World Sailing

ITF International Tennis Federation

International Olympic Committee

INTERNATIONAL BIATHLON UNION

UCI UNION CYCLISTE INTERNATIONALE

IF SUSTAINABILITY PROJECT

CARBON FIBRE CIRCULAR ALLIANCE

WORLD SAILING TRUST

NOC AND IF SUSTAINABILITY CASE STUDIES

The world faces significant challenges across a wide spectrum of economic, social and environmental matters. The Olympic Movement has both an opportunity and a duty to actively contribute to the global sustainability debate in line with its vision of "building a better world through sport".

With this in mind, and in response to Olympic Agenda 2020, the International Olympic Committee (IOC) launched the International Federation (IF) Sustainability Project in 2016 to obtain an overview of IFs' sustainability initiatives – identifying common topics, challenges and good practices while also sharing information among the IFs. One outcome of the project was a series of case studies illustrating how IFs are actively contributing towards a more sustainable world.

As part of the IOC's objective to "profile the role of the Olympic Movement in sustainability through the aggregation of information and collective reporting", it was agreed that the identification and sharing of information contribute to the holistic integration of sustainability and should be continued.

These case studies, which now also showcase the best practices of National Olympic Committees (NOCs), form part of a strategic support system made available to the Olympic Movement through the IOC Sustainability Strategy. Each case study is aligned with one or more of the IOC's five sustainability focus areas: infrastructure & natural sites; sourcing & resource management; mobility; workforce; and climate. They are also aligned with one or more of the United Nations (UN) framework of 17 Sustainable Development Goals (SDGs), which provide a common framework for organisations to explain how they plan to contribute to sustainable development and tackle the key global sustainability challenges.

This framework is pivotal for the Olympic Movement – in September 2015, the UN General Assembly confirmed the important role that sport can play in supporting the UN's 2030 Agenda for Sustainable Development and its SDGs.

The IOC provides support to NOCs and IFs in establishing, designing and developing their sustainability strategies.

"Sport is also an important enabler of sustainable development. We recognise the growing contribution of sport to the realisation of development and peace in its promotion of tolerance and respect and the contributions it makes to the empowerment of women and of young people, individuals and communities as well as to health, education and social inclusion objectives."

PARAGRAPH 37, UN 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

Each NOC/IF sustainability project contributes to one or more of the IOC's sustainability focus areas and one or more of the UN SDGs.

IOC FOCUS AREAS

INFRASTRUCTURE & NATURAL SITES | SOURCING & RESOURCE MANAGEMENT | CLIMATE

UN SDGs

World Sailing | ITF International Tennis Federation | INTERNATIONAL BIATHLON UNION | UCI

International Olympic Committee

OLYMPIC SPORTS ORGANISATIONS TACKLE CARBON FIBRE CIRCULARITY

The forward-looking Carbon Fibre Circular Demonstration Project (Carbon Fibre Project) is a multi-sport collaboration that aims to work with sports equipment manufacturers and users on how to recover, transform and reuse carbon fibre from sporting goods components.

It is coordinated and managed by the World Sailing Trust (The Trust), the charitable organisation affiliated to World Sailing. The Trust is running the Carbon Fibre Project as part of the "Planet" focus area of its strategy, through which it promotes environmentally sustainable activities, products and practices that will make a lasting positive impact and protect the planet's waters.

The Carbon Fibre Project created the Carbon Fibre Circular Alliance (Alliance), which comprises four International Federations: World Sailing, the International Biathlon Union (IBU), the International Tennis Federation (ITF) and the Union Cycliste Internationale (UCI). The Alliance is also supported by the International Olympic Committee and leading equipment manufacturers Wilson Sporting Goods, Starboard, SCOTT Sports and OneWay.

Moreover, the Alliance is working with composite specialists and academics to make the project a truly disruptive one.

