



Nova Carbon

Founding team



Hugo Cartron
CEO & Co-founder

- Former composites engineer at Dassault Aviation & Safran Aircraft Engines.
- Three patents filed on composites manufacturing processes.
- Alumni of the Entrepreneur First program at Station F.
- First and foremost, passionate about composite innovation.



Vincent Gamboa
COO & Co-founder

- Co-founder and director of Sports Carbone for 13 years. Sports Carbon is specialized in the repair of carbon bikes and equipment.
- Active volunteer for 8 years at Recycling Carbon.
- Vincent is strongly committed to the circular economy of carbon fiber and has developed a unique insight on the subject.



WHO ARE WE?

A spin-off from the European MANIFICA Recycling project



We want to develop a circular economy around carbon fibre composites.



Our products are based on a recycling technology patented by the University of Bordeaux.

Carbon fiber A strategic material

A high value-added material,
essential for **the ecological transition**
and innovation.

Ultra-high performance

5x Lighter than steel
Stiffer than aluminum

Double-digit annual growth

 €30Bn market
with strong growth (CAGR >10%)

Applications



Defence and
aerospace



Energy
transition



Mobility



Sports



Construction
& Others

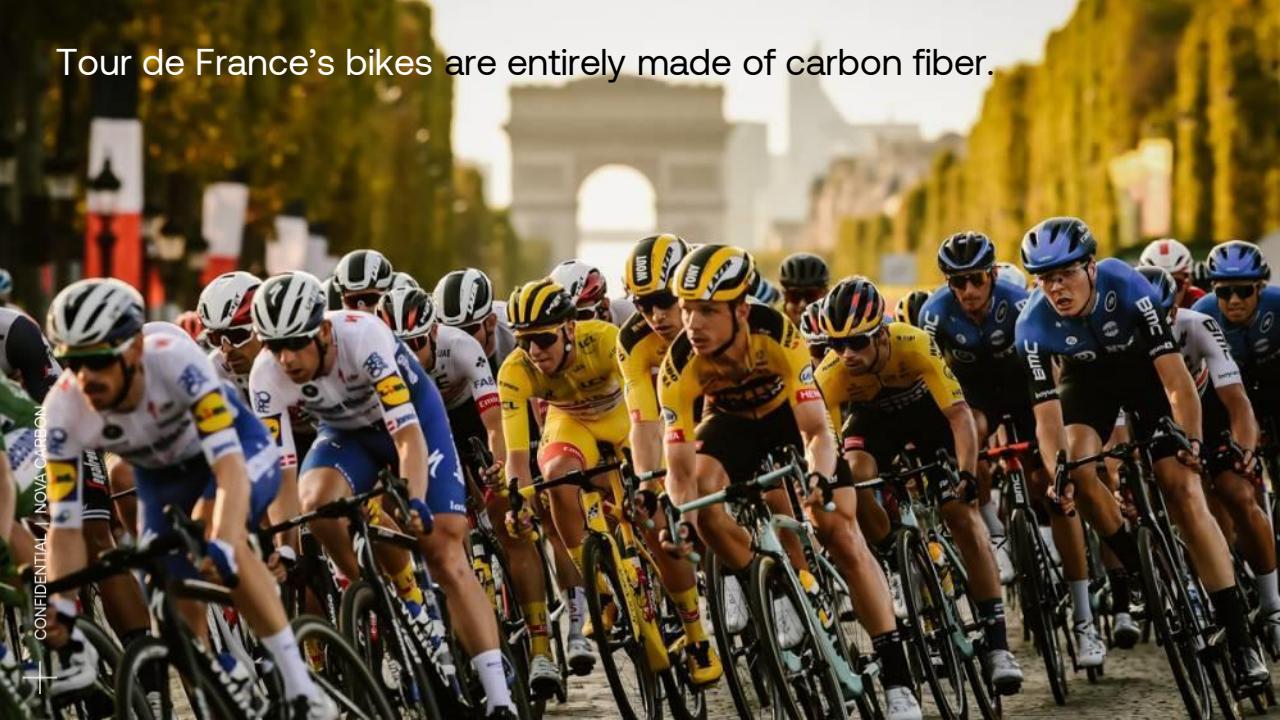


LM Wind Power, Cherbourg, France

The world's longest offshore wind turbine blade with carbon mast.

