack of access to specialized knowledge can hinder the effective adoption of CD strategies.
3. Access to best practices: there is often a gap in knowledge sharing and access to best practices, especially for organizations in more remote or underserved areas. Without clear examples or guidance, many organizations struggle to envision how to implement CE principles within their operations.
4. Regulatory and financial barriers: navigating the complex landscape of regulations and securing funding for sustainability projects can be daunting, particularly for smaller organizations that lack the administrative capacity to manage these challenges effectively.
5. Cultural resistance to change: shifting from traditional operational models to circular practices requires a cultural change within the organization. Resistance to change, whether from leadership, staff, or members, can pose a significant barrier to the adoption of CD strategies.

By addressing these challenges head-on, this theoretical framework aims to equip local and regional sport organizations with the tools, knowledge, and support they need to successfully transition towards more sustainable and resilient operational models.

1.4. Objectives of the Theoretical Framework

1. The primary objective of this theoretical framework is to provide local and regional sport organizations with a structured approach to integrating circular design strategies into their operations. This framework aims to:
2. Establish a comprehensive understanding of CE principles: Educate stakeholders about the relevance and benefits of CE in the sports sector, encompassing environmental, economic, and social dimensions.
3. Identify and disseminate best practices: Compile and share successful case studies and practical examples of CE and CD strategies from across the EU and beyond, providing a rich source of inspiration and guidance.
4. Develop tailored strategies for local and regional sport organizations: Recognize the unique contexts and needs of these organizations, offering customized solutions that respect the diversity of sports and regional specificities.
5. Provide legal and financial guidance: Outline the regulatory landscape and financial implications of implementing CD strategies, helping organizations navigate potential challenges and leverage available opportunities.
6. Promote stakeholder engagement and collaboration: Highlight the importance of partnerships and collaborative efforts among sport governing bodies, educational institutions, businesses, and communities to drive the CE agenda forward.

1.5. Importance of the IDEATION project

The IDEATION project represents a significant step forward in operationalizing the EU's circular economy vision within the sports sector. By focusing on local and regional sport organizations, this project recognizes the pivotal role these entities play in grassroots sports and community engagement. The project's outcomes will not only enhance the sustainability of sports organizations but also contribute to broader environmental and social goals, aligning with global sustainability targets such as the United Nations Sustainable Development Goals (SDGs).

In conclusion, the theoretical framework for circular design strategy application developed under the IDEATION project aims to equip local and regional sport organizations with the knowledge, tools, and support needed to transition towards a more sustainable and resilient future. This framework will serve as a foundational guide, fostering innovation, collaboration, and continuous improvement in the pursuit of circular economy objectives within the sports sector.

2. Objectives of the Theoretical Framework

The primary objective of this theoretical framework is to guide local and regional sport organizations in effectively integrating Circular Design (CD) strategies into their operations. By adopting these strategies, organizations can enhance their environmental sustainability, resource efficiency, and social impact. To achieve this, the framework focuses on three consolidated and interrelated objectives:

2.1 Comprehensive education and implementation of CE principles

This objective merges the original goals of "Disclosing Theoretical Framework of CE applications in sport policies" and "Broadening the mindset of local and regional sport organizations." It aims to educate and empower sport organizations at all levels by providing a clear understanding of Circular Economy (CE) principles and how they can be practically applied within the sports sector. This includes:

- Educating stakeholders: providing comprehensive knowledge on the relevance and benefits of CE principles in sports, encompassing environmental, economic, and social dimensions. This education will address both policy-level understanding and practical, on-the-ground implementation.
- Empowering organizations: offering tailored guidance and tools to help local and regional sport organizations develop and implement their own CD strategies. This involves bridging the gap between theory and practice by linking CE principles to actionable steps that enhance sustainability and operational efficiency.

2.2 Identification and dissemination of best practices

This objective focuses on identifying successful implementations of CD strategies within the EU sports sector and disseminating these best practices to local and regional sport organizations. By learning from proven models, these organizations can replicate or adapt strategies that have already demonstrated effectiveness. Key activities under this objective include:

- Compilation of case studies: collecting and analyzing case studies from across the EU that highlight successful CD initiatives in various sports and contexts.
- Sharing insights and know-how: translating these case studies into practical guidance that sport organizations can apply, including step-by-step instructions, tools, and resources to support implementation.

2.3 Strategic alignment with legal and financial frameworks

This objective emphasizes the importance of aligning CD strategies with existing legal and financial frameworks to ensure sustainable and compliant operations. It involves:

- Navigating legal requirements: providing sport organizations with a clear understanding of relevant laws and regulations at the EU, national, and local levels, and offering guidance on compliance and best practices.
- Leveraging financial opportunities: identifying and helping organizations access funding sources, grants, and financial incentives that support the implementation of CD strategies.

3. Scope and structure

The theoretical framework for Circular Design (CD) strategy application in local and regional sport organizations is designed to provide comprehensive guidance for integrating Circular Economy (CE) principles into the sports sector. The framework is structured to address key areas crucial for the successful implementation of CD strategies, ensuring that the diverse needs of various stakeholders are met. The scope of the framework encompasses legal and financial guidelines, tailor-made approaches for different sports and regions, and practical actions supported by toolkits. This structured approach aims to facilitate the adoption of sustainable practices across all levels of the sports industry, from grassroots clubs to governing bodies.

3.1. Legal and financial framework

The legal and financial framework is a key part of the Circular Design (CD) strategy for local and regional sport organizations. This section provides clear guidelines and regulations that support the integration of Circular Economy (CE) principles within the sports sector, from EU directives to local governance. The goal is to create a supportive environment where sport organizations can adopt and sustain CD practices through well-defined legal rules and financial incentives.

By aligning with EU policies and extending them to national and local levels, the framework promotes consistency in implementing CE principles. It outlines key legislative measures, compliance requirements, and financial tools like grants and subsidies to help sport organizations transition to sustainable practices. Best practice examples and case studies are included to demonstrate successful application in various contexts.

This section equips sport organizations with the legal and financial resources needed to navigate regulatory requirements and access economic support, ensuring they can effectively achieve their sustainability goals.

3.1.1. Legal framework

The legal framework focuses on the legislative measures and compliance requirements that sport organizations need to follow to integrate CE principles effectively. It includes:

1. **European Union Directives**:
    - ✓ EU Circular Economy Action Plan: this plan sets the overarching goals and policies for CE across various sectors, including sports. It includes regulations on waste management, product lifecycle, and resource efficiency.
    - ✓ EU Waste Framework Directive: establishes measures for waste prevention, reuse, recycling, and recovery. Sport organizations must comply with these regulations to minimize waste and promote recycling initiatives.
    - ✓ EU Eco-Design Directive: focuses on the design of products with improved environmental performance. This is relevant for sport equipment manufacturers and facility managers aiming to reduce environmental impact.

2. **National legislation**:
    - ✓ Each EU member state adapts EU directives into national law, which sport organizations must adhere to. Examples include the UK's Environmental Protection Act, Germany's Circular Economy Act, and France's Anti-Waste Law.
    - ✓ National sports policies often include sustainability clauses that promote CE principles within the sports sector.
3. **Local regulations**:
    - ✓ Local governments implement specific regulations and incentives tailored to regional contexts. These may include local waste management policies, environmental standards for sports facilities, and community engagement programs to promote sustainability in sports.
4. **Compliance mechanisms**:
    - ✓ Sport organizations are required to comply with environmental impact assessments, sustainability reporting, and certifications (e.g., ISO 14001 for environmental management).
    - ✓ Regular audits and inspections by environmental agencies ensure compliance with CE regulations.

3.1.3. Financial framework

The financial framework provides sport organizations with access to economic tools and incentives to support the implementation of CE practices. It includes:

1. **EU funding programs**:
    - ✓ Horizon Europe: provides funding for research and innovation projects, including those focused on sustainability and circular economy in sports.
    - ✓ LIFE Programme: offers grants for environmental and climate action projects. Sport organizations can apply for funding to develop and implement CE initiatives.
    - ✓ Erasmus+ Sport: supports projects that promote social inclusion and environmental sustainability in sports.
2. **National funding and incentives**:
    - ✓ Governments offer subsidies, grants, and tax incentives to encourage sport organizations to adopt CE practices. For example, the UK's Sport England provides funding for sustainability projects, and Germany's Federal Environmental Foundation offers grants for environmental innovation.
    - ✓ National development banks and green funds also provide financial support for sustainability projects in sports.

3. **Local funding initiatives**:
    - ✓ Local governments and municipalities may offer specific grants and subsidies for community sports clubs to implement CE practices. These could include funding for installing renewable energy systems, waste reduction programs, and sustainable facility upgrades.
    - ✓ Public-private partnerships (PPPs) can also be a source of funding, where local authorities collaborate with private entities to support sustainable sports projects.
4. **Corporate sponsorship and donations**:
    - ✓ Sport organizations can seek sponsorship and donations from corporations committed to sustainability. Many companies are willing to invest in projects that align with their corporate social responsibility (CSR) goals.
    - ✓ In-kind contributions, such as donations of sustainable materials or services, can also support CE initiatives.
5. **Revenue generation through CE practices**:
    - ✓ Implementing CE practices can lead to cost savings and new revenue streams. For example, selling recycled materials, hosting eco-friendly events that attract sponsorship, and offering sustainable products can generate additional income for sport organizations.
    - o Circular business models, such as equipment leasing or sharing platforms, can provide ongoing revenue while promoting sustainability.

3.1.5. Key regulations for sport clubs and CE

1. **Waste management**:
    - ✓ Waste framework directive (2008/98/EC): requires sport organizations to adopt measures for waste prevention, reuse, and recycling.
    - ✓ Extended producer responsibility (EPR): obligates manufacturers and retailers, including sports equipment producers, to take responsibility for the disposal of their products.
2. **Sustainable Product Design**:
    - ✓ Eco-design directive (2009/125/EC): sets requirements for the environmental performance of products, including sports equipment.
    - ✓ REACH regulation (1907/2006): ensures the safety of chemical substances used in products, relevant for materials used in sports equipment and facilities.
3. **Energy efficiency**:
    - ✓ Energy efficiency directive (2012/27/EU): requires sport facilities to improve energy efficiency, including the use of renewable energy sources.

- ✓ Energy performance of buildings directive (2010/31/EU): sets standards for the energy performance of buildings, applicable to sports facilities.

4. **Water management**:

   - ✓ Water framework directive (2000/60/EC): Mandates sustainable water management practices, relevant for sports facilities with high water usage like swimming pools and golf courses.

5. **Sustainable events**:

   - ✓ Guidelines for organizing sustainable sports events include waste management plans, sustainable sourcing of materials, and measures to reduce carbon footprints.

By adhering to these legal and financial frameworks, sport organizations can effectively integrate CE principles into their operations, contributing to a more sustainable and environmentally responsible sports sector. This comprehensive approach ensures that organizations have the necessary support and resources to achieve their sustainability goals while complying with relevant regulations.

3.2. Psychological well-being

Promoting psychological well-being is not only crucial for the health and performance of athletes but also plays a vital role in the successful implementation of Circular Design (CD) strategies within sport organizations. By creating a supportive environment that prioritizes mental and emotional health, organizations can foster a culture of engagement, collaboration, and innovation—key elements for driving sustainability initiatives forward.

3.2.1. Integration of psychological well-being with CD Strategies

Psychological well-being and Circular Design strategies are intrinsically linked. A supportive and inclusive environment enhances the ability of individuals and teams to engage meaningfully with sustainability practices, driving the adoption of Circular Economy (CE) principles across the organization. Here's how psychological well-being contributes to the success of CD strategies:

1. Increased engagement and participation: when athletes and staff feel supported, valued, and mentally well, they are more likely to engage with sustainability initiatives. This can include participating in recycling programs, advocating for resource efficiency, and embracing eco-friendly practices within the organization. Organizations that actively promote mental health through initiatives like workshops, peer support, and community-building activities tend to see higher participation in environmental initiatives. This increased engagement often stems from a stronger sense of community and shared purpose among members.
2. Enhanced creativity and innovation: psychological well-being fosters a mindset that is open to new ideas and creative solutions, which is essential for the innovation required in Circular Design. A mentally resilient team is more likely to generate and implement innovative strategies for waste reduction, energy efficiency, and sustainable product design. Environments that encourage positive mental health are often more conducive to creativity. Teams within such organizations may be more likely to develop innovative

ways to repurpose materials, reduce waste, or introduce sustainable practices, thereby aligning with CE principles.

3. Improved collaboration and teamwork: a positive and inclusive environment encourages collaboration across all levels of the organization. Effective teamwork is crucial for implementing comprehensive CD strategies, as it requires coordinated efforts between different departments, stakeholders, and external partners. Organizations that prioritize psychological well-being often experience enhanced collaboration. This improved teamwork can lead to more effective development and execution of sustainability projects, as members work together more cohesively toward common goals.
4. Resilience in the face of change: transitioning to Circular Economy practices often involves significant changes in operations, mindset, and behaviors. Organizations that prioritize mental well-being are better equipped to manage these changes, as individuals are more adaptable and resilient when facing new challenges. Organizations that integrate mental health support into their operations typically find it easier to transition to sustainable practices. The focus on well-being helps members become more resilient and open to change, facilitating smoother adoption of new sustainability initiatives.

3.2.2. Metrics for assessing psychological well-being initiatives

To ensure that psychological well-being initiatives are effectively supporting the implementation of CD strategies, it is essential to establish specific metrics for assessment. These metrics will help measure the impact of well-being programs and their contribution to the overall success of Circular Design efforts.

1. **Engagement metrics:**
    - Measurement: track participation rates in both psychological well-being programs (e.g., mental health workshops, peer support groups) and sustainability initiatives (e.g., recycling programs, energy-saving campaigns).
    - **Indicator of Success:** a positive correlation between high participation in well-being programs and increased engagement in sustainability initiatives would indicate that mental health support is driving active involvement in CD strategies.
2. **Satisfaction and well-being surveys:**
    - Measurement: conduct regular surveys to assess the satisfaction and well-being of members, including their perceptions of the organization's environment, support systems, and sustainability efforts.
    - Indicator of success: high satisfaction scores, particularly regarding the organization's supportive culture and environmental initiatives, would suggest that psychological well-being is contributing to a positive and engaged community.
3. **Innovation and idea generation:**
    - Measurement: monitor the number and quality of new ideas generated for Circular Design initiatives, as well as the implementation rate of these ideas.

- Indicator of success: an increase in innovative ideas and successful implementations linked to well-being initiatives would demonstrate that psychological support is fostering creativity and problem-solving.

4. **Team collaboration metrics:**
    - Measurement: evaluate the frequency and quality of cross-functional collaboration on sustainability projects, using tools like project tracking software, peer reviews, and team feedback.
    - Indicator of success: enhanced collaboration, reflected in project outcomes and stakeholder feedback, would show that a focus on psychological well-being is strengthening teamwork and collective efforts toward sustainability.
5. **Resilience and adaptability indicators:**
    - Measurement: assess the organization's ability to adapt to new sustainability practices, including the speed and effectiveness of implementing changes, as well as the level of resistance encountered.
    - Indicator of success: a smoother, more efficient transition to Circular Design practices with minimal resistance indicates that the organization's focus on resilience through well-being initiatives is effective.

Integrating psychological well-being with Circular Design strategies and implementing these metrics, local and regional sport organizations can systematically measure and enhance the impact of their well-being initiatives. This holistic approach not only supports the mental and emotional health of members but also strengthens the organization's capacity to achieve sustainability goals.

3.3. Tailor-made approaches

A key element of the theoretical framework for Circular Design (CD) strategy application in local and regional sport organizations is the development of tailor-made approaches. Recognizing that the sports sector is diverse, with each sport and region presenting unique characteristics and challenges, this section provides strategies that respect these differences. By offering customized solutions, the framework ensures that Circular Economy (CE) principles can be effectively integrated across various contexts, maximizing their impact and sustainability.

3.3.1. Strategies respecting differences between sports

Implementing Circular Design (CD) strategies within local and regional sport organizations requires a nuanced approach that considers the unique environmental, social, and economic contexts of each organization. To ensure the effectiveness and sustainability of these strategies, organizations must adopt a flexible, adaptable, and inclusive approach. The following general principles provide a foundational framework that can be tailored to meet the diverse needs of sport organizations across different regions.

Assess and align with local needs

Principle: The first step in developing a successful CD strategy is to thoroughly assess the specific environmental, social, and economic needs of the local community and region. This assessment should guide the tailoring of CD strategies to ensure they are relevant and impactful. By aligning sustainability initiatives with local needs, sport organizations can address the most pressing challenges in their communities while maximizing the benefits of their efforts.

Application: For regions experiencing water scarcity, CD strategies should prioritize water conservation measures. This might include installing greywater recycling systems, implementing rainwater harvesting techniques, or promoting drought-resistant landscaping around sports facilities. Conversely, in regions with abundant rainfall, organizations might focus on energy efficiency improvements, such as upgrading to energy-efficient lighting and heating systems, or optimizing waste management practices to reduce landfill contributions. By aligning CD strategies with local priorities, sport organizations can make a tangible impact on the sustainability of their communities.

Leverage available resources

Principle: To maximize the effectiveness of CD strategies, organizations must adapt their approaches to the resources available within their community and organization. This includes financial resources, technical expertise, and access to materials or partnerships. Tailoring strategies to fit the organization's capabilities ensures that sustainability efforts are realistic, achievable, and scalable over time.

Application: Smaller organizations with limited budgets might focus on low-cost initiatives that still provide significant environmental benefits. These could include community-driven recycling programs, energy-saving practices like turning off lights and equipment when not in use, or repurposing existing materials for new uses. Larger organizations with more substantial resources might consider investing in renewable energy systems, such as solar panels, or upgrading facilities to meet higher sustainability standards. By leveraging the resources at hand, sport organizations can implement CD strategies that are both effective and sustainable.

Promote stakeholder engagement

Principle: Engaging all stakeholders—athletes, staff, fans, community members, and external partners—in the development and implementation of CD strategies is crucial to their success. Broad participation fosters a sense of ownership, encourages diverse perspectives, and increases the likelihood of long-term commitment to sustainability initiatives.

Application: Organize workshops, forums, or community events to gather input and feedback on proposed sustainability initiatives. Engage stakeholders in meaningful dialogue to understand their needs, concerns, and ideas. Involve them in the decision-making process to ensure that the resulting CD strategies are inclusive and widely supported. For example, a sports organization might host a sustainability day where community members can contribute ideas and learn about ongoing environmental efforts. This approach not only enhances the quality of the CD strategies but also builds a supportive network of advocates who are invested in the success of these initiatives.

Foster flexibility and adaptability

Principle: Circular Design strategies must be flexible and adaptable to remain effective in the face of changing circumstances, new technologies, and evolving community needs. By building adaptability into the planning and implementation processes, organizations can ensure that their sustainability efforts remain relevant and resilient over time.

Application: Regularly review and adjust sustainability plans based on performance data, stakeholder feedback, and emerging best practices. For instance, an organization might begin by focusing on waste reduction, but as new recycling technologies become available, they could pivot to incorporating these innovations into their strategy. Similarly, changes in local regulations or community priorities may require organizations to update their CD strategies. By maintaining a flexible approach, sport organizations can respond proactively to new challenges and opportunities, ensuring the continuous improvement of their sustainability initiatives.

Measure impact and share success

Principle: Establishing clear metrics to measure the impact of CD strategies is essential for tracking progress, identifying areas for improvement, and demonstrating the effectiveness of sustainability initiatives. Sharing success stories both within and outside the organization promotes transparency, encourages continuous improvement, and inspires others to adopt similar approaches.

Application: Use key performance indicators (KPIs) to track progress in critical areas such as waste reduction, energy savings, water conservation, or community engagement. For example, an organization might measure the reduction in waste sent to landfills after implementing a recycling program, or calculate the energy savings achieved through the installation of solar panels. Regularly report on these metrics through internal communications, public reports, or case studies. Highlighting successes not only validates the efforts of those involved but also serves as a powerful tool for inspiring other organizations to embark on their own sustainability journeys. Additionally, showcasing these achievements can strengthen relationships with stakeholders and attract new partnerships or funding opportunities.

Following these general principles, local and regional sport organizations can develop tailor-made Circular Design strategies that are both effective and sustainable. These strategies, grounded in a thorough understanding of local needs, resource availability, stakeholder engagement, adaptability, and measurable impact, provide a robust framework for fostering environmental stewardship and social responsibility in the sports sector. With the right approach, sport organizations can become leaders in sustainability, setting a positive example for other sectors and contributing to a more sustainable future for all.

3.3.2. Strategies respecting regional differences

Regions vary widely in terms of climate, available resources, economic conditions, and cultural attitudes towards sustainability. Tailoring Circular Design (CD) strategies to fit these regional contexts ensures their feasibility and effectiveness, enabling sport organizations to adopt practices that are both practical and impactful within their specific environments.

Climate considerations

Climate significantly influences the type of sustainability strategies that are most effective in different regions.

- Northern Europe: in colder climates, energy efficiency and heating are critical concerns. Strategies to address these issues include improving insulation in sports facilities to reduce heat loss, thereby lowering energy consumption. Utilizing geothermal energy, which harnesses the Earth's natural heat, can provide a sustainable and efficient heating solution. Additionally, promoting indoor sports during the winter months can help manage energy usage more effectively, as these sports can be conducted in controlled environments where energy efficiency measures can be optimized.
- Southern Europe: in contrast, regions with hotter climates need to focus on water conservation and cooling. Implementing greywater systems, which recycle water from sinks, showers, and washing machines for irrigation and other non-potable uses, can significantly reduce water consumption. Drought-resistant landscaping, involving the use of native plants that require minimal water, can also help conserve water resources. For cooling, solar cooling technologies that use solar energy to power air conditioning systems offer a sustainable alternative to traditional methods, reducing the reliance on electricity from non-renewable sources.

Economic conditions

Economic conditions play a pivotal role in determining the types of sustainability strategies that are feasible for different regions.

- High-Income regions: these regions can leverage advanced technologies and innovations for sustainability. For example, smart energy systems that use sensors and automation to optimize energy usage can be implemented in sports facilities to reduce waste and improve efficiency. High-efficiency waste processing technologies can enhance recycling and composting efforts, reducing landfill use. Sustainable architectural designs, incorporating features such as green roofs and energy-efficient materials, can minimize the environmental impact of new and existing sports facilities.
- Lower-Income regions: in regions with fewer financial resources, cost-effective and scalable solutions are essential. Community-based recycling programs, which mobilize local residents to participate in recycling efforts, can be both effective and affordable. Sourcing materials locally reduces transportation emissions and supports the local economy. Educational campaigns to raise awareness about sustainability practices can engage communities and encourage behaviour changes that support environmental goals.

Cultural attitudes and practices

Cultural attitudes and practices towards sustainability vary across regions, influencing the acceptance and success of CD strategies.