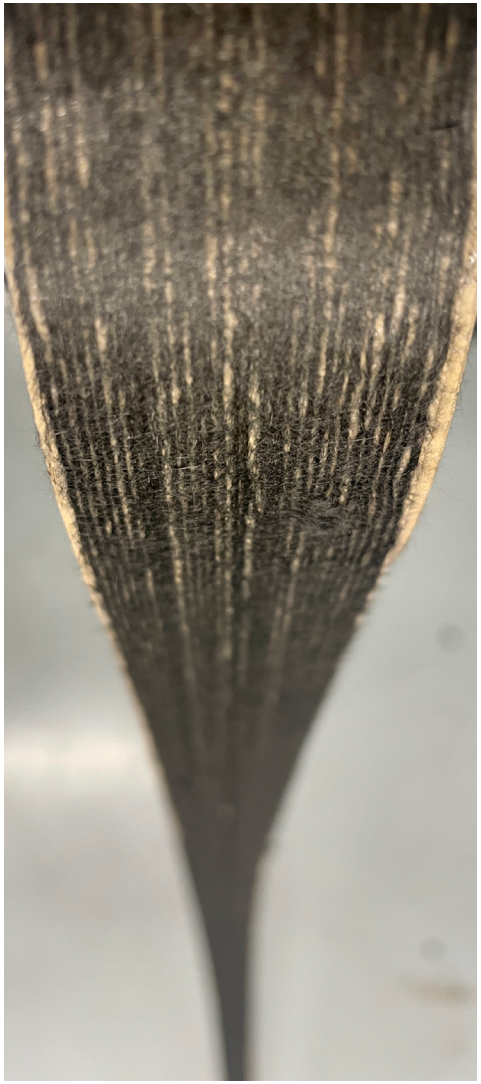
Giving a second life to carbon fibre:

Together with the aerospace, automotive and wind turbine industries, sport is one of the four largest users of carbon fibre worldwide. The weight and strength properties of carbon make it a high-performing material and and it is therefore widely used in sports equipment such as bicycles, tennis rackets, skis and boats.

The downside is that a sustainable end-of-life solution for carbon fibre has not yet been found, since it cannot be remelted and recycled like aluminium. Used and defective products are simply thrown away, and 95% of carbon fibre ends up in landfill. For this reason, the Carbon Fibre Project is an important step in terms of identifying solutions to address this issue and reducing waste. One example of the material's application in sport is that fibres from a broken bicycle could be reused to make new technical carbon tapes, giving them a second life by using them in a tennis racket, a sailing component or a ski pole, or by turning them back into a bicycle component.

OBJECTIVES

- Make a real change and address the challenge of end-of-life carbon fibre through effective collaboration between existing and future members of the Alliance.
- Apply a circularity mindset in the sports equipment industry, whose use of carbon fibre will keep growing, driven by the increasing demand for lightweight materials.
- Engage all sports equipment users in making carbon circularity a mainstream practice, recycling and re-using carbon fibre to reduce the negative environmental impact of its use in sports equipment.



The technical lead of the Carbon Fibre Project, Lineat Composites, proposed a new process, which is very similar to high-tech paper making. It consists of realigning the carbon fibres into uni-directional discontinuous fibre tapes using Aligned Formable Fibre Technology (AFFT). Early results from the project have already shown that, in some cases, the produced carbon fibre tapes are even better than the original virgin fibre due to increased overlap in fibres. This insight helps increase certainty about the quality of reused carbon fibre and thus promote fibre recycling.

The Carbon Fibre Project moved into the testing phase in June 2022:

The four sports equipment manufacturers working with the Alliance started to build prototype equipment with AFFT. They have successfully tested a prototype tennis racket with 50% recycled carbon fibre. Moreover, they they created a prototype ski with realigned fibres from a bicycle frame, and a board fin made of realigned fibres from a windsurfer mast.

During the last few months of 2022, the project gained significant momentum. Lineat Composites has started producing the uni-directional carbon fibre tapes on a bigger scale with an automated AFFT machine, while the Alliance is ensuring that the entire process follows a strict circularity model: from equipment collection, breakdown and reclamation of carbon fibre equipment to the production processes for the AFFT tape.

In recognition of this ground-breaking work, the Alliance was awarded two sustainability awards: the Innovation Award from the British Association for Sustainable Sport, and the Sustainability Award for Circularity from Composites UK, which is the trade association for the composite industry.

BENEFITS

- Significantly reduce waste from sports equipment by finding reuse and recycling solutions for its components.
- Operate within a circular economy model that will help reduce the environmental impact of all sports organisations' operations in the future.
- Provide inspiration to the sports movement at large and offer new future opportunities to make both the sports and commercial sectors in general more sustainable.

"Collaboration and alliance have been key drivers in this project. We know that sport generally has a very high use of carbon fibre. This demonstration project has been a first step, and we are now keen to join with other sports and other industries to develop the next stage of this process."

DEE CAFFARI, CHAIR OF THE WORLD SAILING TRUST