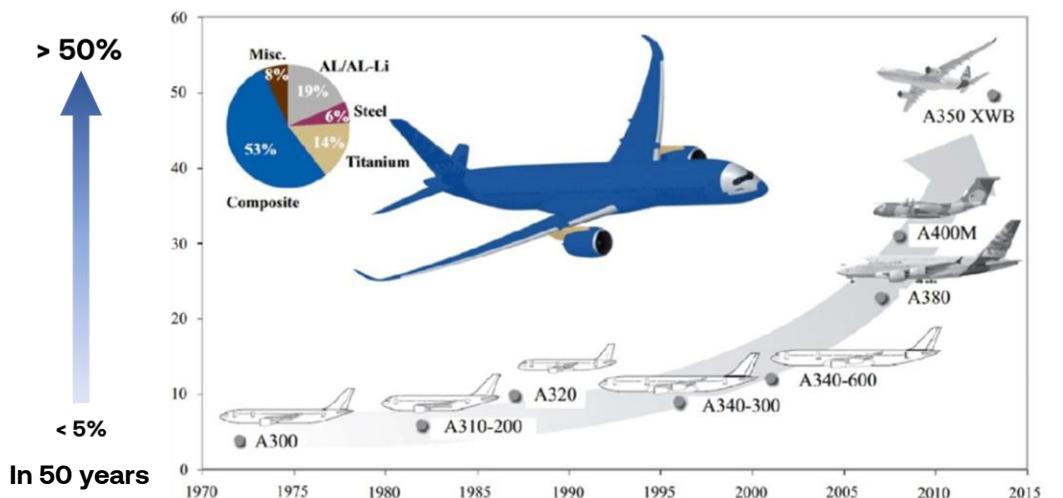


Carbon hydrogen tanks (Forvia).



Tour de France's bikes are entirely made of carbon fiber.

The use of carbon fibre in aeronautics.





Ultra-light carbon fiber roof for the Steve Jobs Theater, Apple Park, California, USA.
The carbon reinforcements for this roof were manufactured by Epsilon Composites (France).

A **high** carbon footprint

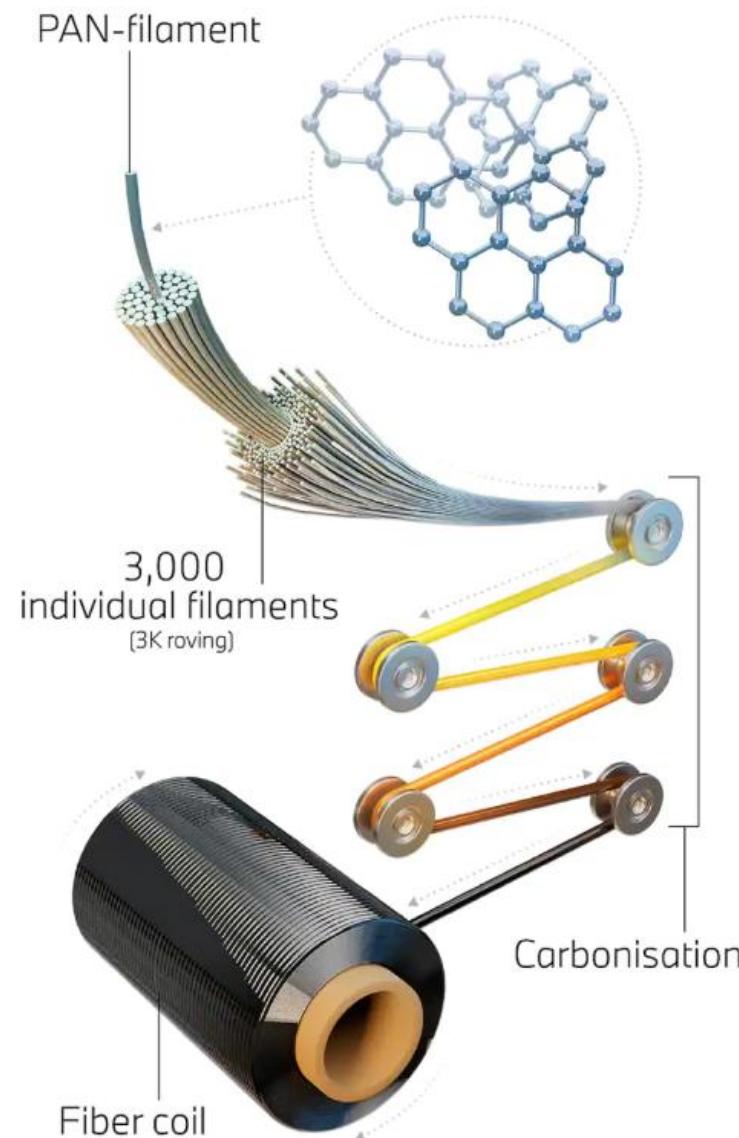
A significant amount of energy is used in the production of carbon fibre, to carbonise the precursor filaments.