- Western Europe: in regions where there is a strong emphasis on community and fan involvement, sustainability strategies can leverage this cultural trait. Fan engagement programs that involve supporters in sustainability initiatives, such as waste sorting at events or volunteering for environmental projects, can drive community participation. Sustainability certifications for sports events can signal a commitment to environmental stewardship, attracting environmentally conscious fans and sponsors. Partnerships with local environmental organizations can enhance the effectiveness of sustainability initiatives through shared resources and expertise.

- Eastern Europe: in regions where building capacity and infrastructure for sustainability is a priority, strategies need to focus on foundational efforts. Training programs for sports administrators can build the knowledge and skills necessary to implement and manage sustainability projects. Developing local recycling facilities can provide the infrastructure needed for effective waste management. Government support, through policies and funding, can play a crucial role in enabling sport organizations to adopt sustainable practices and build the necessary infrastructure.

Considering these regional differences in climate, economic conditions, and cultural attitudes, the framework ensures that CD strategies are tailored to the specific needs and contexts of sport organizations. This tailored approach enhances the feasibility and effectiveness of sustainability efforts, promoting the widespread adoption of CE principles in diverse environments.

3.3.3. Highlighting Success Stories

While general principles provide a strong foundation for adapting Circular Design (CD) strategies to various contexts, real-world success stories offer valuable insights into how these strategies can be effectively implemented. These stories demonstrate how diverse organizations have tailored CD strategies to their unique circumstances, overcoming challenges and achieving significant results. The following examples highlight the versatility and impact of CD strategies across different environments and organizational types, providing inspiration and practical guidance for others looking to implement similar initiatives.

Success story 1: adaptive energy solutions in multi-sport facilities

Context: A multi-sport facility located in a temperate region faced rising energy costs and sought to reduce its environmental impact by embracing sustainable practices. The facility needed a solution that would not only cut costs but also align with broader regional sustainability goals.

Approach: The facility adopted a comprehensive energy strategy that combined renewable energy sources with energy-efficient technologies. Solar panels and wind turbines were installed to generate clean energy on-site, while energy-efficient LED lighting and modern heating systems replaced outdated, high-consumption equipment. Additionally, the facility implemented smart energy management systems to monitor and optimize energy use in real time.

Outcome: These initiatives led to a 40% reduction in overall energy consumption, significantly lowering operational costs and reducing the facility's carbon footprint. The success of this strategy has set a benchmark for other multi-sport facilities in the region, demonstrating the viability of integrating renewable energy and efficiency measures in a cost-effective manner.

Success story 2: waste reduction in community sports clubs

Context: A community sports club located in a densely populated urban area struggled with managing waste generated during large sporting events. The club recognized the need to address this issue to enhance its sustainability profile and reduce its environmental impact.

Approach: The club introduced a comprehensive waste management strategy focused on reducing waste at the source and maximizing recycling efforts. This included setting up waste sorting stations throughout the venue, launching educational campaigns to inform members and

visitors about proper waste disposal, and establishing partnerships with local recycling companies to ensure that waste materials were processed efficiently. The club also replaced single-use items with reusable alternatives wherever possible.

Outcome: The waste reduction program resulted in a 60% decrease in the volume of waste sent to landfills. The club's efforts not only improved its environmental performance but also positioned it as a leader in grassroots sustainability within the local community. Other organizations in the city have since adopted similar practices, further amplifying the impact of the club's initiatives.

Success story 3: water conservation in arid regions

Context: A sports complex in an arid region faced critical water shortages that threatened its operations. The facility required a solution to conserve water without compromising the quality of its services or the comfort of its users.

Approach: The sports complex implemented a multi-faceted water conservation strategy. Key measures included the installation of greywater recycling systems, which allowed water from showers and sinks to be reused for irrigation and other non-potable purposes. The complex also introduced rainwater harvesting systems to capture and store rainwater, which was then used for landscaping. To further reduce water use, the facility switched to drought-resistant plants for its landscaping and educated its staff and members on water-saving practices.

Outcome: Through these initiatives, the sports complex reduced its water consumption by 50%, ensuring the long-term sustainability of its operations. The project also contributed to the region's overall water conservation efforts, demonstrating how sports facilities can play a critical role in addressing environmental challenges specific to their location.

Success story 4: circular product design in sports equipment

Context: An organization in a developed region sought to minimize the environmental impact of the sports equipment it used and distributed. The organization aimed to incorporate Circular Economy principles into its product lifecycle, from design to disposal.

Approach: The organization collaborated with equipment manufacturers to redesign products using recycled and sustainable materials. This included sourcing materials from post-consumer waste and ensuring that new products were fully recyclable at the end of their life cycle. Additionally, the organization introduced a take-back program, allowing users to return old equipment, which was then repurposed or recycled into new products.

Outcome: The initiative led to a 30% reduction in material waste and set a new standard for sustainable product design within the sports industry. The take-back program also helped raise awareness among users about the importance of responsible consumption and disposal. This approach not only minimized the environmental impact of the organization's operations but also provided a replicable model for other sports organizations seeking to adopt Circular Economy principles.

Combining the general principles of Circular Design with specific success stories, this section illustrates how sport organizations can effectively tailor CD strategies to their unique contexts. Whether addressing energy use, waste management, water conservation, or product design, these strategies offer adaptable solutions that can be implemented across diverse environments.

The success stories presented here serve as powerful examples of how organizations can overcome challenges and make meaningful progress toward sustainability. By learning from these examples, other sport organizations can be inspired to adopt similar practices, contributing to a broader movement toward environmental stewardship and social responsibility within the sports sector.

3.3. Practical actions and toolkit

Implementing Circular Design (CD) strategies within local and regional sport organizations requires practical actions and accessible tools that cater to the unique needs of these entities. This section of the framework provides a comprehensive set of practical steps and resources designed to facilitate the adoption of Circular Economy (CE) principles. It also includes considerations for psychological and psychosocial well-being and addresses the specific needs of older grassroots members to ensure an inclusive approach to sustainability.

Practical steps for implementing CD strategies

1. **Initial assessment and planning**:
    - ✓ Conduct a sustainability audit: assess current practices to identify areas for improvement. This audit should cover waste management, energy use, water consumption, and material sourcing.
    - ✓ Set clear goals and objectives: define specific, measurable, achievable, relevant, and time-bound (SMART) goals for sustainability initiatives.
    - ✓ Develop an action plan: outline the steps needed to achieve these goals, including timelines, responsible parties, and required resources.
2. **Engage stakeholders**:
    - ✓ Form a sustainability committee: include representatives from various departments, including management, operations, athletes, and community members.
    - ✓ Conduct stakeholder workshops: gather input and foster buy-in from all relevant stakeholders, including fans and local community groups.
    - ✓ Communicate the vision: clearly articulate the benefits of CD strategies and how they align with the organization's values and mission.
3. **Implement waste reduction programs**:
    - ✓ Establish recycling and composting systems: set up recycling stations and composting facilities for organic waste.
    - ✓ Reduce single-use plastics: replace single-use items with reusable alternatives, such as metal water bottles and biodegradable utensils.
    - ✓ Promote waste reduction: educate members and fans about proper waste disposal and the importance of reducing waste.

4. **Enhance energy efficiency**:
    - ✓ Upgrade lighting systems: install energy-efficient lighting, such as LED bulbs, throughout facilities.
    - ✓ Optimize heating and cooling systems: implement smart thermostats and regular maintenance schedules to improve efficiency.
    - ✓ Utilize renewable energy sources: install solar panels, wind turbines, or other renewable energy systems to reduce reliance on non-renewable sources.
5. **Improve water management**:
    - ✓ Install low-flow fixtures: use low-flow toilets, faucets, and showerheads to reduce water usage.
    - ✓ Implement greywater systems: recycle water from sinks and showers for irrigation and toilet flushing.
    - ✓ Use drought-resistant landscaping: plant native, drought-resistant species to minimize the need for irrigation.
6. **Promote sustainable procurement**:
    - ✓ Source eco-friendly materials: choose materials with low environmental impact, such as recycled or biodegradable products.
    - ✓ Work with sustainable suppliers: partner with vendors who adhere to sustainable practices and ethical standards.
    - ✓ Encourage Local Sourcing: procure goods and services locally to reduce transportation emissions and support the local economy.

Tools for supporting implementation

1. **Sustainability toolkit**:
    - ✓ Guidelines and checklists: provide step-by-step guides and checklists for implementing various sustainability initiatives.
    - ✓ Templates and forms: offer templates for sustainability audits, action plans, and progress reports.
    - ✓ Educational materials: develop brochures, posters, and digital content to educate members and fans about sustainability efforts.
2. **Monitoring and evaluation systems**:
    - ✓ Key performance indicators (KPIs): establish KPIs to measure progress in areas such as waste reduction, energy savings, and water conservation.
    - ✓ Tracking software: use software tools to monitor resource usage and track the effectiveness of sustainability initiatives.

- ✓ Feedback mechanisms: implement systems for collecting feedback from stakeholders to continually improve sustainability practices.

Psychological and psychosocial well-being

1. **Mental health support**:
   - ✓ Provide training: offer training for staff and coaches on recognizing and addressing mental health issues.
   - ✓ Create support networks: establish peer support groups and provide access to mental health professionals.
   - ✓ Promote work-life balance: encourage policies and practices that support a healthy work-life balance for all members.
2. **Inclusive programs**:
   - ✓ Engage diverse groups: ensure that sustainability initiatives are inclusive and accessible to all members, including those from diverse backgrounds.
   - ✓ Foster community spirit: promote activities that build community cohesion and a sense of belonging.

Life span considerations for older grassroots members

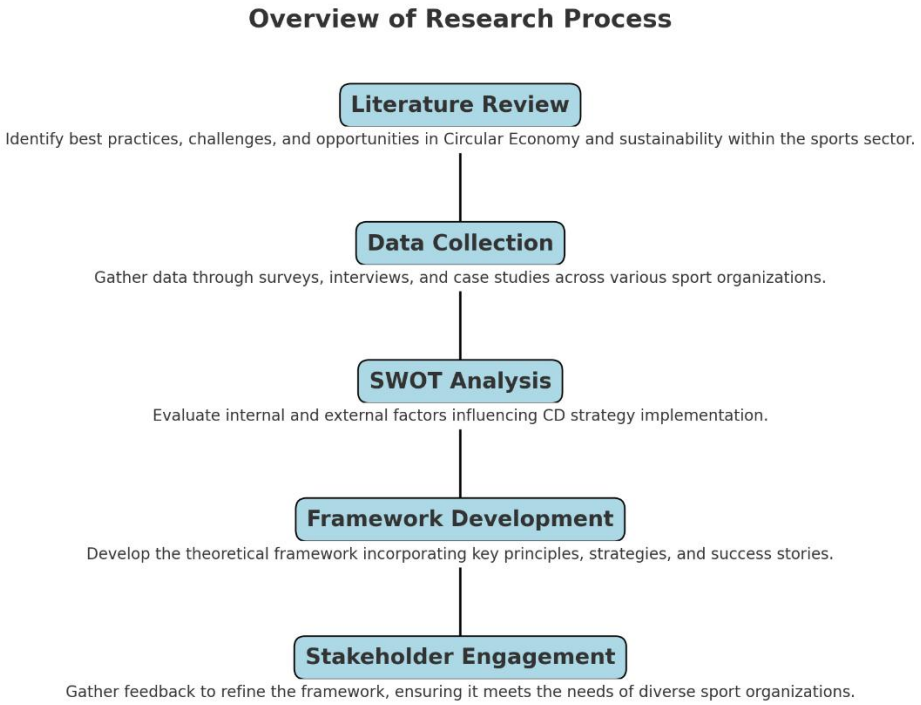
1. **Accessible facilities**:
   - ✓ Design for accessibility: ensure that facilities are accessible to older members and those with disabilities.
   - ✓ Provide appropriate equipment: offer equipment and facilities that cater to the needs of older members, such as lower-impact exercise options.
2. **Intergenerational programs**:
   - ✓ Promote intergenerational activities: create programs that encourage participation from both older and younger members, fostering knowledge transfer and community bonding.
   - ✓ Highlight heritage and traditions: celebrate the contributions of older members by incorporating traditional sports and activities that have historical significance.
3. **Health and wellness programs**:
   - ✓ Offer tailored fitness programs: develop fitness programs specifically designed for older adults, focusing on flexibility, strength, and balance.
   - ✓ Provide health screenings: organize regular health screenings and wellness workshops to support the physical health of older members.

By implementing these practical steps and utilizing the provided tools, local and regional sport organizations can effectively integrate CD strategies into their operations. This holistic approach ensures that sustainability efforts are inclusive, address psychological and

psychosocial well-being, and consider the unique needs of older grassroots members, ultimately fostering a more sustainable and resilient sports sector.

4. Methodology

The development of the theoretical framework for the application of Circular Design (CD) strategies in local and regional sport organizations necessitates a robust methodology. This methodology is grounded in a comprehensive context analysis of environmental and social challenges, and a SWOT analysis conducted in three distinct European countries: Spain, Italy, and Lithuania. These analyses form the backbone of the framework, ensuring that the proposed strategies are both relevant and effective.



The research process for developing the Circular Design (CD) framework involved the following key stages:

1. **Literature review:** the first stage involved a comprehensive review of existing literature on Circular Economy (CE) and sustainability practices within the sports sector. This review aimed to identify best practices, challenges, and opportunities relevant to sport organizations, ensuring a solid theoretical foundation for the framework.
2. **Data collection:** in the second stage, qualitative and quantitative data were gathered through surveys, interviews, and case studies involving sport organizations across Spain, Italy, and Lithuania. This data collection provided insights into the specific environmental and social challenges faced by these organizations, allowing for a detailed understanding of the unique contexts within each country.
3. **SWOT analysis:** a structured SWOT analysis was conducted to evaluate the internal strengths and weaknesses of sport organizations, as well as the external opportunities and threats they encounter. This analysis was crucial for identifying strategic areas where Circular Design strategies could be most effectively implemented.

4. **Framework development:** based on the findings from the literature review, data collection, and SWOT analysis, the theoretical framework was developed. This stage involved integrating best practices from both the EU and global levels to ensure that the framework aligns with broader sustainability goals and innovations.
5. **Stakeholder engagement:** throughout the research process, key stakeholders—including sport clubs, policymakers, and sustainability experts—were actively engaged. Their feedback and insights were incorporated into the framework, ensuring that the strategies developed are practical, contextually relevant, and have broad support.

Employing this methodological approach, the framework aims to provide tailored strategies and tools that are effective, impactful, and sustainable in the long term. The insights gained from the context and SWOT analyses will guide the development of practical recommendations and implementation plans that can be readily adopted by sport organizations in Spain, Italy, and Lithuania, fostering a transition towards a circular and sustainable sport sector.

4.1. Environmental and social challenges

The environmental challenges faced by local and regional sport organizations are multifaceted and significant. These challenges include high energy consumption, substantial waste generation, and the extensive use of non-renewable resources. Sporting events and facilities often contribute to large carbon footprints due to energy-intensive operations, frequent travel, and the use of single-use plastics and other disposable materials. Additionally, the maintenance of sports infrastructure, such as stadiums and training facilities, involves substantial water and energy use, further exacerbating environmental impacts. To address these challenges, the application of Circular Design (CD) strategies can help reduce waste, promote recycling, and enhance energy efficiency, contributing to a more sustainable operation of sport organizations.

On the social front, sport organizations must navigate issues such as inclusivity, community engagement, and health promotion. Sports have a unique capacity to bring together diverse groups, fostering social cohesion and promoting physical and mental health. However, achieving these social benefits requires intentional strategies to ensure that sports are accessible to all, regardless of socio-economic background, age, gender, or ability. Additionally, sport organizations must address the potential negative social impacts of their operations, such as displacement of communities due to infrastructure projects or the exclusion of marginalized groups from participation. By integrating CD principles, sport organizations can develop more inclusive practices and community-oriented initiatives, ensuring that the social benefits of sports are maximized and equitably distributed.

The holistic approach to sustainability in sport organizations must therefore balance both environmental and social dimensions. This balance ensures that the pursuit of ecological sustainability does not come at the expense of social equity, and vice versa. For example, implementing energy-saving measures in sport facilities not only reduces environmental impact but can also lower operating costs, making sports more affordable and accessible to local communities. Similarly, promoting the use of sustainable materials in sports equipment and infrastructure can create healthier environments for athletes and spectators, enhancing the overall experience and well-being.

To effectively address these environmental and social challenges, sport organizations need to adopt comprehensive sustainability strategies that are tailored to their specific contexts. This involves conducting thorough assessments of their environmental impacts and social dynamics, engaging with a wide range of stakeholders, and continuously monitoring and adjusting their practices. By doing so, sport organizations can ensure that they contribute positively to both ecological sustainability and social well-being, setting a precedent for other sectors to follow. Integrating circular economy principles into these strategies not only enhances sustainability but also drives innovation and resilience, enabling sport organizations to thrive in a rapidly changing world.

4.2. SWOT analysis

The SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis serves as a pivotal tool in assessing the current landscape and future potential of Circular Economy (CE) and Circular Design (CD) implementation within the sport sectors of Spain, Italy, and Lithuania. By systematically evaluating the internal and external factors that shape these sectors, the analysis provides a comprehensive framework to identify areas of strength and vulnerability, as well as opportunities for growth and potential threats. This holistic understanding enables stakeholders to craft more effective strategies that advance sustainability and resilience within their unique contexts.

Summary of SWOT Analysis

The accompanying diagram offers a visual summary of the SWOT analysis, providing a clear overview of the key factors that influence the adoption and success of Circular Design strategies in the sport sectors of Spain, Italy, and Lithuania. The analysis reveals several common themes across these countries, while also highlighting distinct characteristics and challenges specific to each region.

Strengths:

- **Strong community engagement:** across all three countries, there is a robust culture of community involvement in sports, which provides a solid foundation for promoting sustainability initiatives. This engagement can be leveraged to foster grassroots support for Circular Design strategies.
- **Existing infrastructure:** the presence of established sports facilities and networks, especially in Italy and Spain, creates opportunities to integrate Circular Economy principles into existing operations without needing to build from scratch.
- **High interest in sustainability:** there is a growing recognition among stakeholders—ranging from policymakers to athletes—of the importance of sustainability in sports. This heightened awareness supports the adoption of Circular Design principles and the implementation of sustainable practices.
- **Progressive eco-innovation:** Italy and Spain, in particular, have made significant strides in eco-innovation, with established recycling systems and initiatives that promote the use of sustainable materials. These advancements position them as leaders in integrating Circular Economy practices within the sports sector.

Weaknesses:

- **Limited financial resources:** a common challenge across all three countries is the limited availability of financial resources, which hampers the ability of sports organizations to invest in sustainability initiatives. Smaller organizations, in particular, struggle to secure the funding needed to implement Circular Design strategies.
- **Lack of technical expertise:** there is a notable gap in technical knowledge and expertise related to Circular Economy practices, especially within smaller organizations. This gap makes it difficult to design and execute effective Circular Design initiatives.
- **Resistance to change:** traditional sports organizations often exhibit resistance to adopting new practices, particularly those that challenge established operational models. This resistance can slow the pace of transition toward more sustainable practices.
- **Regulatory complexities:** the complexity of navigating multiple layers of regulation—especially when they are fragmented between national and regional levels—poses a significant barrier to implementing comprehensive Circular Design strategies.

Opportunities:

- Growing environmental awareness: public concern for environmental issues continues to rise, creating a supportive environment for the adoption of Circular Economy practices. Sport organizations can capitalize on this trend by aligning their initiatives with public expectations for sustainability.
- EU funding mechanisms: significant opportunities exist to tap into EU funding, such as the European Green Deal and Horizon Europe, which provide financial support for green initiatives. These funding streams can help offset the costs of adopting Circular Design strategies.
- Technological advancements: emerging technologies in recycling, energy efficiency, and sustainable product design offer new avenues for innovation. These advancements can be harnessed to develop more efficient and effective Circular Design solutions tailored to the sports sector.
- Partnerships and collaboration: the potential to form partnerships with environmental organizations, academic institutions, and industry leaders offers a pathway to share knowledge, resources, and best practices, thereby accelerating the adoption of Circular Design principles.

Threats:

- Economic instability: economic uncertainties, both at the national and EU levels, pose a threat to the funding and resources available for Circular Economy initiatives. Budget cuts and financial pressures can undermine the sustainability of these efforts.
- Regulatory shifts: changes in regulations, particularly those that increase compliance costs, could create additional hurdles for organizations attempting to implement Circular Design strategies. Smaller organizations may find these shifts particularly challenging to navigate.
- Environmental risks: ongoing environmental risks, such as climate change and resource scarcity, threaten the long-term viability of sports activities. These risks necessitate

proactive adaptation strategies, which may require significant investment and innovation.

- Global competition: the need to remain competitive in a global sports market that increasingly values sustainability adds pressure on organizations to continuously innovate. Failure to do so could result in a loss of reputation or market share.

Country-Specific SWOT Analysis

Spain's SWOT analysis reveals a landscape rich with potential but also marked by significant challenges. The country's strengths include a robust policy framework, exemplified by the Circular Economy Strategy 2030, and strong regional initiatives focused on innovation. However, challenges such as resource constraints and regulatory complexities hinder the full realization of Circular Design principles. Opportunities lie in leveraging innovation and accessing EU funding, while economic uncertainties and global competition pose significant threats.

In Italy, the analysis highlights substantial progress in waste management and eco-innovation, supported by comprehensive legislative frameworks such as the National Strategy for Sustainable Development. However, early-stage adoption of Circular Design principles, combined with limited resources and regulatory constraints, presents challenges. The potential for collaboration among stakeholders offers significant opportunities, though economic constraints and technological risks continue to threaten progress.

Lithuania's SWOT analysis points to emerging trends in sustainability, with strengths in integrating sustainable features within sports infrastructure. However, the sector remains in the early stages of adopting Circular Economy practices, necessitating greater education, capacity-building, and support. Opportunities for collaboration and knowledge sharing are strong, but economic and regulatory challenges threaten the sector's progress.

4.3. Stakeholder engagement

Stakeholder engagement is a cornerstone of the IDEATION project, ensuring that Circular Design (CD) strategies are developed with direct input from those who will implement and benefit from these innovations. The inclusion of key stakeholders, such as local and regional sports organizations, not only enriches the project's outcomes but also strengthens the relevance and applicability of the proposed strategies.

A significant addition to the IDEATION project is the inclusion of the Sailing Club as an "Associated Entity." This engagement highlights the importance of incorporating diverse sports organizations into the framework, particularly those with unique operational contexts, such as nautical and water-based sports.

Role of the Saling Club in the IDEATION Project

The Sailing Club contributed to the IDEATION project by working closely with the University of the Balearic Islands, a key partner in the initiative. Their involvement was aimed at exploring the design and applicability of Circular Design strategies within the context of nautical sports, a sector that presents both distinct challenges and opportunities for sustainability.