This carbonization stage is necessary to achieve high mechanical performance.

Carbon fiber manufacturing

20x

more CO₂ than steel.



Growing environmental issues

It is essential to find new sustainable recycling solutions.

Producing 1kg of virgin carbon fibre generates 40kg of CO₂

>90 %

of carbon fibres are incinerated or landfilled at the end of their lives

1M

tons of carbon fiber composites to be recovered by 2040

An incentive regulatory environment



Laws and decrees aimed at reducing landfill and incineration, and encouraging recycling and recovery

- Energy Transition for Green Growth Act
- Extended Producer Responsibility
- National Waste Prevention Plan



Penalties

Failure to meet targets may result in financial penalties for waste producers and collectors.

Our mission

- ✓ Developing a sustainable recycling approach
 - ✓ Increasing the appeal of carbon fibre by democratising its applications
-

Develop the carbon recycling sector with high added-value semi-finished products:

- ✓ High performance
- ✓ 4 to 5 times recyclable
- ✓ Adapted to current manufacturing processes
- ✓ Stable quality
- ✓ Competitive pricing



Filling the technological gap

Nova Carbon has developed a new technological step, adapted to the current multi-stage recycling process, to maintain high performance.



Our innovative patented process



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Wide range of waste acceptance
Dry fiber or fiber from
depolymerized waste is accepted.

Keep the high performance
We realign the fibers while
preserving their length up to 300mm.