Specifically, the Saling Club's participation was focused on the following areas:

- **Application of CD strategies:** the club served as a case study for the practical application of Circular Economy principles in nautical sports. This involved evaluating current practices and identifying opportunities to integrate sustainability measures, such as waste reduction, resource efficiency, and the use of eco-friendly materials in club operations.
- **Knowledge sharing and best practices:** the collaboration enabled the exchange of knowledge and best practices between the Sailing Club, the University of the Balearic Islands, and other stakeholders within the IDEATION project. This ensured that the strategies developed were both innovative and grounded in real-world applications.
- **Community engagement:** as a key local entity, the Sailing Club engaged its members and the broader community in discussions around sustainability and the benefits of adopting Circular Design strategies. This helped raise awareness and foster a culture of sustainability within the club and its surrounding area.

Benefits of stakeholder engagement

The inclusion of the Sailing Club as a stakeholder in the IDEATION project exemplifies the value of engaging diverse organizations in the development of Circular Design strategies. Their involvement not only provided insights specific to nautical sports but also contributed to the broader goals of the project by:

- Enhancing the diversity and relevance of the CD strategies developed.
- Facilitating the adoption of sustainability practices across different types of sport organizations.
- Strengthening the connection between academic research and practical implementation within local communities.

4.4. CASE STUDY: The nautical clubs as good examples of CE and holistic approach

The circular economy is a model aimed at eliminating waste and promoting the continual use of resources. It contrasts with the traditional linear economy, which follows a 'take-make-dispose' approach. In the context of nautical clubs in Spain, implementing a circular economy can involve practices such as recycling materials used in boat maintenance, promoting eco-friendly boating, and encouraging the use of renewable energy.

This model serves as an example because the process of proposing, obtaining, and renewing licenses at local, regional, and national levels requires effective management across various areas, backed by documentary evidence. These requirements may generally include:

1. Regulatory compliance: clubs must adhere to national and local regulations governing maritime activities, environmental protections, and zoning laws.
2. Safety standards: compliance with safety regulations concerning boat operations, including lifeguard provisions and equipment standards.
3. Environmental impact assessment: clubs may need to evaluate the environmental impact of their operations and demonstrate measures to minimize harm.
4. Operational guidelines: establishing rules for the use of facilities, member conduct, and boat maintenance, which may also include sustainability practices.

5. Community engagement: involving local communities and stakeholders in decision-making processes is often crucial for obtaining and maintaining licenses.
6. Insurance requirements: clubs may need to carry liability insurance and be prepared to show proof of coverage.

Following this general overview, the document will outline specific actions taken by a nautical club, namely the Real Club Náutico de Palma (RCNP), located in Mallorca, Spain. RCNP combines commercial, social, and sporting activities, and its approach serves as a practical example of integrating circular economy principles in a nautical club setting.

4.4.1. Environmental Benefits

Input from Dr. Salud Deudero, Director of the Balearic Islands Oceanographic Institute and a member of the Club's Board.

Waste Reduction:

• Recycling programs: implementation of recycling and composting programs at sports facilities and events.

The club currently has several composting containers, provided through collaboration with the Port Authority of Palma, which is responsible for collecting and processing the compost. Efforts are underway (as of 2025) to expand this initiative to include club members (particularly users of the boats moored at the club) and participants in regattas and events, both external and internal to the club.

• Reduction of single-use plastics: elimination of single-use plastics and promotion of reusable alternatives.

Since 2019, RCNP has taken action to eliminate single-use plastics, starting with the major event Copa del Rey (https://www.regatacopadelrey.com/home). Currently, the club is promoting reusable alternatives at all events and in the daily activities of users and staff. This includes installing drinking water stations to reduce the consumption of single-use plastic bottles year-round, with plans to provide this service for all boats during major events. RCNP has also committed to eliminating single-use plastics from all social and sporting events, aiming for complete elimination by 2030.

• Waste audits: conducting periodic waste audits to identify and address waste sources.

RCNP collaborates with external auditors to conduct regular waste audits as part of its environmental management system, ensuring compliance with ISO14001 (https://www.iso.org/standard/60857.html) and EMAS (https://enor.com/certificacion/medio-ambiente/reglamento-emas) standards. These audits help identify potential issues within the waste management system, whether related to general waste, packaging, plastics, or hazardous materials. Through proper management, the club seeks to minimize waste generation and establish an efficient recycling process, thereby reducing its environmental impact.

Reducing the Carbon Footprint

• Energy efficiency: use of energy-efficient lighting, heating, and cooling systems in sports facilities.

Over the past few years, we have implemented energy-saving measures across our facilities, including the installation of low-consumption LED lighting throughout the port and social building. With upcoming renovations and the installation of new equipment, we aim to further improve the efficiency of our air conditioning and heating systems.

• Renewable energy: integration of solar, wind, and other renewable energy sources at sports facilities and training centers.

The club currently has a solar panel system that supplies power to the captaincy building in the port. If the concession is renewed, we plan to expand our use of renewable energy, including increased solar capacity as well as the potential integration of wind and tidal energy systems.

• Carbon offsetting: investment in carbon offset projects to compensate for emissions.

Since 2019, we have been calculating our carbon footprint and actively offsetting emissions. This initiative not only covers our facilities but also extends to our major events, such as the Copa del Rey - MAPFRE, PalmaVela, and Ciutat de Palma. For each of these events, the RCNP offsets its carbon footprint to mitigate the environmental impact.

Conservation of Natural Resources

• Sustainable Use of Materials: utilization of recycled and biodegradable materials in sports equipment and infrastructure.

We actively encourage our athletes and users to adopt recycled materials in their sports equipment. Additionally, we emphasize the importance of using biodegradable products, particularly for boat cleaning and maintenance. These products must be environmentally safe and not disposed of in the sea, to prevent pollution.

• Water Conservation: implementation of water-saving measures, including rainwater harvesting and efficient irrigation systems for sports facilities.

Currently, water conservation efforts rely on the use of potable water where feasible, such as for cleaning boats and surfaces. We are exploring more advanced water-saving strategies, including: 1) the implementation of rainwater harvesting systems; and 2) the installation of a desalination plant to supply the entire port and club, reducing dependence on the local water distribution network.

4.4.2. Economic Benefits

Input provided by Manu Fraga, Financial and Sporting Director of the RCNP

• Cost Savings:

Reduced Operating Costs: lower energy and water bills through efficient resource use.

The RCNP has been making continuous improvements to port facilities to increase energy efficiency. These measures include:

- Installation of low-consumption LED light bulbs throughout the premises, with ongoing efforts to raise awareness among staff and users about the importance of responsible energy consumption.
- Implementation of water monitoring systems in high-consumption areas of the port. This enables remote management of any leaks or cases of excessive water usage.
- Use of solar panels in the port area to reduce the energy consumption of water heaters.

We are also exploring new projects under the upcoming license concession, including the installation of a desalination plant, to further reduce resource consumption.

Savings in Waste Management: Lower costs associated with waste disposal and management.

Since 2019, the club has been committed to eliminating single-use plastics at social and sporting events. Measures taken include:

1. Installation of drinking water stations to reduce plastic bottle usage.

2. Use of compostable or reusable tableware in catering, cafeterias, and restaurants.

3. Comprehensive awareness campaigns with athletes, members, and partners, in collaboration with associations, government bodies, and NGOs, to promote the elimination of plastic use. This is crucial, as plastics pose a significant threat to marine life.

Annual cost savings from these initiatives are calculated and contribute to a substantial portion of the maintenance budget.

Additionally, we conduct microplastic studies in collaboration with the Oceanographic Institute and the University of the Balearic Islands. These studies assess the impact of regattas and nautical competitions on the marine environment, providing valuable data to inform actions aimed at minimizing this issue.

We have also established green points throughout the port for recycling plastics, paper, glass, and hazardous materials (such as contaminated plastics, oily water, metal waste, batteries, and flares). This ensures proper recycling and prevents harmful materials from ending up in the sea.

New Sources of Income

• Recycling and upcycling: generating income through the sale of recyclable materials and upcycled products.

With the renewal of the license, the club plans to generate income by selling recyclable materials, such as uncontaminated plastics, chains, and ropes, which can be repurposed into new products. This approach not only extends the lifespan of these materials but also reduces the energy costs associated with manufacturing new items from raw materials.

• Sustainable products: offering eco-friendly products and merchandise to fans and participants.

The RCNP is increasingly incorporating eco-friendly and biodegradable products into daily operations, particularly for cleaning, to minimize air and water pollution. However, nautical clothing and equipment must meet strict quality and safety standards for sports, which are closely monitored to ensure compliance.

• Maintenance and repair services: establishing repair and maintenance services for sports equipment to extend its useful life.

Extending the lifespan of equipment used on a daily basis is a priority. This includes regular maintenance of inflatable boats to avoid frequent replacements and the upkeep of school boats, ensuring they can be passed from one athlete to another. Proper and consistent maintenance helps reduce the need for raw materials and prolongs the life of equipment, thereby cutting costs and minimizing environmental impact.

The RCNP is also exploring initiatives to recycle boats at the end of their useful life, as detailed in Annex 2. Additionally, we are collaborating with regional organizations to develop new job opportunities related to the recycling of nautical materials.

• Second-hand markets: creating markets for second-hand sports equipment and clothing.

The club is considering the establishment of a second-hand market for sports equipment. This would allow unused equipment, whether owned by the club or by members and occasional sailors, to be repurposed and sold. By facilitating the reuse of existing items, we can reduce the need for manufacturing and purchasing new products, thus lowering the overall environmental impact.

However, we recognize the potential for a perceived "stigma" associated with using second-hand equipment, which could lead to the impression of a "tiered" system among clubs. To address this, we are looking into compensatory measures to ensure that all participants feel comfortable and supported, regardless of the equipment they use.

4.4.3. Social Benefits

Input from Miquel Salom, Responsible for the Psychosocial Aspects of the RCNP

Enhanced Community Well-Being

• Health and psychological support: "VALUES PROGRAM"

The RCNP has developed a comprehensive "Values Program" that includes training for coaches, personalized consultations with a specialist psychologist, and thematic conferences led by experts and prominent sports figures. The program aims to instill core values across all levels of the club, involving directors, executives, coaches, staff members, athletes, and their parents. Through these conferences, participants either speak or attend to build a shared understanding of essential values in sports.

• Health and fitness: oromoting physical activity through sustainable sports programs accessible to all.

The RCNP offers a range of introductory, advanced, and competitive nautical sports activities, allowing users to engage at their preferred level. Additionally, the club provides other health-promoting activities, such as Pilates, swimming, and gym classes. Many of these activities are subsidized, making them affordable, with costs often kept symbolic. While sailing and canoeing are open to anyone, certain activities, like Pilates and gym sessions, are reserved for club members.

• Environmental education: community participation in education and sustainability practices.

As part of the RCNP's "Values" initiative, the club regularly implements various programs to promote environmental sustainability, including:

- Coastal clean-up activities.

- Selective waste collection at club facilities.

- Installation of drinking water dispensers to encourage the use of reusable bottles.

- Integration of sustainability concepts into the training courses at the sailing and canoeing schools.

Promotion of physical activity

• Accessible Sports Programs: development of inclusive programs to encourage participation from diverse community members.

The RCNP collaborates with charitable organizations to offer disadvantaged groups opportunities to engage in water sports, using sport as a tool for social integration. For example:

- Refugees from the war in Ukraine.

- Participants from the NGO Monti Sion Solidaria.

• Public participation: organizing events and workshops to promote the benefits of an active lifestyle.

Throughout the year, the RCNP organizes a variety of sports competitions, ranging from local social regattas, which allow recreational boat owners to participate, to prestigious international races that attract top sailors and canoeists worldwide (e.g., Copa del Rey, Ciutat de Palma Canoeing, Trophy Princesa Sofia, and various World, Spanish, and Balearic Championships). In 2024, the RCNP has organized:

- 27 cruising regattas.

- 16 light sailing races.

Education and awareness about sustainability

• Partnerships with schools: collaborating with educational institutions to integrate sustainability into sports education.

During the school year, the RCNP conducts "Sea Baptisms," offering students from local schools their first experience with the sea. Students receive both theoretical and practical instruction, introducing them to sailing and canoeing while emphasizing sustainable use of equipment and resources.

• Regulatory overview: understanding relevant laws and regulations, including environmental standards and sustainability guidelines.

According to the Spanish Ports Act of 1986, yacht clubs like the RCNP are non-profit entities. Revenues generated from using public port space must be reinvested in promoting sport and contributing to the community. The RCNP exemplifies this mandate by hosting extensive

sporting, recreational, and competitive activities in both sailing and canoeing, making it one of the most active yacht clubs worldwide. Compliance with local, regional, and national environmental regulations is essential for maintaining and renewing the club's operational license.

• Financial implications: costs and savings associated with adopting circular practices, potential funding and incentives for sustainability projects, and long-term financial benefits.

The RCNP invests a significant portion of its annual budget in promoting sport, acquiring equipment to support over 200 federated athletes, and enabling more than 2,300 sailing and 500 canoeing users to begin their nautical journeys each year. Additionally, the club allocates funds for organizing social and competitive sports events, including those at the highest international levels.

As highlighted in the Economic Benefits section, the integration of circular economy (CE) and sustainable practices has been an asset to the club's budget, encouraging the board to continue and expand these initiatives.

• Case studies: examples of organizations successfully overcoming legal and financial challenges in implementing circular economy practices.

The RCNP is currently navigating a challenging period regarding the renewal of its concession for public port space due to legal obstacles. This situation has led the club to initiate various actions to demonstrate its strong community support:

- A mass demonstration in front of the Balearic Port Authority, attended by over 2,000 people.

- Collection of more than 5,000 signatures in support of the RCNP.

The strong public backing highlights the community's appreciation for the club's contributions, countering the traditional perception of yacht clubs as environmental hazards.

• Stakeholder engagement: importance of collaboration with local governments, businesses, and communities; strategies to foster partnerships and leverage resources.

The RCNP has established agreements with various organizations to promote sports, inclusion, research in sports sciences, and efficient sports management, including:

- NGO Monti Sion Solidaria: integration of disadvantaged groups.

- University of the Balearic Islands (UIB): agreements for research in sports sciences, promotion of values through sport, and hosting psychology interns.

- Catholic University of Murcia (UCAM), European University (UE), and ESERP Business School: hosting students for internships in sports psychology and business management.

- Felipe Moreno University: internships in Physical Activity and Sports Sciences.

- Young Navigators: inclusion and support for children from disadvantaged backgrounds.

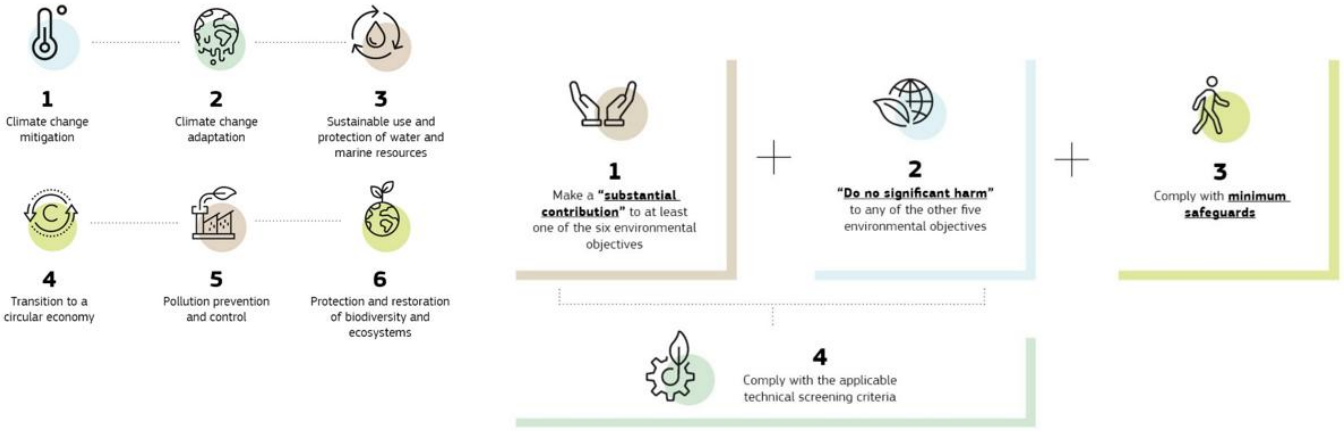
- Food Bank Mallorca: collaboration on food collection and distribution.

- Association of Mediterranean Sailors: advocacy for sailors' interests and conservation of the marine environment.

4.4.4. Recommendations

First steps

• Adhere to the EU Taxonomy levels for Circular Economy (CE) application: follow the guidelines outlined in the EU Taxonomy for sustainable finance to ensure compliance and promote best practices (see Annex 1 for details).



Source: https://ec.europa.eu/sustainable-finance-taxonomy/

• Collaborate with other small clubs: establish partnerships with other small clubs to:

- ✓ Share costs and resources
- ✓ Reduce any "stigma" or resistance among athletes, families, and officials towards adopting CE practices
- ✓ Enhance social and economic benefits through shared initiatives

• Engage stakeholders for support: once the above actions are implemented or underway, seek stakeholders to help sustain and further develop the CE framework, ensuring long-term success and growth.

Next steps

• Develop and implement an information and reward system: educate users, families, stakeholders, and club officials on the fundamentals of the circular economy (CE) and incentivize sustainable practices through a reward system.

• Integrate CE principles into grassroots sports programs: include CE basics in the curriculum of grassroots sports schools, adapting and tailoring them to suit the specific needs of each sport.

• Promote CE models to club members: present practical examples of CE models to club members, highlighting how these practices can reduce costs and generate potential revenue, encouraging sustainable behavior.

• Identify and prioritize CE goals: set clear targets for CE based on the characteristics of specific sports activities. Establish CE as a distinctive "label" that reflects the club's image and traditions, enhancing its identity moving forward.

High steps

• Implement Specific Actions to Integrate CE Principles: gradually introduce circular economy (CE) practices into the daily operations of clubs, ensuring the pace is appropriate for effective adoption.

- For grassroots football clubs, consider following the detailed recommendations provided in the UEFA Circular Economy Guidelines (see Annex 4).

• Address the Perceived "Stigma" of Second-Hand or Recycled Materials: take proactive measures to shift perceptions and promote the use of second-hand or recycled materials, such as:

- Collaborating with well-known athletes or sports figures to endorse these materials.

- Creating a new brand that emphasizes the quality and sustainability of recycled products.

• Seek External Audits for CE and Environmental Best Practices: pursue certification and regular audits, such as the ISO 14001 certification, to ensure adherence to environmental standards and demonstrate a commitment to sustainability.

5. Key components

In developing a robust theoretical framework for the application of Circular Design (CD) strategies in local and regional sport organizations, it is essential to identify and analyse the key components that drive these strategies. Circular Design, grounded in principles of sustainability and resource efficiency, necessitates a comprehensive understanding of various interconnected elements that contribute to its successful implementation. This section delves into the critical components that form the foundation of CD strategies, providing a detailed exploration of each element's role and significance. By examining these components, we aim to offer a clear and structured approach to integrating CD principles within the operations of sport organizations, ultimately promoting sustainable practices and enhancing overall organizational performance.

5.1. Introduction to Circular Economy in the sport sector

The concept of Circular Economy (CE) represents a transformative approach to production and consumption, emphasizing the minimization of waste and the continuous use of resources. Unlike the traditional linear economy, which follows a 'take, make, dispose' model, CE aims to create a closed-loop system where materials are reused, refurbished, remanufactured, and recycled. This paradigm shift is increasingly relevant in the sports industry, where resource-intensive activities and substantial waste generation are prevalent. By redefining how resources are managed, CE offers a pathway for sport organizations to enhance their sustainability and operational efficiency.

Incorporating CE principles within the sports sector can yield significant environmental, economic, and social benefits. Environmentally, adopting circular practices can lead to a reduction in carbon footprints, decreased waste, and more efficient use of natural resources. For instance, sports venues can implement recycling programs, use sustainable materials, and employ energy-efficient technologies. Economically, CE can create new revenue streams and reduce costs through the efficient use of materials and resources. By extending the lifecycle of sports equipment and infrastructure, organizations can lower expenses related to procurement and waste management. Socially, CE promotes a culture of sustainability and responsibility, engaging communities and fostering a positive public image. It also opens up opportunities for education and awareness, encouraging fans and participants to adopt more sustainable behaviours.

Overall, the application of CE in the sports sector aligns with broader global sustainability goals and offers a strategic advantage to organizations willing to innovate and adapt. By embracing circular principles, local and regional sport organizations can not only reduce their environmental impact but also enhance their economic viability and social responsibility. This comprehensive approach not only contributes to the well-being of the planet but also ensures the long-term success and resilience of the sport industry.

5.2. Framework of circular design strategy

The Circular Design Strategy framework is built upon several key principles and components that guide the development and implementation of sustainable practices within an organization. At its core, Circular Design (CD) focuses on maximizing resource efficiency and minimizing waste through the entire lifecycle of products and services. The primary principles include designing for longevity, promoting reuse and refurbishment, optimizing material flows, and

ensuring the recyclability of products. By adhering to these principles, sport organizations can develop strategies that not only reduce their environmental impact but also enhance their operational and economic performance.

Applying circular design principles to the sports sector involves several strategic approaches across various aspects of operations. In product design, this entails creating sports equipment and apparel that are durable, repairable, and recyclable. For example, manufacturers can use modular designs that allow easy replacement of worn-out parts, and choose materials that are either biodegradable or easily recyclable. Additionally, embracing eco-design standards can help reduce the environmental footprint of production processes.

Material sourcing is another critical area where circular design principles can be applied. Sport organizations can prioritize the procurement of sustainable materials, such as recycled or bio-based materials, and establish partnerships with suppliers who adhere to environmentally friendly practices. This approach not only supports the creation of sustainable products but also encourages the development of a green supply chain.

Facility management within sports organizations offers significant opportunities for implementing circular design principles. Sports venues can incorporate sustainable architecture and construction practices, using materials that have a lower environmental impact and are easier to repurpose at the end of their lifecycle. Energy efficiency measures, such as solar panels and energy-efficient lighting, can reduce the environmental footprint of sports facilities. Furthermore, implementing comprehensive recycling and waste management programs can ensure that materials are continuously reused and recycled, minimizing waste sent to landfills.

Overall, the Framework of Circular Design Strategy provides a structured approach for integrating sustainability into the core operations of sport organizations. By adopting these principles and components, sports entities can not only enhance their environmental stewardship but also achieve economic efficiencies and foster a positive social impact. This holistic approach to circular design ensures that sports organizations can thrive sustainably, contributing to a more resilient and eco-friendly industry.

5.3. Legal and financial considerations

The implementation of Circular Design (CD) strategies within the sports industry in Europe requires careful navigation of the regulatory landscape that governs sustainability practices. Various laws, regulations, and standards influence how sports organizations can adopt circular economy initiatives. Key areas include waste management, product sustainability, and environmental impact assessments. In many European regions, legislation mandates the implementation of recycling programs, the use of eco-friendly materials, and strategies for reducing carbon footprints. Additionally, standards such as ISO 14001 for environmental management systems play a significant role in guiding organizations toward sustainable practices.

Waste Management Regulations

Waste management regulations often require sports organizations to implement systematic recycling and waste reduction programs. This may include the segregation of waste at the source, proper disposal of hazardous materials, and initiatives to minimize waste generation

during events. Compliance with these regulations ensures environmental protection and enhances the organization's reputation for sustainability.

Example: An organization could implement a waste segregation system with clearly marked bins for recyclables, organic waste, and general waste. They might also set up composting facilities for organic waste generated during events, leading to improved waste management and reduced landfill contributions.

Product Sustainability Laws

Product sustainability laws mandate the use of materials with a lower environmental impact. This involves selecting renewable, recycled, or biodegradable materials for sports equipment, apparel, and infrastructure. Organizations are encouraged to adopt eco-design principles that prioritize durability, reparability, and end-of-life recyclability of products. Adhering to these laws can reduce environmental harm and align sports organizations with global sustainability goals.

Example: An organization might start using recycled materials for equipment and infrastructure, such as sourcing recycled plastics for sports gear. This shift could reduce the environmental impact and demonstrate the organization's commitment to sustainability, potentially earning recognition from stakeholders and the community.

Environmental Impact Assessments (EIAs)

Environmental impact assessments (EIAs) are often required for new sports facilities and major events. EIAs evaluate the potential environmental effects of proposed projects and suggest measures to mitigate negative impacts. This process ensures that sports organizations consider environmental factors in their planning and decision-making, promoting more sustainable outcomes.

Example: Before constructing a new facility, an organization could conduct an EIA to identify potential impacts on the local environment. The assessment might lead to design modifications that include sustainable features such as green roofing, rainwater harvesting systems, and wildlife corridors, minimizing environmental disruption and enhancing sustainability.

ISO 14001 Standard

The ISO 14001 standard for environmental management systems provides a framework for organizations to systematically manage their environmental responsibilities. By implementing ISO 14001, sports organizations can improve their environmental performance, ensure compliance with regulatory requirements, and enhance stakeholder confidence. This standard helps organizations establish policies and objectives, identify and control environmental impacts, and continuously improve their environmental performance.

Example: An organization might adopt the ISO 14001 standard to develop comprehensive environmental policies and procedures. This could include regular environmental audits, staff training on sustainability practices, and the integration of eco-friendly technologies, thereby improving environmental performance and attracting environmentally conscious sponsors.

Suggestions for legal framework goals implementation

The successful implementation of Circular Design (CD) strategies within local and regional sport organizations requires a robust and adaptive legal framework. Such a framework provides the necessary legislative support and regulatory guidance to ensure that Circular Economy (CE) principles are effectively integrated into the operations of these organizations. As the sustainability landscape continues to evolve, it is essential for sport organizations to not only comply with existing legal requirements but also proactively adapt to new regulations and policy shifts.

Developing a comprehensive legal framework involves setting clear short, medium, and long-term goals that guide sport organizations through the process of legal integration and compliance. In the short term, the focus is on understanding and aligning with current legal obligations, establishing initial compliance mechanisms, and building awareness among staff and stakeholders. Medium-term goals aim to deepen this integration by enhancing monitoring systems, influencing national and local legal adaptations, and promoting best practices across the sector. Over the long term, the goal is to institutionalize CE compliance within the organizational culture, advocate for policy innovations, and achieve recognition as leaders in sustainability.

By pursuing these goals, local and regional sport organizations can ensure that their commitment to Circular Design is supported by a strong legal foundation. This not only enables them to meet regulatory requirements but also positions them as proactive contributors to a more sustainable and legally compliant sports sector. Through strategic planning and continuous improvement, these organizations can navigate the complexities of the legal landscape while driving positive environmental, economic, and social outcomes.

Short-term goals (0-1 year):

1. Identify and align with existing legal requirements:
    - Conduct a comprehensive review of relevant European Union (EU) directives, national legislation, and local regulations that impact the implementation of Circular Economy (CE) principles in sport organizations.
    - Develop a clear compliance roadmap that aligns the organization’s practices with these legal requirements, ensuring adherence to existing waste management, eco-design, and energy efficiency standards.
2. Develop compliance training programs:
    - Create training modules for coaches, staff, and management on the key legal obligations related to CE principles. This includes understanding the EU Circular Economy Action Plan, the Waste Framework Directive, and local regulations.
    - Implement these training programs across the organization to build awareness and ensure that all stakeholders are informed about the legal framework and their responsibilities.

3. Establish initial compliance mechanisms:
    - Set up basic compliance mechanisms such as environmental impact assessments, sustainability reporting, and internal audits to monitor adherence to legal requirements.
    - Begin the process of seeking relevant certifications, such as ISO 14001 for environmental management, to formalize the organization's commitment to sustainability.

Medium-term goals (1-3 years):

1. Strengthen national and local legal integration:
    - Collaborate with national and local governments to adapt EU directives into specific regulations that support CE principles within the sports sector. This may include advocating for tailored regulations that address the unique needs of local sport organizations.
    - Work with industry bodies to influence the development of national sports policies that incorporate CE principles and provide clear guidance for compliance.
2. Enhance monitoring and evaluation systems:
    - Develop and implement advanced monitoring and evaluation systems to track compliance with legal requirements. This includes regular audits, sustainability reporting, and the use of digital tools to measure environmental impact.
    - Establish a dedicated compliance team or assign roles within existing teams to oversee the ongoing adherence to legal frameworks and to manage relationships with regulatory bodies.
3. Promote legal best practices across the sector:
    - Document and share successful case studies of legal compliance and CE integration within the sports sector. This can involve publishing reports, hosting workshops, and participating in industry conferences to promote best practices.
    - Foster collaboration between sport organizations to develop a shared repository of resources, guidelines, and tools that support compliance with CE-related legal requirements.

Long-term goals (3-5 years):

1. Institutionalize CE compliance within organizational culture:
    - Integrate legal compliance into the core values and operational practices of the organization, ensuring that CE principles are embedded into the strategic planning and decision-making processes.
    - Regularly update policies and procedures to reflect changes in the legal landscape, ensuring that the organization remains at the forefront of legal and regulatory developments in CE.

2. Advocate for policy innovations and legal reforms:
    - Engage in advocacy efforts to influence the development of new policies and legal frameworks that further support the integration of CE principles within the sports sector. This could involve participating in public consultations, working with policymakers, and contributing to the creation of new directives or regulations.
    - Lead initiatives to pilot innovative legal approaches, such as circular business models and extended producer responsibility (EPR) schemes, that could be scaled across the sector.
3. Achieve recognition for legal compliance and sustainability leadership:
    - Pursue certifications, awards, and public recognition for the organization's leadership in legal compliance and sustainability. This could include achieving higher-level certifications, being recognized as a model of best practice, or receiving industry awards.
    - Position the organization as a benchmark for others by actively sharing knowledge, mentoring other sport organizations, and continuing to innovate in the application of legal frameworks for Circular Design.

By setting these short, medium, and long-term goals, local and regional sport organizations can develop a robust legal framework that not only ensures compliance with existing regulations but also positions them as leaders in sustainability and circular economy practices within the sports sector.

Financial Considerations

Financially, adopting CD strategies can involve both short-term costs and long-term benefits for local and regional sport organizations. Initial investments in sustainable materials, technologies, and infrastructure may be substantial, including costs for installing solar panels, upgrading to energy-efficient lighting, and purchasing eco-friendly sports equipment. However, these investments can lead to significant cost savings over time through reduced waste management expenses, lower energy consumption, and potential new revenue streams from recycled materials and sustainable products.

Example: An organization might invest in energy-efficient technologies like solar panels and LED lighting. Although the initial investment may be high, the long-term savings on energy bills can offset these costs, allowing the organization to allocate funds to other areas, such as community programs and facility upgrades.

Sponsorship and Revenue Opportunities

Organizations that demonstrate strong environmental stewardship can attract sponsorships and partnerships, enhancing their financial stability and market appeal. Companies often seek to associate with environmentally responsible organizations to enhance their own sustainability credentials. By showcasing their commitment to sustainability through CD strategies, sports organizations can secure sponsorship deals, grants, and other financial support from like-minded businesses and institutions.

Example: An organization could secure sponsorship from an eco-friendly brand after highlighting its sustainability initiatives, such as using biodegradable materials and implementing zero-waste policies. This sponsorship could provide financial support for expanding green initiatives and improving the organization's market appeal.

Moreover, there is potential for generating revenue from recycled materials and sustainable products. For example, repurposing waste materials into new products or selling recyclable materials can create new income streams. Organizations can also explore opportunities to monetize sustainability initiatives, such as offering eco-friendly merchandise or hosting green events that attract environmentally conscious participants and spectators.

Example: An organization might produce eco-friendly merchandise, such as T-shirts made from recycled materials, for an event. By promoting sustainability, the event could attract more participants and sponsors, increasing profitability while also contributing to environmental goals.

While the initial financial outlay for implementing CD strategies in local and regional sport organizations in Europe may be significant, the long-term benefits include cost savings, new revenue streams, and enhanced financial stability through improved market appeal and sponsorship opportunities. Navigating the regulatory landscape effectively ensures compliance and promotes sustainable practices, positioning sports organizations as leaders in environmental stewardship.

Suggestions for financial framework goals implementation

The transition to a Circular Design (CD) approach within local and regional sport organizations requires not only a shift in operational practices but also the development of a robust financial framework to support sustainable initiatives. A well-structured financial framework is essential to ensure that these organizations can effectively implement CD strategies, manage costs, and generate new revenue streams while maintaining financial stability. By setting clear short, medium, and long-term financial goals, sport organizations can strategically align their resources to support sustainability efforts, optimize funding opportunities, and enhance their overall financial resilience.

In the short term, the focus is on securing initial funding, establishing a dedicated budget for CD initiatives, and engaging with corporate sponsors and donors who share a commitment to sustainability. Medium-term goals involve developing sustainable revenue streams, strengthening financial management systems, and leveraging public-private partnerships to expand the impact of CD practices. Over the long term, the objective is to institutionalize financial sustainability within the organization, diversify funding sources, and achieve recognition for financial excellence in supporting Circular Design.

These goals provide a clear roadmap for sport organizations to navigate the complexities of financing sustainability initiatives. By building a solid financial foundation, local and regional sport organizations can ensure the long-term success and scalability of their Circular Design strategies, ultimately contributing to the broader goals of environmental stewardship, economic resilience, and community well-being.

Short-term goals (0-1 year):

1. Identify and secure initial funding sources:
    - Research and apply for relevant European Union funding programs, such as Horizon Europe, the LIFE Programme, and Erasmus+ Sport, to support the initial implementation of Circular Design (CD) strategies.
    - Identify national and local government grants, subsidies, and tax incentives that can provide immediate financial support for sustainability projects within the sport organization.
2. Establish a budget for CD initiatives:
    - Develop a dedicated budget for CD initiatives, allocating funds for essential areas such as waste reduction, energy efficiency upgrades, and sustainable product procurement.
    - Prioritize low-cost, high-impact projects that can demonstrate quick wins and generate savings or additional revenue in the short term.
3. Engage with corporate sponsors and donors:
    - Approach corporations and businesses with strong corporate social responsibility (CSR) goals for sponsorships and donations. Emphasize the alignment between the organization's CD initiatives and the sponsor's sustainability objectives.
    - Explore in-kind contributions, such as donations of sustainable materials or services, to support the implementation of CD practices.

Medium-term goals (1-3 years):

1. Develop sustainable revenue streams:
    - Implement circular business models such as equipment leasing, sharing platforms, or the sale of recycled materials. These models can generate ongoing revenue while promoting sustainability.
    - Launch eco-friendly events and activities that attract sponsorships and participant fees, creating new income sources aligned with the organization's sustainability goals.
2. Strengthen financial management and reporting:
    - Develop comprehensive financial management systems to track the costs, savings, and revenues associated with CD initiatives. This includes regular financial reporting on the return on investment (ROI) of sustainability projects.
    - Use financial performance data to refine budget allocations, ensuring that funds are directed towards the most effective and impactful CD strategies.

3. Leverage public-private partnerships (PPPs):
    - Form partnerships with local governments, private companies, and non-profits to co-fund and co-manage sustainability projects. PPPs can provide additional financial resources and expertise to scale CD initiatives.
    - Participate in joint ventures that focus on sustainable infrastructure development, waste management, or renewable energy, thereby sharing costs and benefits.

Long-term goals (3-5 years):

1. Institutionalize financial sustainability:
    - Embed financial sustainability into the organization's core strategy, ensuring that all future projects and initiatives are designed with Circular Design principles and financial viability in mind.
    - Regularly review and update the financial framework to align with evolving sustainability goals, regulatory changes, and market opportunities.
2. Expand and diversify funding sources:
    - Explore new and diverse funding sources, such as impact investment funds, green bonds, or crowdfunding platforms, to finance large-scale sustainability projects.
    - Build long-term relationships with major donors, foundations, and institutional investors who are committed to supporting sustainable development within the sports sector.
3. Achieve financial recognition and awards:
    - Pursue certifications, awards, and recognition for financial excellence in sustainability. This could include achieving high rankings in sustainability indexes or receiving industry awards for innovative financial management in Circular Design.
    - Position the organization as a leader in the financial aspects of sustainability by sharing best practices, participating in industry forums, and mentoring other sport organizations.

By setting these short, medium, and long-term goals, local and regional sport organizations can develop a resilient and sustainable financial framework that supports the successful implementation of Circular Design strategies. This framework will not only ensure the financial viability of CD initiatives but also contribute to the broader sustainability of the organization and its community.

5.4. Psychological well-being integration

Psychological well-being is a fundamental yet often underappreciated aspect of sustainability within sport organizations. In the context of Circular Design (CD) strategy implementation, psychological well-being plays a crucial role in ensuring that athletes, coaches, staff, and community members are mentally and emotionally supported. Focusing on psychological well-being enhances individual performance, overall organizational health, and long-term resilience.

Integrating Psychological Well-being into Circular Design

Integrating psychological well-being into the Circular Design framework involves creating environments that promote mental health, encourage positive social interactions, and support a balanced approach to competition and personal development. By addressing mental health alongside physical and environmental sustainability, sport organizations can develop more holistic and enduring strategies that benefit both individuals and the collective. Psychological well-being thus becomes a key component supporting the long-term success and sustainability of sport organizations.

Creating a Positive and Inclusive Environment

To promote psychological well-being, sport organizations must first create a positive and inclusive environment. This involves training coaches and staff to recognize signs of mental health challenges and fostering a culture where athletes feel safe to express their emotions and seek help when needed.

Example: An organization could implement mental health first-aid training for coaches and staff, enabling them to identify early signs of stress or anxiety among members. Proactively addressing these issues can prevent them from escalating and ensure that individuals receive the support they need.

Fostering Teamwork and Positive Reinforcement

Positive reinforcement and teamwork are crucial for building self-esteem and fostering a sense of belonging within sport organizations. Recognizing and celebrating not only athletic achievements but also efforts, teamwork, and sportsmanship can significantly enhance psychological well-being.

Example: An organization might introduce a recognition program that highlights not just performance but also positive attitudes and support for others. Such initiatives can strengthen team bonds and improve overall morale.

Integrating Well-being into Daily Operations

Sport organizations should integrate psychological well-being into their daily operations and decision-making processes. This could include regular mental health check-ins, offering counselling services, and creating spaces for relaxation and mindfulness. Additionally, designing training schedules that balance physical demands with recovery time is essential for preventing burnout.

Example: An organization could incorporate mindfulness sessions into their training routines, allowing participants to focus on mental clarity and stress management. This practice can help manage competition stress and improve both performance and well-being.

Measuring and Monitoring Mental Health Outcomes

To ensure that psychological well-being initiatives are effective, sport organizations should establish systems for measuring and monitoring mental health outcomes. This could involve conducting surveys, feedback sessions, and mental health assessments to evaluate the effectiveness of existing programs and identify areas for improvement.

Example: An organization might conduct regular surveys to assess the mental health and satisfaction of its members. Based on the feedback, the organization could introduce additional support services, workshops, or peer support groups, leading to improvements in overall well-being.

By integrating psychological well-being into the Circular Design framework, sport organizations can create environments that support the holistic development of their members. These efforts not only enhance individual mental health but also contribute to the long-term sustainability and success of the organization. As a core component of Circular Design, psychological well-being ensures that sport organizations are not only physically sustainable but also socially and emotionally resilient.

Suggestions for psychological well-being framework goals implementation

As local and regional sport organizations increasingly adopt Circular Design (CD) strategies to enhance sustainability, it is crucial to incorporate the development of well-being into these frameworks. A holistic approach to sustainability recognizes that the mental and emotional health of athletes, coaches, and community members is as important as environmental and economic sustainability. By setting clear short, medium, and long-term goals, sport organizations can systematically integrate psychological well-being into their operations, creating environments that nurture both physical performance and mental resilience.

These goals provide a structured pathway for organizations to gradually implement, expand, and sustain well-being initiatives. In the short term, the focus is on laying the foundation by equipping staff with the skills to support mental health and creating an environment that promotes positive reinforcement and open dialogue. The medium-term goals build on this foundation by integrating well-being more deeply into the CD framework, enhancing teamwork, and establishing robust monitoring systems. In the long term, the objective is to sustain these initiatives, embed well-being into the organizational culture, and position the organization as a leader in holistic sustainability.

By pursuing these goals, sport organizations can ensure that their commitment to circular design not only reduces environmental impact but also promotes the overall well-being of their members, contributing to stronger, more resilient communities.

Short-term goals (0-1 year):

1. Implement mental health training: introduce training programs for coaches and staff to recognize and address mental health issues among athletes.
2. Establish positive reinforcement practices: develop and implement recognition programs that highlight effort, teamwork, and sportsmanship within the club.
3. Create a supportive environment: launch initiatives that encourage open discussions about mental health, such as workshops or guest speaker sessions.

Medium-term goals (1-3 years):

1. Integrate psychological well-being into CD framework: incorporate specific strategies for promoting psychological well-being into the broader Circular Design strategy, linking it with environmental and social sustainability.

2. Strengthen teamwork and community engagement: develop regular team-building activities and community outreach programs that foster social connections and inclusivity.
3. Monitor and evaluate mental health initiatives: implement tools and metrics to assess the effectiveness of mental health programs, adjusting them based on feedback and outcomes.

Long-term goals (3-5 years):

1. Sustain and scale well-Being programs: establish long-term partnerships with mental health professionals and organizations to provide continuous support and expand well-being initiatives.
2. Create a culture of holistic sustainability: ensure that psychological well-being is fully embedded in the culture and operations of the sport organization, aligning with environmental and economic sustainability efforts.
3. Achieve recognition for well-being leadership: position the organization as a leader in promoting psychological well-being within the sports sector by achieving certifications, awards, and recognition for its comprehensive well-being programs.

5.5. Tailor-made approach for local and regional sport organizations

Local and regional sport organizations in Europe face unique challenges and opportunities when adopting circular practices. These organizations often operate with limited resources and must consider specific contextual factors such as community expectations, regional regulations, and available infrastructure. Tailoring Circular Design (CD) strategies to fit the specific needs and capacities of these organizations is essential to ensure successful implementation and long-term sustainability.

Tailoring Circular Design Strategies

A key first step is conducting thorough assessments of current practices to identify areas for improvement. This involves evaluating existing waste management processes, material sourcing, and facility operations. Understanding the current environmental impact allows sport organizations to pinpoint where changes are needed and determine which strategies will be most effective.

For smaller organizations, a practical starting point might be the implementation of efficient waste management systems. This could involve setting up clearly marked recycling bins, organizing regular waste audits to monitor and improve recycling rates, and collaborating with local waste management services to ensure proper disposal and recycling of materials. Education and training for staff, volunteers, and athletes on proper waste segregation and recycling practices can also significantly enhance the effectiveness of these systems.

Example: A sport organization could implement a comprehensive recycling program by partnering with local waste management services. They might install recycling bins throughout their facility and educate members on proper recycling techniques through workshops and informational materials. Such initiatives can improve recycling rates and engage the local community, positioning the organization as a leader in sustainability.

Sourcing Local, Sustainable Materials

Sourcing local, sustainable materials is another critical aspect for local and regional sport organizations. By prioritizing the purchase of eco-friendly and locally produced equipment, apparel, and facility materials, organizations can reduce their carbon footprint and support the local economy. For instance, using recycled materials for sports uniforms or biodegradable products for event supplies can have a substantial positive impact.

Example: An organization could source uniforms from a local company that uses recycled materials, reducing its carbon footprint while supporting local businesses. Promoting this initiative among members can also encourage them to adopt sustainable practices in their personal lives.

Leveraging Community Engagement and Partnerships

Practical examples of successful grassroots initiatives can provide valuable insights and inspiration. For example, sport organizations might partner with community recycling programs to manage waste from events. This could involve collaborating with local recycling centers, educating attendees on proper waste disposal, and providing incentives for recycling. Such initiatives can reduce environmental footprints while engaging the community in sustainability efforts.

Example: A sport organization could collaborate with community recycling programs to manage waste during events. By setting up recycling stations, distributing educational materials, and offering incentives for participation, the organization can reduce waste and increase community support.

Another approach involves implementing energy-saving measures, such as installing solar panels and using energy-efficient lighting and heating systems. These changes can reduce energy consumption and operating costs while demonstrating a commitment to sustainability, potentially attracting eco-conscious sponsors and participants.

Example: A sport facility might install solar panels and switch to energy-efficient lighting, significantly reducing energy bills and showcasing a commitment to sustainability. This can attract sponsors interested in associating their brand with environmentally responsible initiatives.

Community Collaboration and Co-Creation

To further tailor CD strategies, organizations should consider the specific needs and capacities of their local context. This might include leveraging available local resources, such as partnerships with nearby universities for sustainability research and support, or collaborating with local governments to align with regional sustainability initiatives and access potential funding opportunities.

Engaging the community in co-creating sustainable solutions is also beneficial. This can involve organizing workshops to gather input and ideas, hosting sustainability-themed events to raise awareness, and establishing volunteer programs to support ongoing sustainability efforts. By

involving the community, organizations can build stronger relationships, foster local support, and create a shared sense of responsibility for sustainability.

Example: An organization might host community workshops to discuss sustainability in sports, gathering input from members and local residents on how to reduce waste and improve energy efficiency. Based on this input, the organization could implement a sustainability program and organize events that promote environmental responsibility, thereby strengthening community ties and support.

A tailor-made approach to implementing Circular Design strategies in local and regional sport organizations requires a thorough understanding of current practices, focused improvements in key areas, and strong community engagement. By leveraging local resources, collaborating with stakeholders, and learning from successful grassroots initiatives, these organizations can effectively adopt circular practices that enhance sustainability, reduce environmental impact, and create positive outcomes for the community.

5.6. Stakeholder engagement and collaboration

Stakeholder engagement is crucial for driving circular economy initiatives within the sports sector. Engaging a broad range of stakeholders—including local governments, sports organizations, businesses, and communities—fosters a collaborative environment essential for promoting circularity. Effective strategies for fostering collaboration include establishing multi-stakeholder working groups, hosting community workshops, forming strategic alliances with businesses, collaborating with local governments, and networking with other sports organizations.