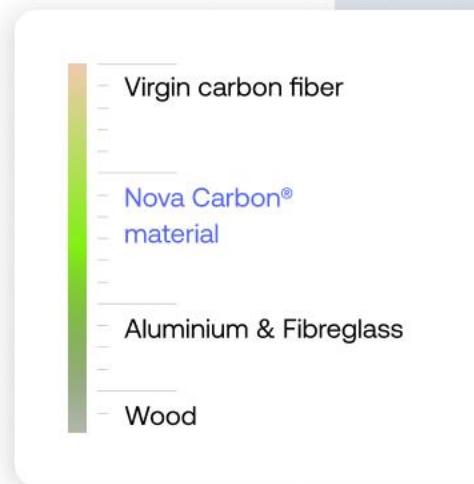
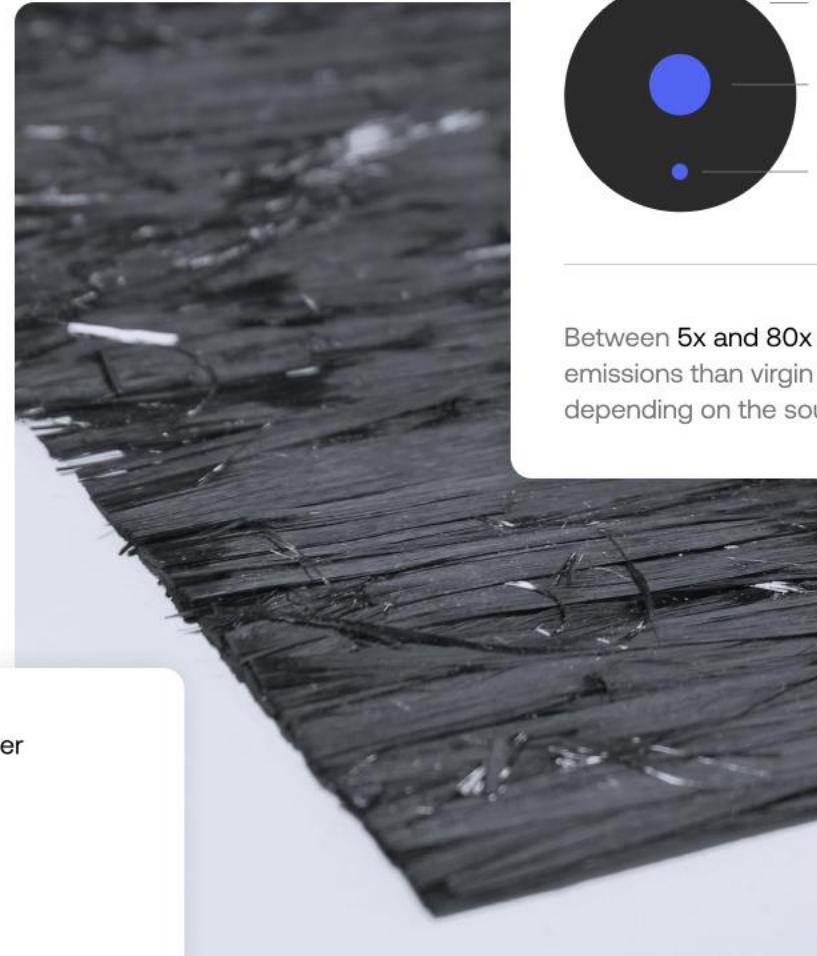
Range of semi-products
made of Nova Carbon®.

Definition of the Nova Carbon® material

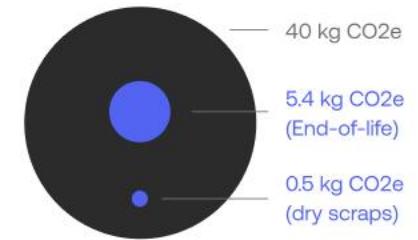
Realigned carbon fibre resulting from a circular economy process based on blends of recovered fibres from 10 to 50 waste supplier.

The combination of different recovered carbon fiber types is strategic to create a material with stable properties and controlled environmental impact.

The high performance and low cost of Nova Carbon® create new opportunities for carbon fibre applications.

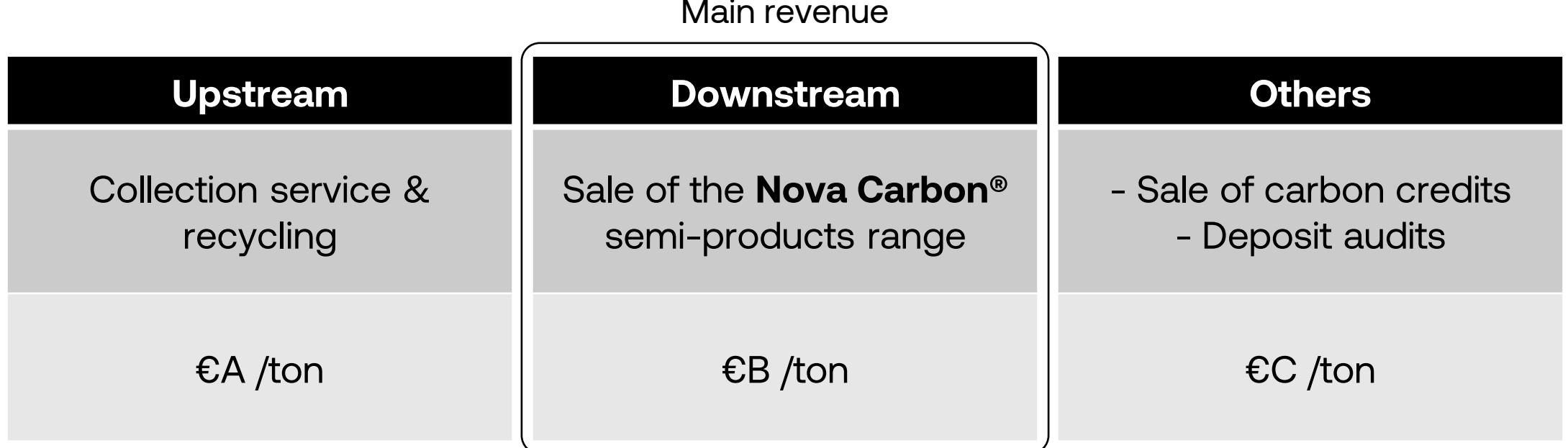


1kg of virgin carbon fiber vs.
1kg Nova Carbon material:



Between 5x and 80x less CO2 emissions than virgin fibre, depending on the source recovered.

Business model



For every ton recycled, Nova Carbon generates at least
€ A+B+C /ton

Our latest collaborations

Collaboration with Decathlon

2023

DECATHLON



BIKE SHOES
VAN RYSEL



RUNNING SHOES
KIP RUN



KAYAK PADDLE
ITWIT



KAYAK PADDLE
ITWIT

Collaboration with FLK Composites

2023



NOVA CARBON® BICYCLE SADDLE
MANUFACTURED IN FRANCE BY FLK COMPOSITES



Collaboration with Epsilon Composite

2023

Nova Carbon is working with Epsilon Composite, one of the world's leading pultrusion companies, to incorporate recovered carbon fibre into their product range.

Here, the first Nova Carbon® pultruded plate, manufactured in France (Nouvelle-Aquitaine) by Epsilon Composite.

There are many potential applications:
building, boating, sports, etc.



Collaboration with Time for Oceans

ONGOING

Technical collaboration with Stéphane Le Diraison, the Vendée Globe skipper behind the Time For Oceans project.

Objective of Time For Oceans

To design and build a low-carbon competition boat (30% less carbon impact) using new materials, in particular Nova Carbon®.



KEY MILESTONES ACHIEVED

Manufacturing tests at Multiplast (Vannes) using Nova Carbon® material

TO COME

New tests and production of a prototype boat

Vendée Globe Edition 2028

LOI signature by Stéphane Le Diraison

Promising mechanical test results

Design and final manufacture of the boat with Nova Carbon® material

Nova Carbon roadmap

2023

2024

2026

PRE-SEED

SEED

SÉRIE A

Technological and logistical maturation

Objective: develop an initial product that meets the needs of industry and secure the first deposits.

Team: 5 people

Nova Carbon® range: 1 certified product

Industrialization & Development

Objective: To industrialize and market Nova Carbon® products on a large scale.

Team: 15 people

Nova Carbon® range: 3 certified product

Annual tonnage: > 500t

Internationalization & Scaling

Objective: Internationalization of production sites.

Team: > 30 people

Nova Carbon® range: 5 certified product

Annual tonnage: > 5000t

Team

FOUNDERS



Hugo Cartron
CEO & Co-fondateur



Vincent Gamba
COO & Co-fondateur



TECHNICAL TEAM



Alexandre Faure
Textile engineer



Constance Amaré
Composites engineer



LEGAL & FINANCE



Financial consulting
Specialising in start-ups



Legal/IP consulting
Specialising in start-ups

Advisors and Business Angels

ADVISORS



Olivier Mantaux
Professeur et inventeur
de la technologie



Didier Ecabert
New Business
Development Directeur



Maylis Chusseau
Présidente
Aquitaine Science Transfert



Cédric Abad
DRH



BUSINESS ANGELS



Ludovic Daudois
CEO Comat



Franck Abihssira
Emerton Consulting
Ex-Bouygues



Richard Boudinot
Président
Clix Industries



Stéphane Panou
Président
FEDEREC Papier Carton



Recent achievements



Startup Booster finalists
JEC World 2023



1st Prize Call for Projects
Bordeaux TechnoWest
“Sustainable Buildings and Cities”



1^{er} contract
Preliminary work on FORVIA supply
(part 1)