Establishing Multi-Stakeholder Working Groups

Creating multi-stakeholder working groups brings diverse perspectives and expertise together. These groups typically include representatives from local government, sport organizations, environmental NGOs, community leaders, and businesses. A collaborative approach ensures that the needs and insights of all stakeholders are considered in the development and implementation of circular design strategies.

Example: A regional sports association might form a working group with representatives from local government, environmental experts, and businesses to develop a sustainable event management plan. This collaborative effort could result in practical and widely supported guidelines for waste reduction, energy efficiency, and sustainable procurement.

Hosting Community Workshops

Community workshops are an effective way to engage local residents and stakeholders in sustainability initiatives. These workshops can be used to educate the community about the benefits of circular design, gather input on potential initiatives, and build local support for sustainability efforts.

Example: A sports club could organize a series of community workshops to discuss how to reduce its environmental impact. These workshops might include presentations on circular economy principles, group discussions, and brainstorming sessions, leading to the

implementation of new initiatives such as a club-wide recycling program or the use of sustainable materials.

Forming Strategic Alliances with Businesses

Partnerships with businesses can provide sports organizations with access to innovative solutions and technologies. Businesses can offer expertise in areas such as waste management, renewable energy, and sustainable materials, helping sports organizations implement effective circular design strategies.

Example: A sports organization might partner with a company specializing in biodegradable products to replace plastic items with biodegradable alternatives. This collaboration could help reduce waste while also promoting the company's products to a broader audience, benefiting both parties.

Collaborating with Local Governments

Collaboration with local governments can facilitate access to funding and technical support. Governments often have resources and programs dedicated to promoting sustainability that sports organizations can leverage.

Example: A sports complex might work with local government authorities to secure funding for installing solar panels. With government-provided technical support and financial incentives, the project could become feasible, resulting in significant energy savings and demonstrating successful public-private collaboration in promoting renewable energy.

Networking with Other Sports Organizations

Networking with other sports organizations allows for the sharing of best practices and success stories. This creates a collective movement towards sustainable development in the sports industry and encourages more organizations to adopt circular practices.

Example: A network of sports clubs could establish a platform to share experiences and best practices in sustainability, including regular meetings, an online forum, and joint projects. This network would help accelerate the adoption of circular economy initiatives across the region by learning from each other's successes and challenges.

Stakeholder engagement and collaboration are vital for driving circular economy initiatives within the sports sector. By establishing multi-stakeholder working groups, hosting community workshops, forming strategic alliances with businesses, collaborating with local governments, and networking with other sports organizations, local and regional sports clubs can effectively implement circular design strategies. These collaborative efforts not only enhance the sustainability of individual organizations but also contribute to a broader movement towards a more sustainable sports industry.

5.7. Monitoring and evaluation

Establishing robust metrics and indicators is essential for measuring the effectiveness and impact of Circular Design (CD) strategies in the sport industry. Key performance indicators (KPIs) might include the amount of waste diverted from landfills, the percentage of recycled materials used, and reductions in energy consumption and carbon emissions. Developing a

comprehensive monitoring and evaluation framework ensures that progress is tracked, areas for improvement are identified, and accountability is maintained.

5.7.1. Key performance indicators (KPIs)

To effectively monitor and evaluate CD strategies, local and regional sport clubs in Europe should identify specific KPIs tailored to their operations and sustainability goals. Examples of KPIs include:

- **Waste diversion rate:** the percentage of total waste generated that is diverted from landfills through recycling, composting, and other sustainable practices.

  Example: A club might aim to achieve a 75% waste diversion rate within two years. By implementing comprehensive recycling programs and partnering with local composting facilities, the club could potentially exceed this target, diverting a significant portion of its waste from landfills.

- **Recycled materials usage:** the percentage of materials used in equipment, uniforms, and facility construction that are recycled or sustainably sourced.

  Example: An organization could commit to using uniforms made from recycled materials. By sourcing from suppliers that utilize recycled fabrics, such as nylon from discarded fishing nets, the club could achieve a high percentage of recycled materials usage in their products.

- **Energy consumption reduction:** the reduction in energy use achieved through the implementation of energy-efficient technologies and practices.

  Example: A sports facility might install LED lighting and solar panels, aiming for a significant reduction in energy consumption over several years. This KPI could be monitored through regular energy audits and comparisons with historical energy usage data.

- **Carbon emissions reduction:** the decrease in carbon emissions resulting from sustainable practices such as using renewable energy, reducing travel, and enhancing energy efficiency.

  Example: A club could track its carbon emissions and implement initiatives like carpooling programs for events. By doing so, the organization could achieve a substantial reduction in its overall carbon footprint within a specified timeframe.

5.7.2. Comprehensive monitoring and evaluation framework

Developing a comprehensive framework involves:

1. **Setting clear goals:** establish specific, measurable, achievable, relevant, and time-bound (SMART) goals for sustainability initiatives.

   Example: An organization might set a goal to reduce water usage by 20% within two years by installing water-efficient fixtures and implementing rainwater harvesting systems.

2. **Data collection:** regularly collect data on key metrics using tools such as digital tracking systems, surveys, and manual audits.

   Example: Organizations can use smart meters to track water and energy usage in real-time, allowing for the quick identification and resolution of inefficiencies.

3. **Analysis and reporting:** analyse the collected data to assess performance against goals and generate regular reports for stakeholders.

   Example: Regular sustainability reports can be produced to detail progress on waste reduction, energy savings, and other key performance indicators (KPIs). These reports can then be shared with members, sponsors, and the community.

4. **Feedback mechanisms:** establish mechanisms for gathering feedback from stakeholders, including members, staff, and the community, to identify areas for improvement.

   Example: Conducting annual surveys can help gather feedback on sustainability initiatives. The insights gained can be used to refine strategies and address any concerns or suggestions.

5. **Continuous improvement:** foster a culture of continuous improvement by regularly reviewing practices, updating goals, and implementing new initiatives based on feedback and performance data.

   Example: Hosting regular sustainability workshops for staff and volunteers can provide opportunities to review performance, celebrate successes, and brainstorm new ideas for further improvement.

5.7.3. Periodic reviews and adjustments

Regular reviews of sustainability practices are crucial. These reviews can reveal opportunities for further waste reduction, energy savings, or other improvements.

Example: An organization may conduct semi-annual waste audits to evaluate the effectiveness of their recycling program. If the audits reveal that certain types of waste, such as compostable materials, are being incorrectly disposed of, the organization could respond by implementing additional training for members and staff on proper waste segregation. This proactive approach could lead to improved waste management practices and higher composting rates.

5.7.4. Fostering a culture of continuous improvement

By fostering a culture of continuous improvement, sport organizations can optimize their circular economy efforts and achieve greater sustainability outcomes over time.

Example: An organization could establish a dedicated sustainability team composed of enthusiastic members and staff. This team could meet regularly to review progress, brainstorm new ideas, and plan initiatives such as energy-saving competitions or waste reduction challenges. Such ongoing efforts would lead to continuous enhancements in the organization's sustainability practices, driving long-term success in their circular economy goals.

In conclusion, robust monitoring and evaluation frameworks, combined with clear KPIs, feedback mechanisms, and a culture of continuous improvement, are essential for local and

regional sport clubs in Europe to successfully implement and sustain CD strategies. By regularly assessing their performance and making informed adjustments, these organizations can achieve significant environmental, economic, and social benefits.

6. Suggestions for the practical toolkit

6.1. Steps for implementation

Initial assessment

The first step in implementing Circular Design (CD) strategies is to conduct a comprehensive baseline assessment of current practices. This involves thoroughly evaluating existing operations to identify areas where improvements can be made. Key areas of focus include waste management, energy usage, and material sourcing. By understanding the current environmental impact, sport organizations can pinpoint specific practices that need to be modified or replaced with more sustainable alternatives. This assessment provides a clear starting point and sets the stage for developing targeted strategies that address the most pressing sustainability challenges.

Stakeholder engagement

Engaging stakeholders is crucial for the successful adoption of CD strategies. Establishing a multi-stakeholder working group that includes representatives from staff, members, local government, businesses, and the community is an effective way to gather diverse perspectives and foster collaboration. Hosting workshops can facilitate this engagement, allowing stakeholders to share their insights and suggestions. These workshops serve as a platform for discussing potential initiatives, setting priorities, and building consensus around sustainability goals. Engaging stakeholders early in the process ensures that the strategies developed are inclusive, practical, and widely supported.

Goal setting and planning

Setting clear and achievable goals is essential for driving progress in sustainability initiatives. Organizations should establish SMART goals that are Specific, Measurable, Achievable, Relevant, and Time-bound. These goals provide a clear direction and help measure the success of implemented strategies. Alongside goal setting, developing a detailed implementation plan is crucial. This plan should outline the steps needed to achieve the set goals, allocate responsibilities, and establish timelines. A well-structured plan ensures that all stakeholders are aligned and that efforts are coordinated efficiently.

Systems implementation

Implementing systems to support CD strategies involves several key areas:

- **Waste management:** setting up recycling stations, composting facilities, and waste segregation protocols is fundamental. These systems help divert waste from landfills and promote recycling and composting.
- **Energy efficiency:** installing energy-efficient lighting such as LEDs, solar panels, and other energy-saving appliances can significantly reduce energy consumption and operational costs.

- **Water management:** implementing water-saving fixtures and rainwater harvesting systems can help reduce water usage and promote sustainable water management practices.

By addressing these areas, organizations can create a solid foundation for sustainability.

Product and material sourcing

Switching to sustainable, recycled, or biodegradable materials for equipment and uniforms is a crucial aspect of CD strategies. Organizations should prioritize partnering with suppliers who offer eco-friendly products. This not only reduces the environmental impact but also supports businesses that are committed to sustainability. Transitioning to sustainable materials can also enhance the organization's reputation and appeal to eco-conscious members and supporters.

Service changes

Adopting digital solutions for ticketing and communication can significantly reduce paper waste. Additionally, implementing carpooling or shuttle services can help minimize carbon emissions from travel. These changes not only contribute to environmental sustainability but also offer convenience and cost savings for members and participants. Embracing digital and transportation innovations is a practical step towards reducing the overall ecological footprint.

Ongoing monitoring and evaluation

Regular monitoring and evaluation are critical to ensure the effectiveness of CD strategies. Organizations should consistently collect and analyze data on key performance indicators (KPIs) such as waste diversion rates, energy usage, and water consumption. This data-driven approach allows for informed decision-making and timely adjustments to strategies based on performance feedback. Continuous evaluation fosters a culture of improvement and ensures that sustainability goals are being met.

Community involvement

Community involvement is essential for sustaining CD initiatives. Organizing events to educate and engage the community can raise awareness and encourage participation in sustainability efforts. Promoting sustainable practices among members and supporters not only helps achieve organizational goals but also contributes to broader environmental consciousness. By involving the community, organizations can build strong support networks and create a shared sense of responsibility for sustainability.

In conclusion, the implementation of Circular Design strategies in local and regional sport organizations involves a systematic approach that includes initial assessment, stakeholder engagement, goal setting, systems implementation, sustainable sourcing, service changes, ongoing monitoring, and community involvement. By following these steps, sport organizations can effectively transition to sustainable practices, reduce their environmental impact, and foster a culture of sustainability within their communities.

6.2. Legal levels

National regulations play a crucial role in guiding local and regional sport organizations towards adopting Circular Design (CD) strategies. Each country has specific laws governing waste management, recycling, and environmental protection that organizations must adhere to. These laws are designed to reduce environmental impact and promote sustainable practices. For instance, many European countries have stringent regulations on waste segregation and disposal, requiring organizations to implement comprehensive recycling programs and ensure proper disposal of hazardous materials. Additionally, national standards for product sustainability and carbon emissions set benchmarks that organizations must meet, encouraging the use of eco-friendly materials and technologies.

Example: In some countries, laws may mandate that organizations, including sports clubs, implement waste management systems that prioritize recycling and resource efficiency. Such regulations may also require the reduction of carbon emissions through the adoption of energy-efficient practices and technologies. Compliance with these regulations helps organizations meet legal requirements and enhances their sustainability credentials and public image.

Regional regulations

In addition to national laws, regional regulations provide further guidance and incentives for adopting circular economy practices. Regional governments often implement specific regulations that address local environmental challenges and promote sustainability initiatives tailored to regional needs. Understanding these regional regulations is essential for local and regional sport organizations to effectively implement CD strategies.

Regional regulations may include incentives such as tax breaks, grants, or subsidies for organizations that demonstrate a commitment to sustainability. These incentives can significantly reduce the financial burden associated with transitioning to circular practices and encourage more organizations to adopt sustainable initiatives.

Example: Some regions may offer financial incentives for sports clubs that invest in renewable energy systems, such as solar panels or wind turbines. By leveraging these regional funding opportunities, clubs can reduce their energy costs and carbon footprint.

Financing options

Financing is a critical aspect of implementing CD strategies, and there are various grants and subsidies available to support sustainability projects. Sport organizations should explore funding opportunities offered by national and regional governments, as well as international bodies and non-governmental organizations (NGOs). These grants can provide the necessary capital for initial investments in sustainable infrastructure, technologies, and materials.

Partnering with local businesses and governments can also be an effective way to co-fund sustainability initiatives. Collaborative projects can pool resources and expertise, making it easier to achieve common sustainability goals. Businesses often seek to enhance their corporate social responsibility (CSR) profiles and may be willing to support local sport organizations in their sustainability efforts.

Example: An organization might partner with a renewable energy company to co-fund the installation of energy-efficient systems in their facilities. The company could provide technical expertise and partial funding, while the organization might receive additional financial support from government grants. This collaboration would not only improve the organization's energy efficiency but also strengthen ties with the local business community.

Navigating the legal landscape is essential for local and regional sport organizations aiming to implement Circular Design strategies. Understanding and complying with national and regional regulations ensures that organizations meet legal requirements and take advantage of available incentives and funding opportunities. By exploring various financing options and forming strategic partnerships, sport organizations can effectively transition to sustainable practices, reduce their environmental impact, and contribute to the broader goal of a circular economy.

6.3. Impact on new professions

For smaller sport organizations with limited human capacity and resources, creating new professional roles dedicated solely to sustainability may not always be feasible. However, by integrating sustainability responsibilities into existing roles and leveraging part-time or project-based expertise, these organizations can still make significant progress in implementing Circular Design strategies.

Recycling coordinators, sustainability officers, eco-design specialists, and circular economy managers whether full-time, part-time, or dual-role can drive the adoption of sustainable practices, helping smaller sport organizations reduce their environmental impact and contribute to a more sustainable future.

Recycling coordinators

Recycling coordinators play a pivotal role in managing and optimizing recycling programs within sports organizations. For smaller sport organizations with limited resources, the appointment of a dedicated recycling coordinator can significantly enhance waste management efficiency. These coordinators are responsible for setting up and maintaining recycling systems, educating staff and members on proper waste segregation, and ensuring compliance with local recycling regulations. They also track recycling rates and identify areas for improvement, helping the organization reduce its environmental footprint.

Example: An organization could appoint a part-time recycling coordinator to implement a comprehensive recycling program, organize educational workshops on recycling, and partner with local recycling centers. This approach can lead to a significant reduction in waste sent to landfills and foster a culture of environmental responsibility.

Sustainability officers

Sustainability officers are professionals dedicated to developing and implementing sustainability strategies within organizations. For smaller sport organizations, hiring a full-time sustainability officer may not be feasible due to budget constraints. However, these organizations can benefit from appointing a part-time sustainability officer or integrating sustainability responsibilities into an existing role. The sustainability officer's duties include

conducting sustainability assessments, setting environmental goals, and coordinating initiatives to reduce energy consumption, waste, and emissions.

Example: An organization might integrate sustainability responsibilities into an existing operations role, enabling the staff member to develop and implement a sustainability action plan that includes energy-saving measures and waste reduction initiatives. This approach leverages existing staff to enhance sustainability efforts without the need for additional hires.

Eco-design specialists

Eco-design specialists focus on designing products and services that have minimal environmental impact. While employing a full-time eco-design specialist may be beyond the reach of smaller sport organizations, these clubs can still benefit from consulting with eco-design experts on a project basis. These specialists can provide valuable insights into sustainable materials, product lifecycle management, and environmentally friendly design practices.

Example: An organization could consult with an eco-design expert to redesign uniforms or other products using recycled materials, thereby reducing environmental impact and improving product durability. This project-based approach allows smaller organizations to access specialized expertise when needed.

Circular Economy managers

Circular economy managers oversee the transition to and management of circular systems within organizations. For smaller sport organizations, this role can be challenging to establish due to limited human capacity and financial resources. However, these organizations can adopt circular economy principles by designating a staff member to coordinate circular initiatives alongside their existing duties. This person would focus on integrating circular practices, such as reusing materials, reducing waste, and promoting the use of sustainable products.

Example: An organization could assign an existing staff member to manage circular economy initiatives, such as organizing repair workshops or second-hand equipment exchanges. This dual-role approach allows the organization to promote a circular economy mindset without the need for a dedicated full-time position.

6.4. Measuring success

Measuring success is a vital component of implementing Circular Design strategies, especially for smaller sport organizations with limited resources. By utilizing Gantt charts to organize and track project timelines, monitoring KPIs and metrics to gauge progress, and producing regular sustainability reports to share with stakeholders, these organizations can effectively manage their sustainability initiatives. Despite their limited human capacity, smaller sport organizations can achieve significant environmental impact by adopting these practical tools and methods to ensure continuous improvement and accountability in their sustainability efforts.

Gantt charts

Using Gantt charts to set timelines and track progress on sustainability goals can be extremely effective, even for smaller sport organizations with limited human capacity and resources. Gantt charts provide a visual representation of project schedules, helping organizations break down their sustainability initiatives into manageable tasks with clear deadlines. These charts can be created using tools like Microsoft Project, Trello, or Asana, which are accessible and user-friendly.

For smaller organizations, setting up a Gantt chart can help streamline efforts and ensure that everyone involved understands their responsibilities and deadlines. By visualizing the timeline of sustainability projects, such as installing recycling bins or transitioning to LED lighting, organizations can better manage their limited resources and keep track of progress. Regularly updating the Gantt chart ensures that any delays or issues are identified early, allowing for timely adjustments.

Example: An organization could use a Gantt chart to map out tasks like conducting a waste audit, sourcing recycled materials, and installing water-saving fixtures. By assigning tasks to specific team members and setting clear deadlines, the organization can stay organized and make steady progress towards its sustainability goals.

KPIs and metrics

Tracking Key Performance Indicators (KPIs) and metrics is crucial for measuring the effectiveness of sustainability efforts. Smaller sport organizations should focus on a few critical KPIs, such as waste diversion rates, energy consumption, water usage, and carbon emissions. Setting benchmarks and regularly reviewing progress against these metrics helps organizations understand their environmental impact and identify areas for improvement.

Even with limited resources, smaller organizations can track these metrics using simple tools like spreadsheets or basic software. Establishing clear benchmarks at the beginning of sustainability initiatives allows organizations to measure progress over time and celebrate achievements.

Example: An organization could track energy consumption and waste diversion rates using a basic spreadsheet. By setting a benchmark for reducing energy usage or improving waste management, the organization can monitor progress and make data-driven decisions to further enhance sustainability practices.

Regular reporting

Producing regular sustainability reports, such as quarterly and annual reports, is essential for maintaining transparency and accountability. These reports should summarize the progress made towards sustainability goals, highlight successes, and identify areas for improvement. Sharing these reports with stakeholders, including members, sponsors, and the local community, helps build trust and demonstrates the organization's commitment to sustainability.

For smaller organizations, creating these reports might seem daunting due to limited human capacity. However, using templates and focusing on key metrics can simplify the process. Reports can include visual aids like graphs and charts to make the data more accessible and engaging.

Example: An organization could produce quarterly sustainability reports using an online template. These reports might include visual representations of progress in reducing waste and energy consumption, along with a summary of initiatives undertaken in the past quarter. Sharing these reports via the organization's website and social media channels can help keep stakeholders informed and attract new supporters interested in sustainability efforts.

6.5. Recognition and incentives

Recognition and incentives play a crucial role in promoting and sustaining circular economy initiatives within local and regional sport clubs, especially for smaller organizations with limited resources. Certification programs provide external validation and enhance the club's reputation, awards celebrate and publicize outstanding achievements, and incentive programs engage staff and members in meaningful ways. By leveraging these strategies, smaller sport organizations can effectively drive sustainability efforts, attract support from the community, and build a strong foundation for long-term environmental stewardship.

Certification

Developing a certification program for local and regional sport clubs that meet circular economy criteria can be highly beneficial, even for smaller organizations with limited resources. Certification programs recognize and reward clubs that have successfully implemented sustainable practices, such as waste reduction, energy efficiency, and sustainable sourcing. These certifications not only provide external validation of an organization's efforts but also serve as a powerful marketing tool to attract eco-conscious members, sponsors, and partners.

For smaller sport organizations, achieving certification can enhance their reputation and differentiate them from competitors. Certification criteria should be clear, achievable, and relevant to the organization's capacity, ensuring that even clubs with limited resources can participate. By working towards certification, these organizations can systematically improve their sustainability practices, leading to long-term environmental and economic benefits.

Example: A sport organization could pursue certification under a sustainability program that recognizes efforts in waste management and energy efficiency. The certification process might involve an audit of the organization's practices and a commitment to ongoing improvements. Once certified, the organization could display the certification logo on its website and promotional materials, helping to attract new members and secure sponsorships from environmentally conscious businesses.

Awards and Recognition

Establishing annual awards for outstanding achievements in sustainability can motivate local and regional sport clubs to pursue and maintain high standards of environmental stewardship. These awards recognize and celebrate the efforts of organizations that have made significant

strides in implementing circular economy practices. By promoting award winners through media and community channels, smaller organizations can gain valuable publicity and build a positive public image.

Awards can be tailored to recognize different aspects of sustainability, such as innovation in waste reduction, excellence in energy management, or leadership in community engagement. For smaller sport organizations, winning an award can provide a morale boost, validate their efforts, and encourage further investment in sustainability initiatives.

Example: An organization could receive an award for its innovative waste reduction program, which might include extensive recycling efforts and a successful composting initiative. The recognition could raise the organization's profile and highlight its commitment to sustainability, helping to attract new members and foster a sense of pride among existing members and volunteers.

Incentive programs

Offering incentives for staff and members who actively participate in sustainability initiatives is an effective way to encourage engagement and foster a culture of environmental responsibility within sport organizations. Incentive programs can include tangible rewards such as discounts on membership fees, free entry to events, or public recognition for individuals who contribute significantly to sustainability goals.

For smaller sport organizations, these incentives can be a cost-effective way to boost participation and ensure that sustainability initiatives are embraced by the entire community. By rewarding active participation, clubs can build momentum for their circular economy efforts and ensure long-term commitment from their members.

Example: An organization might implement an incentive program where members who consistently recycle, use reusable water bottles, or participate in clean-up events receive discounts on their annual membership fees. The organization could also publicly recognize these members in newsletters and on social media, fostering a sense of community and encouraging others to follow suit.