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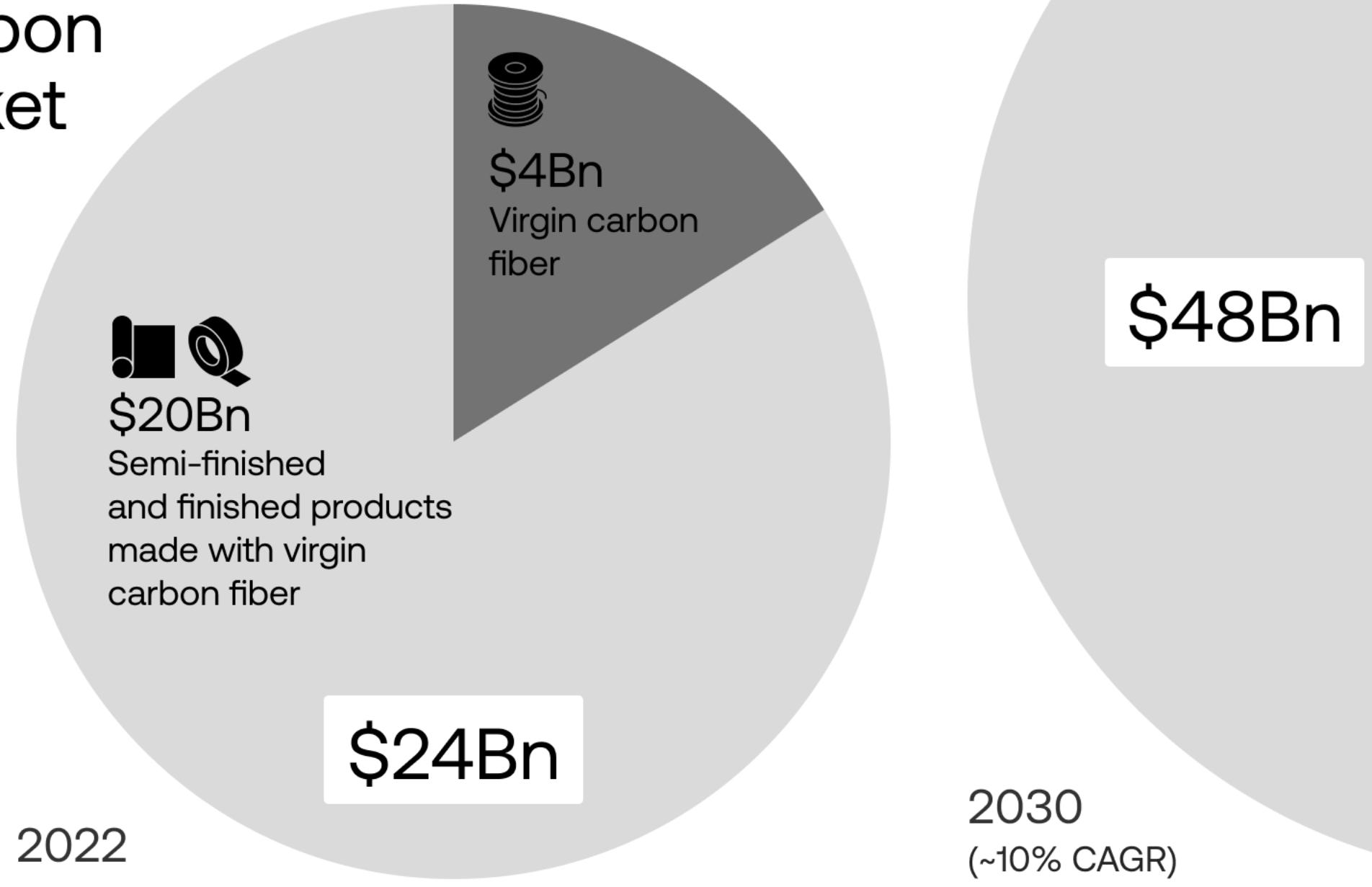
Be part of the next generation of the composites industry.