6.5. Psychological well-being

Psychological well-being is an essential yet often overlooked aspect of implementing Circular Design (CD) strategies in sport organizations. Prioritizing the mental and emotional health of staff, members, and stakeholders can significantly enhance the effectiveness of sustainability initiatives. Incorporating psychological well-being into the implementation process involves fostering a positive work environment, promoting work-life balance, and ensuring that all participants feel valued and supported throughout the transition to more sustainable practices.

Initial assessment: in addition to assessing current environmental practices, it is important to evaluate the psychological well-being of staff and stakeholders. This can involve gathering feedback on stress levels, job satisfaction, and work-life balance. Understanding these factors can help identify areas where improvements are needed to support a positive work environment, which in turn can lead to more effective and sustainable implementation of CD strategies.

Stakeholder engagement: engaging stakeholders in a way that prioritizes their psychological well-being is crucial. During workshops and discussions, it is important to create a supportive atmosphere where all participants feel heard and respected. Facilitating open communication and encouraging collaboration can reduce stress and promote a sense of ownership and satisfaction among stakeholders, leading to more successful and sustainable outcomes.

Goal setting and planning: when setting goals, it is important to consider the psychological impact on those responsible for achieving them. Establishing realistic, manageable goals that account for the capacity and well-being of staff and stakeholders can prevent burnout and ensure sustained engagement. Incorporating regular breaks, opportunities for reflection, and celebrations of progress can further support psychological well-being during the implementation process.

Systems implementation: as new systems are implemented, it is essential to monitor the psychological impact on those involved. Changes in routines and responsibilities can be stressful, so providing training, support, and clear communication is key. Encouraging feedback and being responsive to concerns can help ease the transition and maintain a positive work environment.

Ongoing monitoring and evaluation: regularly assessing the psychological well-being of staff and stakeholders as part of the monitoring process can help identify any issues that may arise during the implementation of CD strategies. This can include conducting surveys or interviews to gauge satisfaction, stress levels, and overall morale. Addressing any concerns promptly can help maintain a healthy and productive work environment.

Community involvement: when involving the community in sustainability initiatives, it is important to promote a sense of inclusion and belonging. Organizing events that are enjoyable and rewarding can enhance the psychological well-being of participants, encouraging ongoing engagement and support for sustainability efforts.

In conclusion, integrating psychological well-being into the practical toolkit for implementing Circular Design strategies can lead to more effective and sustainable outcomes. By prioritizing the mental and emotional health of all participants, sport organizations can create a positive environment that supports long-term success in their sustainability efforts.

6.6. Implementation suggestion

Implementing circular economy practices in smaller sport organizations can be challenging due to limited resources, but with a well-structured approach, these organizations can achieve significant progress in sustainability. A clear and phased implementation timeline allows for steady, manageable steps that not only address immediate needs but also build towards long-term sustainability goals. This timeline fosters a culture of environmental responsibility within the organization, encouraging continuous improvement and innovation. The following implementation suggestions outline how local and regional clubs can evolve their sustainability practices over short, medium, and long-term periods, providing a practical roadmap for adopting circular economy principles effectively.

6.6.1. Suggestion for short term implementation

Months 1-2: Initial assessment and stakeholder engagement

1. Conduct baseline assessment:
    - Assess current operations: begin by thoroughly evaluating the organization's current practices in key areas such as waste management, energy usage, and material sourcing. Utilize simple tools like spreadsheets and involve volunteers or interns to help gather and analyze data. This assessment will provide a clear understanding of the starting point and highlight areas for improvement.
2. Form working group and host initial workshops:
    - Gather diverse perspectives: establish a multi-stakeholder working group that includes staff, members, local government representatives, businesses, and community members. Host workshops to discuss the findings from the baseline assessment and gather input on potential sustainability initiatives. Leverage community centers or partnerships with local businesses to host these workshops at minimal or no cost.

Months 3-4: Goal setting and planning

1. Develop SMART goals:
    - Set clear objectives: based on the initial assessment and stakeholder input, develop SMART goals that are Specific, Measurable, Achievable, Relevant, and Time-bound. These goals should be realistic, considering the organization’s available resources and human capacity.
2. Create a detailed implementation plan:
    - Outline action steps: develop a comprehensive implementation plan that details the steps needed to achieve the set goals, assigns responsibilities, and establishes clear timelines. This plan will serve as a roadmap to guide the organization through each phase of the process.

Months 5-6: Systems implementation

1. Install recycling stations and energy-efficient systems:
    - Initiate infrastructure upgrades: begin implementing systems that support sustainability goals, such as installing recycling stations, energy-efficient lighting, and water-saving fixtures. Smaller organizations can seek partnerships with local businesses or apply for grants to help fund these initial installations.

Months 7-8: Product and material sourcing

1. Transition to sustainable products:
    - Source eco-friendly materials: focus on sourcing sustainable products and materials, such as uniforms made from recycled fabrics and eco-friendly cleaning supplies. Prioritize cost-effective and locally sourced options to remain within budget while promoting sustainability.

Months 9-10: Service changes and community involvement

1. Implement new services:
    - Adopt digital solutions: introduce services that align with sustainability goals, such as digital ticketing to reduce paper waste and carpooling schemes to minimize carbon emissions.
2. Organize community engagement events:
    - Promote broader participation: engage the community through events like regular clean-up activities or sustainability workshops. These events help raise awareness, encourage participation, and build a sense of shared responsibility.

Months 11-12: Monitoring, evaluation, and recognition

1. Collect data and analyse KPIs:
    - Track progress: regularly collect and analyse data on key performance indicators (KPIs) such as waste diversion rates, energy usage, and water consumption. Use simple tools like spreadsheets or basic software to monitor progress.
2. Adjust strategies as needed:
    - Refine Approaches: based on the data collected, assess progress towards the goals and adjust strategies as necessary. Continuous improvement is key to achieving long-term sustainability.
3. Launch recognition and incentive programs:
    - Encourage participation: recognize and reward the efforts of staff, members, and volunteers through public recognition, certificates, or tangible rewards like discounts on membership fees. This helps maintain momentum and encourages ongoing participation.

6.6.2. Suggestion for medium term implementation

Months 13-16: Expansion of Circular systems

1. Enhance waste management and recycling programs:
    - Expand recycling efforts: increase the scope of recycling by introducing collection points for e-waste, hazardous materials, and organic waste. Implement composting systems for organic waste produced by the facility, such as food scraps and grass clippings.
    - Improve waste segregation: refine waste segregation practices by clearly labeling bins and providing education on proper waste sorting. This ensures that recyclables are not contaminated and can be processed efficiently.
    - Introduce closed-loop systems: consider adopting closed-loop systems where waste products are repurposed or reused within the organization. For example, organic waste can be composted and used as fertilizer for landscaping.

2. Upgrade energy efficiency measures:
    - Install smart energy systems: implement smart thermostats, motion-sensor lighting, and energy-efficient HVAC systems to optimize energy use. These systems can be programmed to reduce energy consumption during non-peak hours.
    - Renewable energy integration: begin integrating renewable energy sources such as solar panels or wind turbines. Consider starting with small-scale installations and gradually expanding based on the organization's capacity and funding.
    - Energy audits: conduct regular energy audits to identify inefficiencies and opportunities for further reductions in energy use. These audits can help justify future investments in energy-saving technologies.

Months 17-20: Deepening community engagement

1. Launch ongoing community sustainability initiatives:
    - Workshops: organize regular events where community members can promote a culture of reuse. Workshops on topics like sustainable living, recycling, and energy conservation can also be held to educate the broader community.
    - Eco-friendly product fairs: host fairs that showcase eco-friendly products, such as biodegradable sports equipment, recycled uniforms, and green cleaning supplies. These events can encourage members and the community to adopt more sustainable practices.
    - Sustainability challenges: initiate community-wide sustainability challenges, such as reducing plastic use or carpooling to events. Recognize and reward those who make significant contributions to these challenges.
2. Strengthen partnerships for local sustainability projects:
    - Collaborate with schools and universities: partner with educational institutions to engage students in sustainability projects. This can include research on improving the organization's environmental impact or joint projects like tree planting or habitat restoration.
    - Develop local green spaces: work with local government and environmental organizations to develop or enhance green spaces such as parks, community gardens, or nature trails. These spaces can be used for both recreation and education on biodiversity and conservation.
    - Joint renewable energy projects: collaborate with local businesses or government entities to fund and implement renewable energy projects, such as community solar farms or wind turbines that benefit both the organization and the surrounding community.

Months 21-24: Institutionalization of sustainability practices

1. Integrate sustainability into organizational culture:
    - Formalize sustainability policies: develop and implement formal policies that embed sustainability into all aspects of the organization's operations. This includes procurement, facility management, and event planning.
    - Create a sustainability committee: establish a dedicated committee or task force responsible for overseeing all sustainability initiatives. This group should include representatives from different departments to ensure broad engagement.
    - Staff training and onboarding: incorporate sustainability training into staff onboarding and ongoing professional development. Ensure that all employees understand the organization's sustainability goals and how their roles contribute to achieving them.
2. Pursue sustainability certifications:
    - Identify appropriate certifications: research and select sustainability certifications that align with the organization's goals and practices. Examples might include ISO 14001 for environmental management or specific certifications for green buildings and facilities.
    - Prepare for certification audits: begin preparing documentation and evidence needed for certification audits. This may involve tracking energy use, waste reduction, and other environmental metrics.
    - Leverage certification for branding: once achieved, use the certification to enhance the organization's brand and attract eco-conscious members, sponsors, and partners.

6.6.3. Suggestion for long term implementation

Years 3-4: Scaling and innovating

1. Expand sustainable procurement practices:
    - Broaden supplier criteria: continue refining procurement policies to prioritize suppliers that adhere to circular economy principles. This includes using recycled, biodegradable, or sustainably sourced materials.
    - Innovate with Circular Design: explore opportunities to implement circular design principles in all products and services offered by the organization. This could include designing uniforms and equipment for easy recycling or creating programs to take back and repurpose old gear.
    - Local sourcing and partnerships: increase the use of locally sourced materials and products, reducing the carbon footprint associated with transportation and supporting local economies.
2. Invest in renewable energy projects:

- Scale renewable energy installations: expand initial renewable energy projects to cover a larger portion of the organization's energy needs. Consider adding more solar panels, investing in wind turbines, or exploring geothermal energy.
- Energy storage solutions: Invest in energy storage systems, such as batteries, to store excess energy generated by renewable sources. This allows for greater energy independence and resilience.
- Participate in community energy initiatives: engage in broader community energy initiatives, such as sharing surplus energy with neighbouring facilities or participating in grid-tied renewable energy programs.

Years 4-5: Long-term monitoring, reporting, and recognition

1. Implement advanced monitoring systems:
    - Adopt real-time monitoring technology: invest in advanced data collection tools that provide real-time insights into sustainability metrics, including energy use, water consumption, and waste production. This allows for quick identification of inefficiencies and proactive management.
    - Dashboard and reporting tools: use digital dashboards to visualize and communicate sustainability data to stakeholders. Regularly update these dashboards to keep all stakeholders informed of progress and areas needing improvement.
    - Longitudinal data analysis: analyze data over multiple years to identify trends, measure long-term impacts, and adjust strategies accordingly. This data can be used to set more ambitious goals and improve the organization's sustainability performance.
2. Establish a legacy of sustainability:
    - Create educational programs: develop educational programs for youth and community members focused on sustainability and environmental stewardship. These programs can be tied to the organization's activities and facilities.
    - Establish endowments or funds: create endowments or funds dedicated to supporting ongoing sustainability initiatives. These funds can be used to finance future projects, ensure long-term maintenance of green infrastructure, or support scholarships related to environmental studies.
    - Continuous innovation: stay ahead of sustainability trends by regularly reviewing new technologies, practices, and partnerships. Encourage a culture of innovation within the organization that seeks out the latest in circular economy advancements.

8. Conclusion

The IDEATION project's theoretical framework has established a comprehensive and practical approach for local and regional sports organizations to adopt Circular Design (CD) strategies. By leveraging detailed methodologies and integrating best practices, the framework effectively addresses both environmental and social challenges within the sports sector. It provides a valuable resource that equips organizations across Europe with the tools and strategies needed to drive sustainability, ensuring a shift towards a more circular economy within the sports industry. Here are the core components and strengths of this framework:

- **Policy alignment and advocacy:** one of the framework's key strengths is its emphasis on aligning circular economy practices with existing policies and advocating for supportive regulations. By engaging proactively with policymakers at local, national, and EU levels, sports organizations can play a pivotal role in shaping regulations that encourage the adoption of sustainable practices. This engagement facilitates the creation of a legislative environment that is conducive to circular economy initiatives, thereby providing a clear path for organizations to follow. Furthermore, policy alignment makes it easier for organizations to secure funding, grants, and other incentives that support green initiatives. By actively participating in policy discussions, sports organizations can help set standards that prioritize sustainability, thus ensuring long-term resilience and environmental stewardship within the sector.
- **Knowledge sharing and collaboration:** another fundamental aspect of the framework is fostering a culture of knowledge sharing and collaboration. The IDEATION project underscores the importance of building strong networks among stakeholders, including sports organizations, local governments, educational institutions, businesses, and community groups. By promoting the exchange of ideas, experiences, and best practices, the framework enhances the collective capacity to address complex sustainability challenges. This collaborative approach is essential for developing robust, community-based solutions that can be easily scaled and adapted to different regions, ensuring the widespread adoption of circular economy principles. The framework encourages cross-sector partnerships that not only broaden the scope of sustainability initiatives but also create synergies that lead to innovative solutions and more efficient resource use.
- **Development of a practical toolkit:** a significant and tangible outcome of the IDEATION project is the development of a practical, hands-on toolkit designed to guide sports organizations through the implementation of CD strategies. This toolkit provides clear, step-by-step guidance on critical aspects such as waste management, energy efficiency, sustainable sourcing, and community engagement. It includes templates, checklists, and case studies that make it easier for organizations, regardless of size or budget, to adopt sustainable practices. By offering accessible and actionable tools, the framework empowers organizations to take concrete steps towards sustainability, helping them overcome barriers such as limited resources, lack of expertise, and complexity of implementation. The toolkit is designed to be adaptable, ensuring that it remains relevant across various contexts and operational scales.
- **Introduction of new professional roles:** the evolving nature of the sports sector requires new professional roles to drive sustainability initiatives forward. Recognizing this, the IDEATION framework highlights the need for positions such as sustainability

officers, eco-design specialists, and circular economy managers. These roles are crucial for ensuring that sustainability practices are effectively integrated into daily operations, that compliance with regulations is maintained, and that there is continuous improvement in environmental performance. Smaller organizations, which may lack the capacity to hire dedicated staff, can still integrate these responsibilities into existing positions, enabling them to maximize their impact without overstretching resources. The framework advocates for the professionalization of sustainability roles, encouraging the development of new skill sets within the industry.

- **Psychological well-being and sustainability:** an essential addition to the IDEATION framework is the integration of psychological well-being initiatives. Beyond improving individual health, these programs play a crucial role in enhancing the overall effectiveness of sustainability efforts. Studies have shown that mental health initiatives can lead to increased job satisfaction, better team collaboration, and improved problem-solving abilities. By fostering a positive mental health environment, organizations can cultivate a culture where creativity and innovation in sustainability projects thrive. Moreover, well-being programs can enhance employee engagement, reducing burnout and turnover, which are essential for the long-term success of sustainability strategies. Integrating such initiatives not only promotes a healthier workforce but also supports more cohesive and dynamic teams, driving continuous improvement and more effective implementation of Circular Design principles.
- **Robust evaluation and measurement:** measuring the success of CD strategies is a core component of the framework, as it allows organizations to track their progress, identify areas for improvement, and ensure accountability. The IDEATION project has established robust evaluation methods that include the use of Key Performance Indicators (KPIs) and regular reporting mechanisms. These tools help organizations monitor the effectiveness of their sustainability initiatives, enabling them to make data-driven decisions that enhance operational efficiency and environmental impact. By fostering a structured approach to evaluation, the framework promotes transparency and accountability, which in turn drives a culture of continuous improvement. This focus on measurement ensures that sustainability efforts are not just well-intentioned but also deliver tangible, verifiable results.
- **Recognition and incentive programs:** to encourage the widespread adoption of sustainable practices, the IDEATION framework emphasizes the need for recognition and incentive programs. Although there is currently a lack of dedicated programs at the EU level specifically targeting sports organizations, the framework advocates for the integration of existing broader sustainability frameworks that can offer recognition and rewards. These programs can play a critical role in enhancing engagement and commitment across the sector, providing visibility and validation for organizations that successfully implement circular economy practices. Recognition initiatives can include certifications, awards, and public acknowledgments that highlight the achievements of organizations, encouraging others to follow suit. Such incentives not only motivate organizations to adopt and maintain sustainable practices but also help to build a positive reputation and attract further support and partnerships.

In conclusion, the IDEATION project's theoretical framework sets a clear and actionable roadmap for local and regional sports organizations aiming to adopt Circular Design strategies. By focusing on critical aspects such as policy alignment, knowledge sharing, practical tools,

new professional roles, robust measurement systems, and the need for recognition programs, the framework ensures that the sports sector in Europe can achieve significant sustainability milestones. This comprehensive approach enables organizations to navigate the complexities of implementing circular economy practices, driving change at both the grassroots and regional levels. Ultimately, the collective effort promoted by this framework will contribute to a more sustainable, resource-efficient, and inclusive future for sports, setting a global benchmark for circular economy practices and establishing the sports sector as a leader in sustainability.

9. Recommendation: Roadmap for implementation the Framework

To enhance the practicality and accessibility of the IDEATION framework, a clear, step-by-step roadmap for implementing Circular Design (CD) strategies is essential. This structured approach guides organizations through each phase, ensuring a systematic and manageable transition toward sustainability. Each phase is designed to build on the previous one, allowing for gradual and sustainable integration of circular practices.

The roadmap includes the following key phases:

1. Initial assessment

- Comprehensive analysis: organizations begin by conducting an in-depth analysis of their current practices, resource usage, and sustainability challenges. This involves mapping existing processes, identifying key areas where resources are used, and recognizing waste-generating activities. The assessment should consider aspects such as material use, energy consumption, water usage, waste management, and carbon footprint.

- Setting clear objectives: this phase helps identify areas of improvement and sets clear, achievable goals that align with the organization’s overall mission and sustainability vision. Organizations need to establish baseline data for measuring progress, which will serve as reference points for tracking success over time.

- Understanding context: it's essential to understand the unique context and needs of each organization. This includes considering the local environment, economic conditions, regulatory landscape, and cultural factors that may influence the adoption of CD practices. A thorough assessment lays the groundwork for more effective planning and decision-making.

2. Stakeholder engagement

- Identifying key stakeholders: building strong partnerships and engaging key stakeholders is critical for successful implementation. This phase involves identifying and collaborating with internal teams, external partners, local governments, regulatory bodies, and communities. Key stakeholders may include employees, suppliers, customers, environmental organizations, and academic institutions.

- Fostering collaboration: active engagement ensures alignment on sustainability goals, facilitates knowledge sharing, and fosters a collaborative environment where diverse perspectives can contribute to innovative solutions. Regular workshops, seminars, and brainstorming sessions can help to keep stakeholders informed and involved, allowing for the integration of their insights and expertise into the CD strategy.

- Communication strategy: clear and consistent communication is essential for maintaining stakeholder engagement. Organizations should develop communication plans to articulate the vision, objectives, and benefits of CD practices, addressing any concerns and building trust among partners. By engaging stakeholders early in the process, organizations can generate support, resources, and commitment necessary for successful implementation.

3. Strategy development

- Tailored CD strategy: based on insights from the initial assessment and stakeholder input, organizations develop a tailored CD strategy. This strategy outlines specific goals, timelines, and resource allocations, as well as key performance indicators (KPIs) to track progress. A well-crafted strategy should address all aspects of the organization, from product design and manufacturing to supply chain management and customer engagement.

- Detailed action plan: clear planning at this stage sets the foundation for successful implementation. The action plan should detail the steps required to achieve the defined goals, including resource allocation, training needs, and technological investments. Prioritizing actions that deliver quick wins can build momentum and demonstrate the benefits of CD practices early in the process.

- Risk management: developing a risk management plan is crucial to anticipate and mitigate potential obstacles. Identifying possible risks, such as supply chain disruptions, regulatory changes, or internal resistance, allows organizations to develop contingency strategies to address them proactively.

4. Pilot programs

- Testing and experimentation: before rolling out full-scale initiatives, organizations can test their CD strategies through smaller, targeted pilot programs. These pilots can focus on specific products, processes, or departments to evaluate the feasibility and effectiveness of proposed solutions. This phase allows for experimentation, adjustment, and refinement of approaches, minimizing risks and identifying best practices that can be scaled up.

- Gathering feedback: pilot programs also provide an opportunity to gather feedback from stakeholders, including employees, partners, and customers. This feedback is crucial for fine-tuning the strategy, as it helps to identify any challenges, inefficiencies, or areas that need improvement before broader application.

- Scaling best practices: successful elements of the pilot programs can be documented and shared as best practices, serving as models for larger-scale implementation. Organizations should create detailed reports on pilot outcomes, including successes, lessons learned, and recommendations for scaling up.

5. Full-scale implementation

- Deployment of resources and systems: after successful pilot testing, organizations can proceed with the full-scale implementation of their CD strategies. This phase involves deploying resources, processes, and systems to integrate circular practices across the organization. It may include investments in new technologies, infrastructure upgrades, and sustainable sourcing methods.

- Training and capacity building: effective implementation requires equipping staff with the necessary skills and knowledge. Training programs should be developed to educate employees on CD principles, new processes, and their roles in the sustainability journey. Continuous learning opportunities help to embed a culture of sustainability throughout the organization.

- Effective communication: throughout the implementation process, it is essential to communicate effectively across all levels of the organization. Regular updates, progress reports, and success stories help to maintain enthusiasm and commitment. Celebrating milestones and achievements can also reinforce the value of CD practices and encourage continued engagement.

6. Ongoing evaluation and continuous improvement

- Regular monitoring and evaluation: implementation does not end once strategies are deployed. Continuous monitoring and evaluation are vital to track progress, assess effectiveness, and make necessary adjustments. Organizations should establish clear KPIs that align with their sustainability goals and set regular intervals for data collection and analysis.

- Reporting and accountability: regular reporting on sustainability outcomes ensures transparency and accountability. Reports should be shared with stakeholders to demonstrate progress, highlight achievements, and outline areas for improvement. This fosters trust and allows for informed discussions on how to enhance future efforts.

- Adapting to change: the circular economy landscape is dynamic, with evolving technologies, regulations, and market trends. Organizations should remain flexible and open to new ideas, continuously seeking opportunities to innovate and improve their CD strategies. This structured approach to evaluation fosters a culture of continuous improvement, ensuring that CD strategies evolve and adapt to new challenges and opportunities over time.

By following this comprehensive roadmap, local and regional sports organizations can navigate the complexities of adopting Circular Design principles with greater ease and confidence. The structured, phased approach ensures that each step builds on the previous one, allowing for gradual and sustainable integration of circular practices. This clearer pathway empowers organizations to make informed decisions, optimize resource use, and ultimately achieve their sustainability goals more effectively. By investing in stakeholder engagement, strategic planning, pilot testing, and continuous improvement, organizations can lead the way in setting a benchmark for circular economy practices within the sports sector.

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11. Annexes

Annex - 1

Utilization Of The European Union Taxonomy Navigator For To Control And Label Tehe Level Of Circular Economy Of The Grassroot Clubs

Source: https://ec.europa.eu/sustainable-finance-taxonomy/

European Commission

EU Taxonomy Navigator

Home

EU Taxonomy Navigator

A simple and practical guide for users

The EU Taxonomy Navigator is a user-friendly website that offers a series of online tools to help users better understand the EU Taxonomy in a simple and practical manner, ultimately facilitating its implementation and supporting companies in their reporting obligations.

The EU Taxonomy Navigator offers four tools to help you navigate the EU Taxonomy.

1. EU Taxonomy Compass – a visual representation of sectors, activities and criteria included in the EU Taxonomy

2. EU Taxonomy Calculator – a step-by-step guide on reporting obligations

3. FAQs repository – an overview of questions and answers on the EU Taxonomy and its delegated acts

4. EU Taxonomy User Guide – a simple guide on the Taxonomy for non-experts

5. NACE classification mapping

What is the EU Taxonomy?

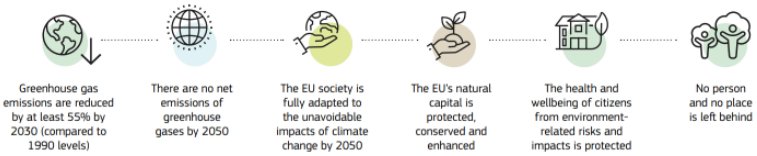
The EU Taxonomy is a classification system that helps companies and investors identify "environmentally sustainable" economic activities to make sustainable investment decisions. Environmentally sustainable economic activities are described as those which "make a substantial contribution to at least one of the EU's climate and environmental objectives, while at the same time not significantly harming any of these objectives and meeting minimum safeguards."

The EU Taxonomy is not a mandatory list for investors to invest in. It does not set mandatory requirements on environmental performance for companies or for financial products. Investors are free to choose what to invest in. However, it is expected that over time, the EU Taxonomy will encourage a transition towards sustainability in order to achieve the EU's climate and environmental goals.

What the EU Taxonomy is	What the EU Taxonomy is not
A classification system to establish clear definitions of what is an environmentally sustainable economic activity	It's not a mandatory list to invest in
Tool to help investors and companies to make informed investment decisions on environmentally sustainable activities for the purpose of determining the degree of sustainability of an investment	It's not a rating of the "greenness" of companies
Reflecting technological and policy developments: The Taxonomy will be updated regularly	It does not make any judgement on the financial performance of an investment
Facilitating transition of polluting sectors	What's not green is not necessarily brown. Activities that are not on the list, are not necessarily polluting activities. The focus is simply on activities that contribute substantially to environmental objectives.
Technology neutral	
Fostering Transparency by disclosures for financial market participants and large companies related to the Taxonomy	

Why do we need an EU Taxonomy?

The EU Taxonomy aims to help scale up investments in projects and activities that are necessary to reach the objectives of the European Green Deal – our plan to make the EU's economy environmentally sustainable, adhering to the following principles and objectives:

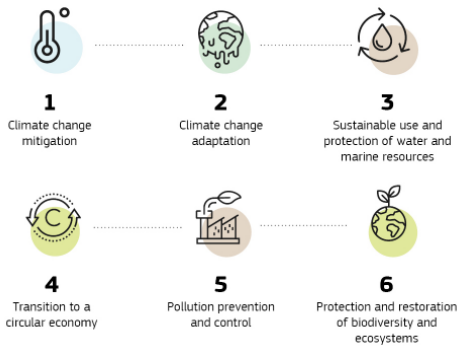


For that we need reliable tools to support companies in their transition towards a sustainable economy and climate neutrality. The EU Taxonomy is one such tool to help investors identify **environmentally sustainable economic activities**, promote a transition to a zero-carbon future and guide funding towards solutions to tackle the climate crisis and prevent further environmental degradation:

1. It creates a frame of reference for investors and companies;
2. It supports companies in their efforts to plan and finance their transition;
3. It protects against greenwashing practices;
4. It helps accelerate financing of those projects that are already sustainable and those needed in the transition.

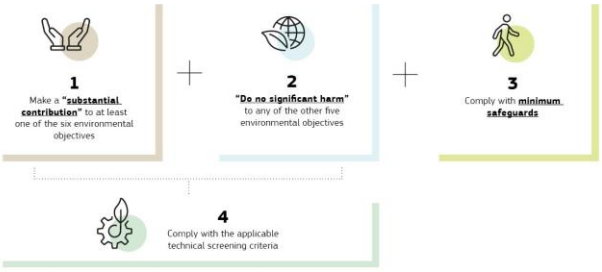
How can activities qualify under the EU Taxonomy?

The Taxonomy Regulation was published in the Official Journal of the European Union on 22 June 2020 and entered into force on 12 July 2020. Article 9 of the Taxonomy Regulation sets out six climate and environmental objectives.



The Taxonomy Regulation also sets out 4 overarching conditions that an economic activity must meet in order to qualify as environmentally sustainable:

1. Making a substantial contribution to at least one environmental objective;
2. Doing no significant harm to any of the other five environmental objectives;
3. Complying with minimum safeguards; and,
4. Complying with the technical screening criteria set out in the Taxonomy delegated acts.

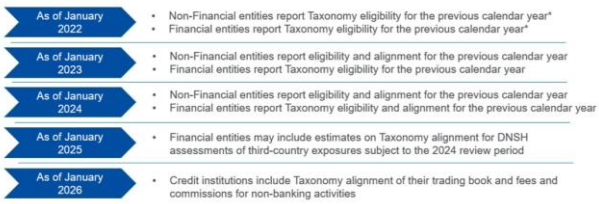


To ensure that an economic activity substantially contributes to one of these objectives, while not doing significant harm to any of the other five objectives, the EU sets performance criteria (so called "technical screening criteria") in delegated acts [3] .

What are the disclosure obligations included in the EU Taxonomy?

Companies that fall under the scope of the Corporate Sustainability Reporting Directive (CSRD) have to report in their annual reports to what extent their activities are covered by the EU Taxonomy (**Taxonomy-eligibility**) and comply with the criteria set in the Taxonomy delegated acts (**Taxonomy-alignment**). Other companies that do not fall under the scope of CSRD can decide to disclose this information on a voluntary basis to get access to sustainable financing or for other business-related reasons.

The reporting obligations and timelines [4] for undertakings are set out in the Disclosures Delegated Act supplementing Article 8 of the Taxonomy Regulation. The Disclosures Delegated Act specifies the content, methodology and presentation of information to be disclosed by financial and non-financial undertakings concerning the proportion of environmentally sustainable economic activities in their business, investments or lending activities.



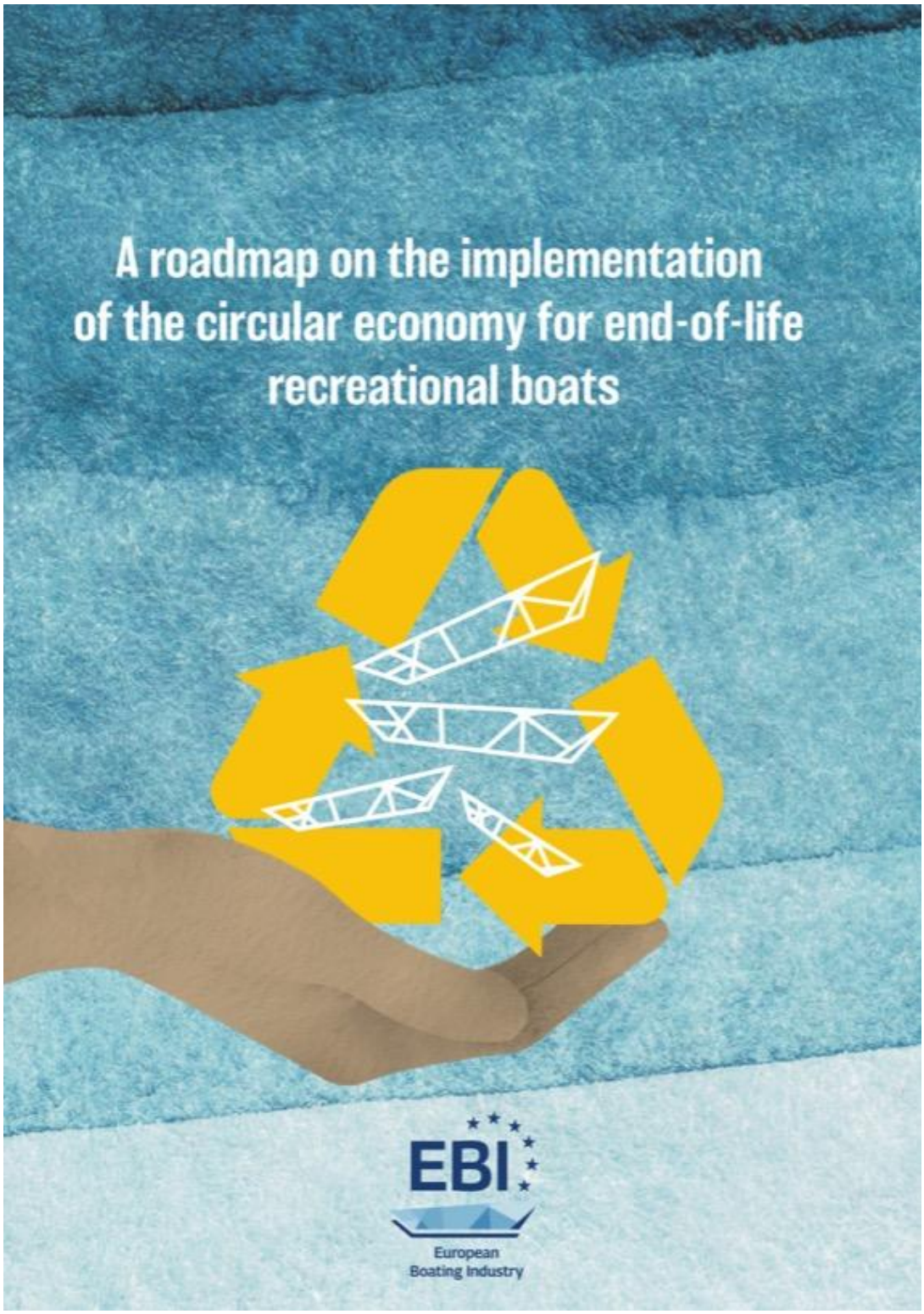
For more information about the EU Taxonomy and the EU Taxonomy delegated acts, please refer to the main webpage on the EU Taxonomy.

Disclaimer

Please note that in case of any differences, the contents displayed in the tools listed on this website do not overrule the text in any of the Taxonomy delegated acts, FAQ documents and Commission notices that underlie the repository. When changes or additions in Taxonomy delegated acts enter into application, the tools on this website will be updated accordingly. For technical questions, please contact FISMA-SUSTAINABLE-FINANCE@EC.EUROPA.EU. Please note that this address should be used only for reporting technical issues with displaying the contents of the tools and FAQs, not for providing comments on its substance.

Annex - 2

EBI recommendations on the recycling of boats



1. BACKGROUND

These recommendations were developed by the European Boating Industry (EBI) following the work of the Stakeholders' Group on end-of-life recreational boats set up in 2018 by the European Commission (Directorate-General for Maritime Affairs and Fisheries). Based on a co-creation process, the Stakeholders' group was composed of national authorities of the Member States and key stakeholders (industry, users, academia, and related industries) and chaired jointly by DG MARE & EBI. A series of regular structured exchanges laid down the basis for this document. The aim of this document is to present the status quo for composite materials from end-of-life/end-of-use boats at EU level and provide recommendations on how to fully implement a circular economy approach in line with the ***European Green Deal***[1].

2. EU POLICY PERSPECTIVE

The recommendations primarily concern recreational boats under 24m in line within the scope of EU Recreational Craft Directive 2013/53/EU. They should be applied to fully implement a circular approach. The aim is to coordinate the current national approach in tackling the issues of recreational boats reaching their end-of-life and implementing circular economy principles following the 2030 and 2050 targets. A circular approach, including in design, production and end-of-life treatment, should avoid potential negative environmental impact, abandonment in the natural environment or marina/yard and increase proper waste management, including material re-use and up-cycling. This should at the same time advance the EU's international competitiveness in boat-building.

The recommendations in this document support implementation of a number of key EU policy goals, namely the ***New approach for a sustainable blue economy in the EU Transforming the EU's Blue Economy***[2], the ***Circular Economy Action Plan***[3] and ***Zero Pollution Ambition***[4], part of the overarching framework of ***EU Green Deal***. In addition, the ***European Strategy for more Growth and Jobs in Coastal and Maritime Tourism***[5] and ***Staff Working Document on Nautical Tourism***[6] include end-of-life boats as priority areas. Previous work has also been carried out by the International Maritime Organisation in the framework of the London Protocol[7] and by the Baltic Marine Environment Protection Commission[8]. A study for the European Commission also looked at the topic and developed policy options[9]. Currently, there is no common EU approach towards the management of end-life recreational boats, including their dismantling and preparation for re-use or recycling. Action at EU level and better coordination of Member States would provide significant added value and support solving the issues identified.

3. SCOPE OF THE ISSUE

The Composite materials, particularly Glass Fibre Reinforced Polymer (GFRP) have been used for the manufacturing of boats since the 1950s and increased substantially since the 1970s. The material properties, lightweight nature, and durability make it well-suited for boat-building. Recreational boats using composite have a lifetime of up to 50 years and even much longer when well maintained. This is positive for life cycle environmental impact. Critical is the point of end-of-life as there are currently only a few specialised dismantling sites available

[2] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2021:240:FIN
[3] https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN
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[9] Study on the competitiveness of the recreational boating sector, Ecorys, 2015 for the European Commission

across Europe and very limited recycling options available at large and commercial scale. The need to scale up dismantling and recycling is clear given the increase in number of composite boats built since the 1970s that may be reaching their end-of-life in the near future. It should be noted that 72% of the waste from the dismantling of boats is subject to recycling or energy recovery (wood, metal, and composite)[10].

Within the European composite market, marine (including commercial) uses about 72 kilotons of composite in 2019[11], which is about 2-3% of the total composite sector in Europe. The largest use sectors are transportation, construction with wind energy gaining in importance.

It is estimated that there are over 6.5 million boats in European waters, mostly smaller than 7.5 m[12]. The majority of the fleet is composed of motorboats, followed by sailboats and inflatables. Some countries make up a large part of the overall fleet (see chart below). Besides, EU fishing fleet register lists 81,167 active vessels, where 51,861 vessels are in a length category 0-8 m, and majority made of plastic[13]. However, it should be noted that there is a lack of consistent classification and lack of boat registers in some countries and differences in the registration requirements of Member States, with some starting at a certain length or engine power. Therefore, making a precise estimation of the fleet size, types of craft and further indicators is difficult.

[10] Data from APER

[11] JEC market report 2019

[12] ICOMIA Recreational Boating Industry Statistics

[13] Fleet Register (europa.eu)

[14] The figure of 1.1 million boats in France corresponds to the registration figures of the administration. The actual fleet is lower as until 2019, deconstructed boats were very rarely deregistered. The real figures is likely to between 800,000 and 850,000 units

Previous studies and the Staff Working Document on Nautical Tourism have indicated that 1-2% of all boats likely reach their end-of-life/end-of-use each year, equalling to around 65-130,000 boats per year in the EU. The practical experience of several countries, in particular the French APER[15] system, shows however that theoretical estimates are usually not achievable[16]. Based on previous studies, APER's initial aim was to dismantle 20-25,000 boats in the period 2019-2023, but current theoretical estimations stand at 10-15,000 boats by the end of 2023. The reasons for this are varied but include emotional attachment of the final owner, high transportation cost, a thriving used boat market, as well as the potentially longer life-time of recreational boats. It can therefore be estimated that the real number reaching their end-of-life each year and available for dismantling would be 30-40 000 boats in the EU until around 2030.

An estimation can therefore also be made on the potential volume of composite waste from end-of-life boats. According to APER, the average volume of composite waste per boat dismantled is 0,77 tonnes. This would result in 23,1000 – 30,800 tons per year at European level. It can be estimated that this will grow by 1-2% every year with increasing awareness among boaters and more dismantling sites becoming available.

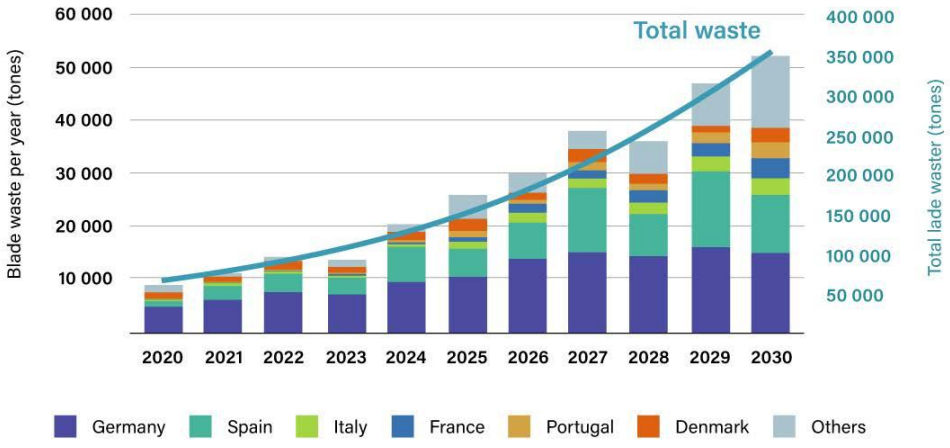
To achieve a full picture, other composite use sectors should be compared, in particular wind turbines. According to the sector's association WindEurope, 67 GW of wind energy will reach the end of its designed lifetime by 2030. These turbines of the first generation are almost exclusively built onshore. Most of the turbines will first be decommissioned in Germany and Spain, with some as well in Denmark. They account for 80% of the waste material in the first years. Towards 2030, Italy, France and Portugal will also decommission large amounts of blades.

The wind sector will have produced about 15,000 tonnes of blade waste in Europe each year in the period 2020-2023. By 2025 this would be 30,000 tonnes per year and by 2030 more than 60,000 tonnes per year. Cumulatively this would be more than 400,000 tonnes of waste from decommissioned blades that will need to be treated by 2030.

It shows that the boating industry and wind energy sectors face similar challenges related to composite material use and are logical partners in driving forward recycling solutions of composite materials at their end-of-life.

However, compared to the boating sector, the wind energy sector has more precise knowledge about the amounts of composite materials to be decommissioned each year. This visibility on composite waste volumes makes the wind sector a prime mover in supporting the establishment of a business plan for the industrialisation of composite recycling/upcycling. This is less the case for the nautical sector, as there is no certainty on the amount of composite that will be dismantled in the future at national or EU level. Nevertheless, the two sectors are working together to advance composite waste recycling.

Decommissioned blade weight (including repowering)



[15] Association pour une Plaisance Eco-Responsable

[16] https://www.ecologie.gouv.fr/bateaux-plaisance-ou-sport

4. FINANCING

A key element is the implementation of a financing system to allow setting up a permanent structure and fund to collect, treat and dismantle end-of-life boats. It should be considered that the last owner of a boat usually cannot afford the high costs of proper disposal and affordable solutions are therefore needed to incentivise proper dismantling. Several different approaches can be envisaged, which are in place across Europe or being considered:

EU approach (as included in the Waste Framework Directive)

- **Extended Producer Responsibility** scheme with an eco-contribution from companies placing the boat on the market and subsidies from existing sector-specific registration fees or taxes (such as France, APER)

In addition, other options for financing could be:

- **Public subsidies** throughout the year or based on specific campaigns (such as Sweden, BÅTRETUR/Swedish Agency for Marine and Water Management)[17]
- Inclusion in **insurance premiums** or in **marina fees**
- **Private system** with payment by final owner, marina, or local authority

A simple and unbureaucratic and financially sustainable approach needs to consider the specificities of each Member State in relation to the number of boats, geographical features (primarily inland or coastal waters), maturity of the market and boat fleet, number of new compared to old boats, the historical stock and other factors. Specific consideration needs to be placed on the differences for financing for the existing boats on the market and new boats. EU funding can be useful to support and kickstart regional projects or campaigns to identify, dismantle and recycle end-of-life boats.

RECOMMENDATIONS

- Member States: Cooperation of neighbouring Member States or regions to set up joint dismantling systems
- EU: Provision of funding for setting-up of boat dismantling systems in EU countries (BlueInvest, Horizon Europe, LIFE, EIB, EMFAF) & provision of funding for pilot projects in regions to identify appropriate funding system

[17] The public subsidies are only a complement to other solutions that will be phased out in the long run. There is now a government assignment with the aim to dismantle end-of-life boats, but at the same time find other solutions to tackle the financial perspective (including EPR).

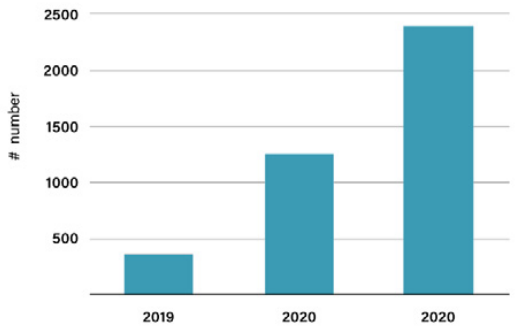
5. DISMANTLING & TRANSPORT

A key aspect for the circular approach is the availability of dismantling centres in proximity to the locations of end-of-life boats (e.g. boating hotspots, marinas) to which they can be easily transported and dismantled. Composite material of end-of-life boats is often worn out and has likely been treated with antifouling paint, requiring specialised knowledge and common guidelines. A basis could be the Italian UNI Standard on "End-of-life treatment of pleasure craft, small vessels" (UNI 11509: 2013) finalised in 2013[18].

The cost of dismantling increases with the size of the boat. It has been quoted as 15 €/metre for boats under 6 metres long. Individual dismantling was estimated to cost about 1163€ for a 6-metre motorboat and 989€ for a sailboat (Belgium[19]). According to APER that relies on the largest base of dismantled boats, the dismantling costs per boat is an average of 600€ with wide variance from 120€ to 6,000€ for large boats.

Using European average, the cost of dismantling for the smaller range of boats alone, without taking other costs into account, will therefore be at least 18-24 million € per year for the EU. This could be much higher depending on the length and types of boats ultimately brought to dismantling. Further costs for administration, communication, and importantly transport need to also be taken into account. Also, there is a possibility to consider using such funding for R&I.

Boat dismantling (APER, France)



A key cost driver is transport, which increases with distance to the dismantling site, length of the craft and need for exceptional transport and special permits. In France, the AGEC law (anti-waste and circular economy) provides that from 2023, sectors covered by the EPR scheme must organise and finance not only deconstruction but also the collection and transport of waste to treatment centres. The cost of transport is as high as the cost of deconstruction and the new obligation therefore leads to a doubling of unit costs per boat, which puts the economic balance of the APER system at risk. APER is conducting an experiment to cover transport costs in the second half of 2022 in the Brittany region. The objective is to measure collection and transport costs and to observe the effect of free transport on the number of requests. The first results show that the land transport costs for the boats is between €250 for a boat of less than 6m close to a dismantling centre and more than €10,000 for the largest units. These prices do not include the costs of refloating, hauling out and loading.

A potential solution to the high transport costs and in countries with a smaller boat fleet, could be the use of mobile dismantling units that can access boat yards or marinas for direct on-site dismantling. Importantly, these locations should be able to apply for

[18] https://store.uni.com/p/UNI21012702/uni-115092013-231697/UNI21012702_EIT
[19] Marina VYNieuwpoort

► Member States: Setting up a funding (based on EPR or other suitable approach) and dismantling system for end-of-life boats in cooperation with stakeholders by 2030

► Waste dismantling industry: Adoption of procedures to allow for dismantling of end-of-life boats in existing waste facilities

► EU: Within current revision of Waste Framework Directive, the following should be considered:

▷ Dedicated waste code for composite waste in European Waste List with sub-codes for end-of-life recreational boat composite waste and other use sectors.

▷ Ensure EU waste shipment regulation allows for cross-border transport of composite material waste in various stages of treatment.

▷ Addition of permission for dismantling outside of waste centres for end-of-life boats, such as in marinas or boat yards with specific light-touch license for occasional use and use of mobile dismantling units.

► Member States & Marinas: Change of internal rules and procedures to allow for easier removal of abandoned boats and adoption of specific procedure to seize abandoned boats

6. RECYCLING

Recycling/upcycling of composite waste is a major cross-sectoral issue[22]. Currently, there are no commercially viable recycling solutions due to high energy and other costs involved with the final product not able to be sold at profit. The aim for recycling/upcycling should be the conversion into new materials and products used in the manufacture of new composite products, enabling a circular approach within the composite sector. Currently, composite waste, regardless of the source, is used for energy recovery and landfill. According to APER, 40% of composite waste is stocked in classified locations with 60% used for energy recovery.

Cement kiln co-processing, while costly, is the treatment technology that is already available and that could be increasingly used within the next years to transition to the circular economy approach. Glass fibre can be a source of silica that is needed in the cement production. One ton of com-

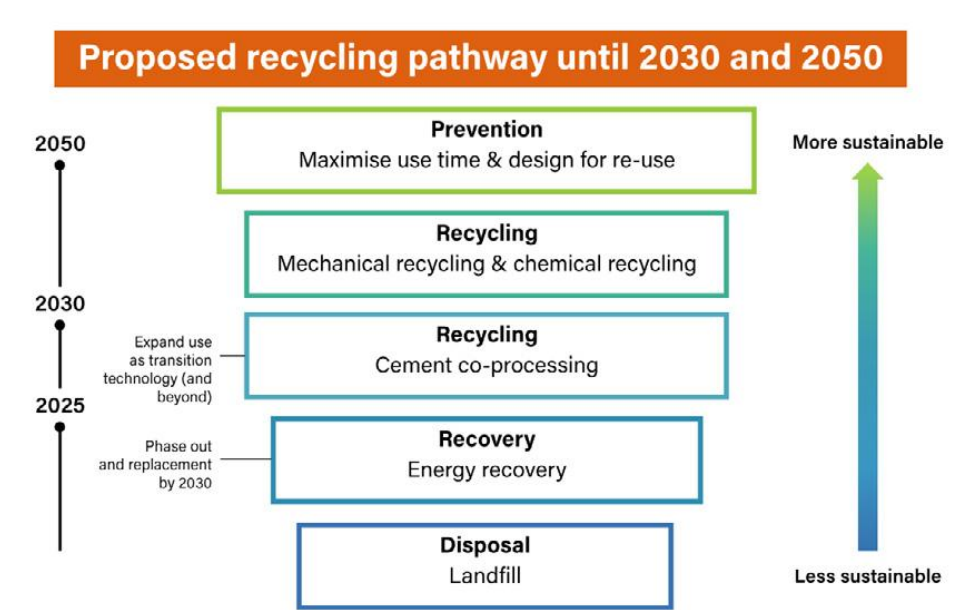
[22] https://ec.europa.eu/environment/pdf/waste/low_review_oekopol.pdf

[21] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13225-Environmental-impact-of-waste-management-revision-of-EU-waste-framework_en

posite material leads to the saving of 460 kilograms of primary raw material (such as sand). Polymers can be used to produce energy. The high efficiency and lower CO_2 emission factor, reduces the total CO_2 impact of the cement production process. One ton of composite can save approximately 110 kilograms of CO_2[23] compared to fossil fuels. In 2021, only one cement plant was accepting composite waste. However, this single facility could take the entire existing combined annual composite waste of both the boating and wind energy sector. Given its immediate availability and cement sector's need to replace sand and lower GHG emission, cement co-processing can act as a recycling technology for composite waste and continue to be used alongside other technologies. The approach for new recycling solutions has to be technology-open to identify the most suitable approach for all composite use industries.

Other recycling solutions, such as mechanical and chemical composite recycling have been developed. While proven to be successful at pilot scale, scale-up and commercialisation is key in the next few years This requires investment and support from public funding. The recreational boating industry alone can be considered as too small and insufficiently certain to produce the stable composite waste stream to create a recycling market and must work with other industries such as wind energy, construction and automotive to find common solutions at industrial scale. A stand-alone recycling system for end-of-life recreational boats is not feasible. Central recycling hubs in regions, even cross-border, may be crucial to reduce transport costs from waste dismantling to recycling. Given that boats made from composite will dominate the stock of end-of-life boats for the coming decades, recycling of composite waste will be required

In addition, the re-use of boats needs to be encouraged as much as possible as



[23] Data from Geocycle

this can prevent waste effectively. Boats can be refitted and their lifetime extended again. This could benefit from cross-border cooperation by identifying use of end-of-life boats in other EU countries. An important aspect would be to design and manufacture boats with reuse and recycling in mind. The Swedish Båtskroten system, for instance, puts customers in contact with owners of end-of-life boats. This has resulted in reusing approximately 650 components from boats dismantled in 2022 (including mainsheets, anchors, tiller fittings, lanterns, compasses, sails, rudder). Some boats that come in are fully functional boats that could be used for many more years. Båtskroten has received some requests to export entire boats to Estonia, Latvia, Lithuania and Poland for upcycling.

RECOMMENDATIONS

► Industry (commitment taken by EBI): Phase out landfilling and energy recovery by 2030, expand use of cement kiln route from 2025 (and beyond) and adoption of additional recycling/upcycling solutions from 2030 in coordination with other composite use industries (based on a cross-sectoral and technology-neutral approach)

► Composite use industries: Cooperation across the major composite use industries to set up common recycling pathways

► EU: Focus of funding opportunities of upscaling and commercialisation of recycling solutions for composite waste and identification of approaches to encourage reuse and upcycling of end-of-life boats

7. Research&Innovation

Besides the implementation of recycling solutions for existing end-of-life boats and funding to support their transition from pre-industrial to real-life application, the identification of new fibres and resins is needed that are sustainable and less CO_2-intensive. Basalt, flax, and hemp are being trialled and may become part of the material used in boat building. Their further implementation requires proof of durability, as well as life cycle analysis comparisons with existing materials. While being currently still in early adoption phase, these may offer part of the solution to reduce environmental impact and reduce CO_2 emissions. Other innovation, such as 3D printing, can also support a circular approach. Further Research & Innovation is therefore needed to support the future development of composite materials used in boat-building. Life Cycle Analysis (LCA), if standardised, can also be an important tool to evaluate effective reduction of environmental impact across all phases of the life cycle taking a strong material perspective.

RECOMMENDATIONS

► EU: R&I funding for development of new high-performance materials with enhanced circularity (design for longer lifetime, eco-design, reuse/ repurpose approach)

► EU: R&I funding for boat manufacturers to apply new materials in boat-building

► EU: Consideration of mandatory use of LCA-proven sustainable composites/ recycled content in non-structural applications through Recreational Craft Directive based on eco-design approach by 2030 in next revision of RCD

8. CONCLUSION AND SUGGESTED IMPLEMENTATION

The experience of the Stakeholder Group has shown a clear need to discuss and coordinate activities at EU level and identify and implement common solutions. This should be continued for the implementation phase of the roadmap. It is suggested to set up a coordination group/Network for countries with a dismantling system in place as well as those wanting to develop it. Members should be the national authorities, national associations of the boating industry, and association of boat users. It should be led by the European Commission (DG MARE) and European Boating Industry (EBI). This group would oversee follow-up and implementation of the recommendations identified in this roadmap.rently still in early adoption phase, these may offer part of the solution to reduce environmental impact and reduce CO_2 emissions. Other innovation, such as 3D printing, can also support a circular approach. Further Research & Innovation is therefore needed to support the future development of composite materials used in boat-building. Life Cycle Analysis (LCA), if standardised, can also be an important tool to evaluate effective reduction of environmental impact across all phases of the life cycle taking a strong material perspective.

RECOMMENDATIONS

► Set up an EU Network on end-of-life boats (national dismantling schemes + stakeholders) co-chaired by DG MARE and EBI with at least yearly meetings from 2023

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For more information:
European Boating Industry
office@europeanboatingindustry.eu
www.europeanboatingindustry.eu

a license based on suitable protocols. However, this is currently not possible due to the provisions in the EU Waste Framework Directive that should be considered in the current revision. This is common practice in the wind energy sector. Very often decommissioned blades are already cut on-site with all necessary environmental precautions.

In addition, end-of-life boats and composite waste are not included as a specific category in the European Waste List. The European List of Waste provides common terminology for classifying waste across the EU, crucial for waste management, recycling, and statistics. This makes composite waste hard to track and transport once labelled. It thereby prevents the pooling of composite waste from different sectors needed for recycling and its pre-treatment with recycling companies unable to source enough and consistent composite material waste. In a supporting study[20] for the last revision of the EU waste list, it was suggested to create a new entry on "waste from end-of-life ships and other means used for the maritime transport". However, this was never implemented in the final EU Waste List and should be reviewed in the context of this document and the upcoming revision[21]. To enhance pooling of composite waste, an entry on 'composite waste' with sub-headings/categories for 'composite waste from end-of-life boats', 'composite waste from end-of-life blades', 'composite waste from manufacturing', and further for each major use sector should be implemented.

Specific concerns exist for abandoned boats, either within marinas or in the natural environment, when the owner cannot be identified or is unwilling to act. In this case, special procedures need to be implemented to allow for the boat to be confiscated and dismantled. Boats abandoned in marinas also occupy valuable space. An approach being discussed in Spain is that in case of abandoned boats in marinas, a notary can declare the boat abandoned and remove ownership rights. Abandoned boats are defined as those that do not pay the mooring fees for more than one year or exceptionally for six months if the boat is polluting or close to produce pollution or is a danger for other boats. Once this notary declaration has been made, the marina or other site can sell the boat or start the dismantling procedure. The use of a notary provides legal security to the marina or other site. This approach should also be considered at Member State level or adapted to the national legal framework.

RECOMMENDATIONS

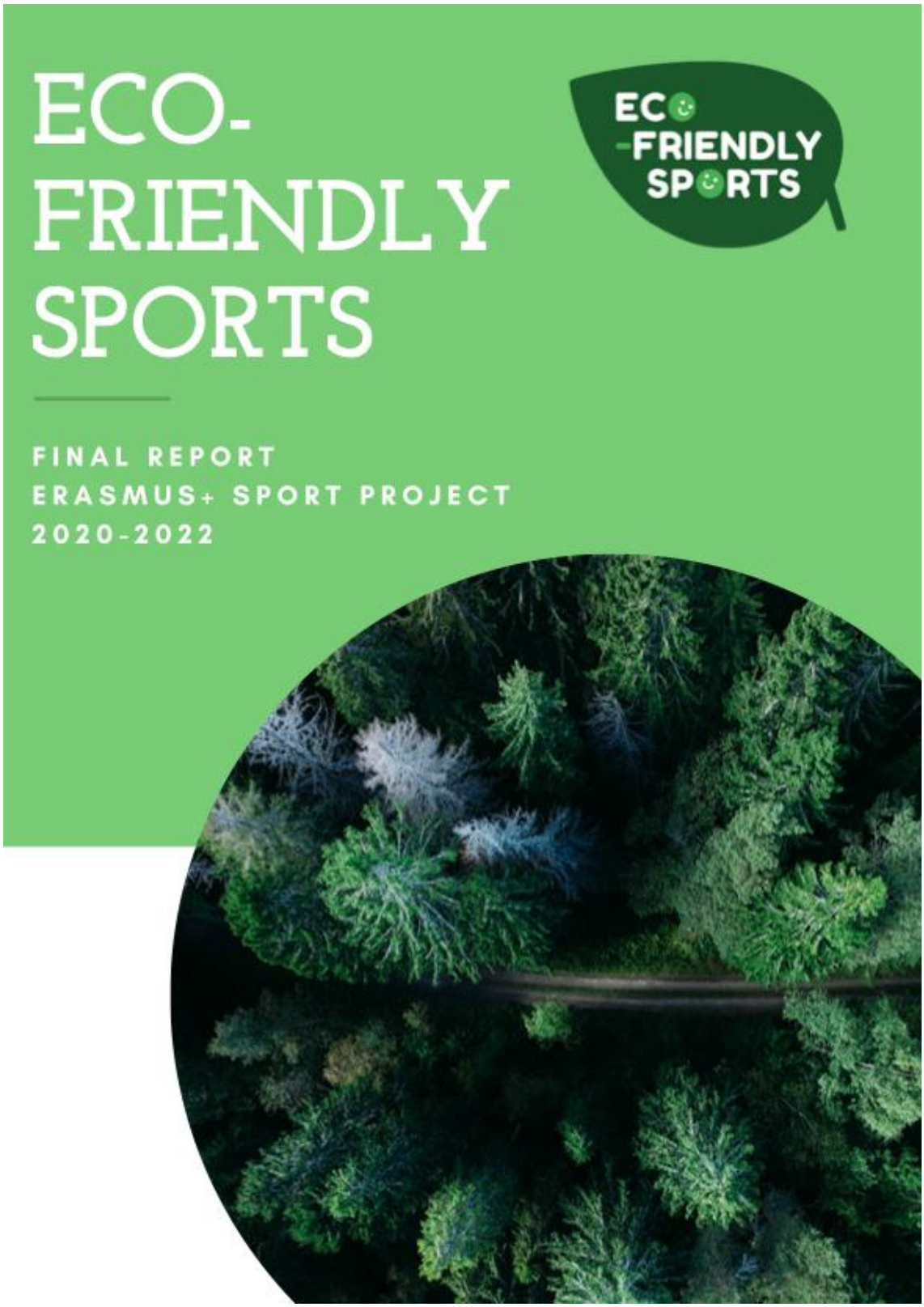
► Member States & EU: Alignment of data collection on end-of-life boats (number, volume, locations) and consolidation at EU level

cont.

[20] https://ec.europa.eu/environment/pdf/waste/low_review_oekopol.pdf
[21] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13225-Environmental-impact-of-waste-management-revision-of-EU-waste-framework_en

Annex - 3

ERASMUS+ “ECO FRIENDLY SPORTS”



OUR OBJECTIVES:

- to promote and develop new methods of environmental education through sport,
- to increase the number of eco-friendly sports events organized,
- to generate public awareness about the possible connection between sport and the protection of the environment,
- to foster citizens' engagement in sport, but also encourage them to take action towards a better environment,
- to improve the knowledge and experience of representatives of sports clubs and youth workers about the concept of eco-friendly sport,
- to provide opportunities in the urban lifestyle to keep people's physical and mental health and to significantly decrease the stress levels,
- Building a society that feels close & attached to nature will contribute to using natural resources sustainably and thus building sustainable cities,
- to contribute to the social inclusion of young people from disadvantaged backgrounds.

THE MAIN TOPICS COVERED:

- How to organize eco-friendly sport events,
- How to make existing regular sports activities or sport events more eco-friendly,
- How to integrate education about the environment and nature into the sport and physical activities,
- How can sport help nature conservation and other related topics.
- In each chapter a theoretical introduction is available followed by the practical part for all those who are interested in organizing workshops about the topic for their colleagues or NGOs representatives.

GOOD PRACTICES COLLECTION: HOW TO COMBINE SPORT AND PROTECTION OF THE ENVIRONMENT

We started the project with analysis and have been exploring diverse activities, events, and non-formal education methods of various sports, environmental and governmental actors that already combine sport and protection of the environment.

The aim has been to analyze, identify and collect good practices, recommendations, and resources about existing programs. The publication can serve as an inspiration for the integration of the environmental aspects into the sport, especially at the grassroots level.

A FEW TIPS TO ORGANIZINE ECO-FRIENDLY SPORTS EVENTS

Feeling inspired? There are a variety of eco-friendly sports events that can be organized!

- Hike or run in nature, and try to always link these physical activities to waste collection;
- Plant trees;
- Clean up river banks, and shores while doing water sports;
- Manage repairing and upcycling workshops;
- Produce eco-friendly stuff - e.g. nests for birds, bees wraps, rock gardens, etc.
- Observe, walk and learn about birds, butterfly species, and other animals;
- Connect environment conservation workshops with sports activities.

...and many others.

A FEW TIPS TO INVOLVE THE LOCAL COMMUNITY

Ask people about their opinion and involve them in the organization of the up-coming events!

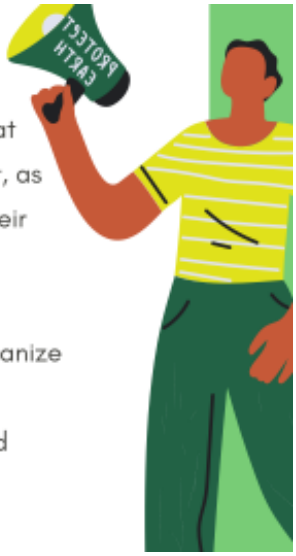
- Asking people about their opinion is always a good idea which can help you to improve the quality of your event. You can create an evaluation or follow-up questionnaire which you can share in the facebook event.
- Sometimes your participants become the most active organizers. Make sure you give your event's participants the opportunity to join your organization and become an active member. In our experience the most active volunteers always come from the pool of event participants.
- Be always open to new ideas, suggestions and feedback. Evaluate your event with the team of organizers and sum up the positive aspects and the points for improvement. Next time you will even do it better!

VOLUNTEERS ARE THE KEY INGREDIENTS FOR A SUCCESSFUL SPORTS EVENT

BASICS OF VOLUNTEER MANAGEMENT

- Start pre-event planning with the hiring or recruitment of a Volunteer Coordinator.
- Begin to create the Volunteer Services Plan. There are a number of items that must be included in the plan like What committees need volunteers and how many are needed? What will they be doing and are written job descriptions available? Where will they need to be and how do they get there?
- Organise volunteer training in advance of the event a few days prior.
- Think after the event, your volunteers need closure in the way of an appreciation letter, certificate or gift, and possibly a party.

CONCLUSION



Our project is one of the many great initiatives of "ordinary" people that want to contribute to the protection of the environment and our planet, as well as better health of people through encouraging and increasing their physical activity. Join us!

If you are interested in the topic, or our events, or you would like to organize them on your own, you should definitely check our publications and multimedia on our project website - WWW.ECOFRIENDLYSPORT.EU and follow our Facebook page and Instagram account (@ecofriendlysports)

ECO-FRIENDLY SPORTS

THE LOCAL EVENTS WERE CARRIED OUT IN 8 COUNTRIES:

AUSTRIA
BULGARIA
HUNGARY
PORTUGAL
ROMANIA
SLOVAKIA
SPAIN
TURKEY

Lastly, we would like to thank all the volunteers, participants, partners and everyone who were involved or supported our act without you, it wouldn't have been possible.

"Small acts, when multiplied by millions of people, can transform the world" – Howard Zinn

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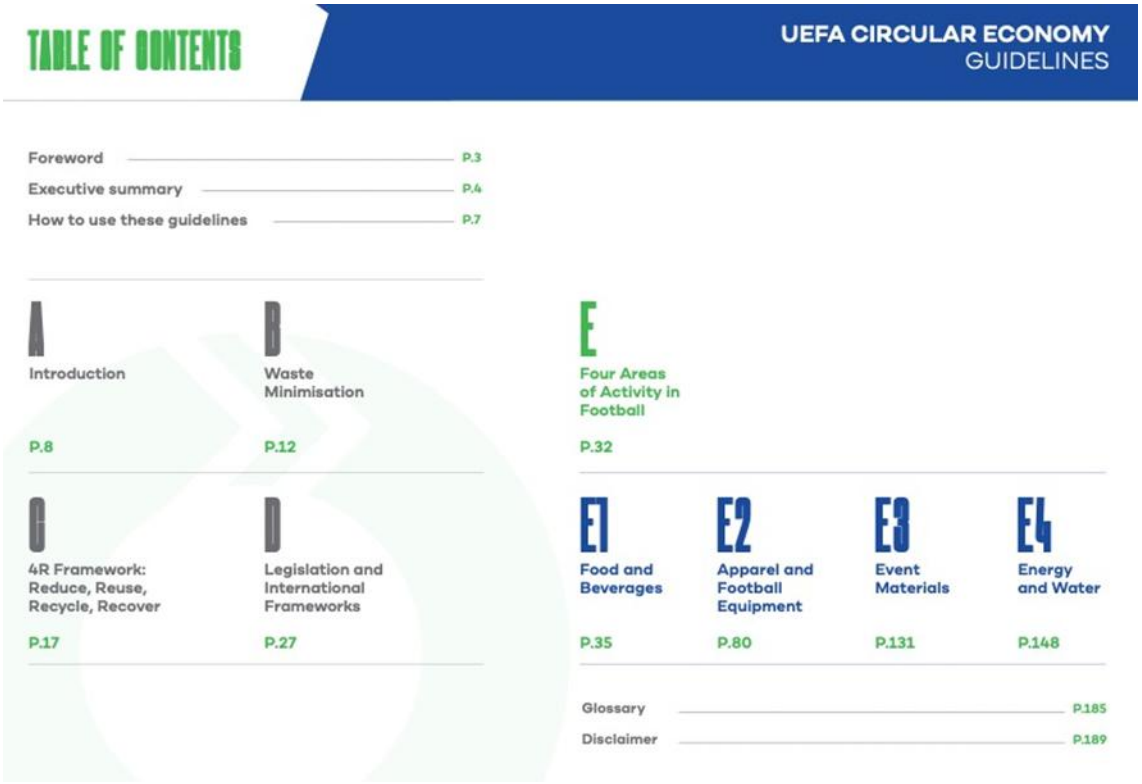
Co-funded by the Erasmus+ Programme of the European Union

Annex - 4

UEFA CIRCULAR ECONOMY GUIDELINES



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