nova-carbon.com

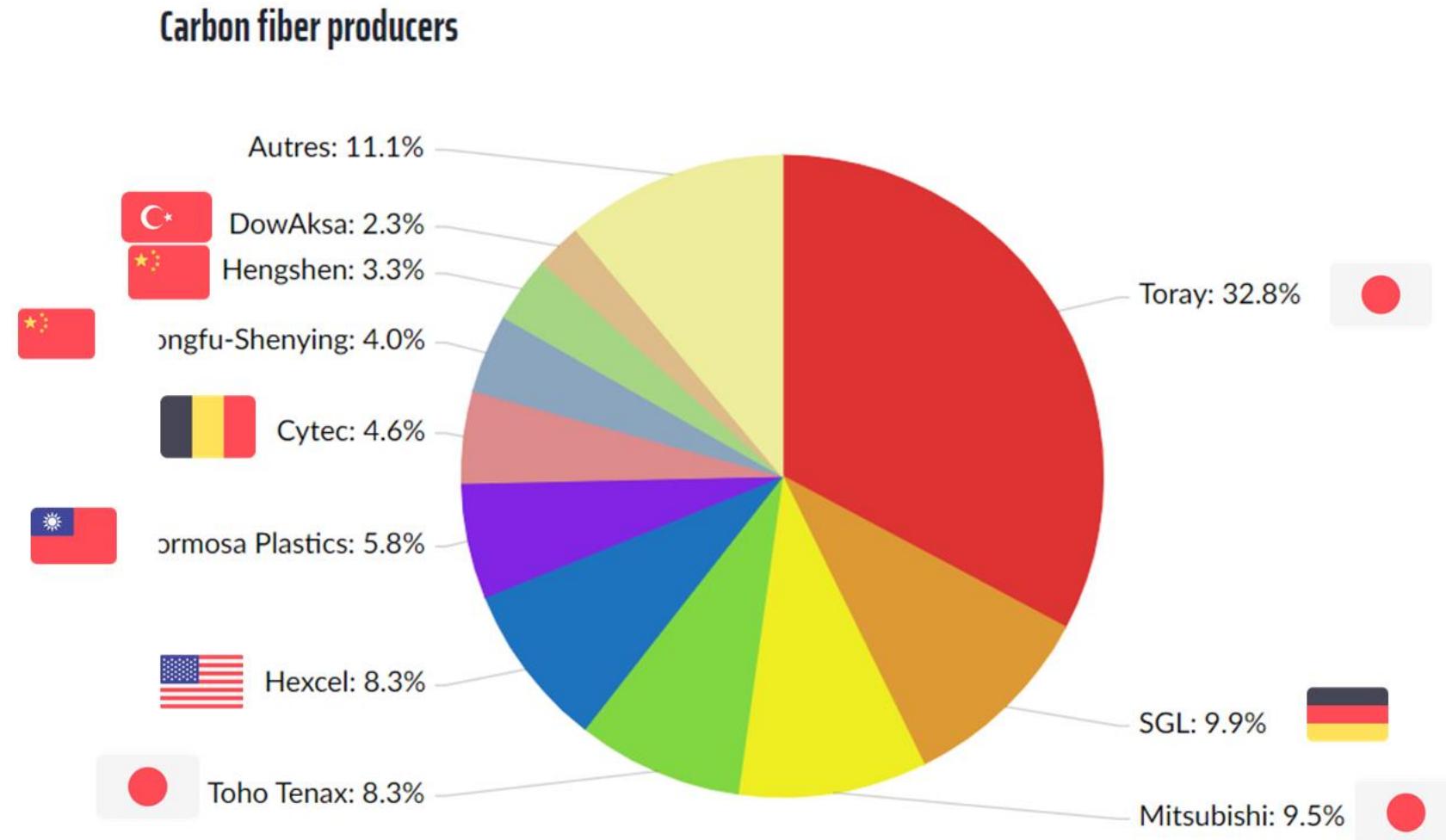
®

Annexes

Virgin carbon fiber market



Global distribution of virgin carbon fiber production



In thousands of t/year, in 2019, out of a world total of 150,900 t/year

Carbon fiber's big players buy innovation



Latest acquisitions by Toray

- Zoltek (FC low-cost) : \$600M (2013)
- Tencate Advanced Composites (FC thermoplastique) : \$1Md (2018)



Latest acquisitions by Hexcel

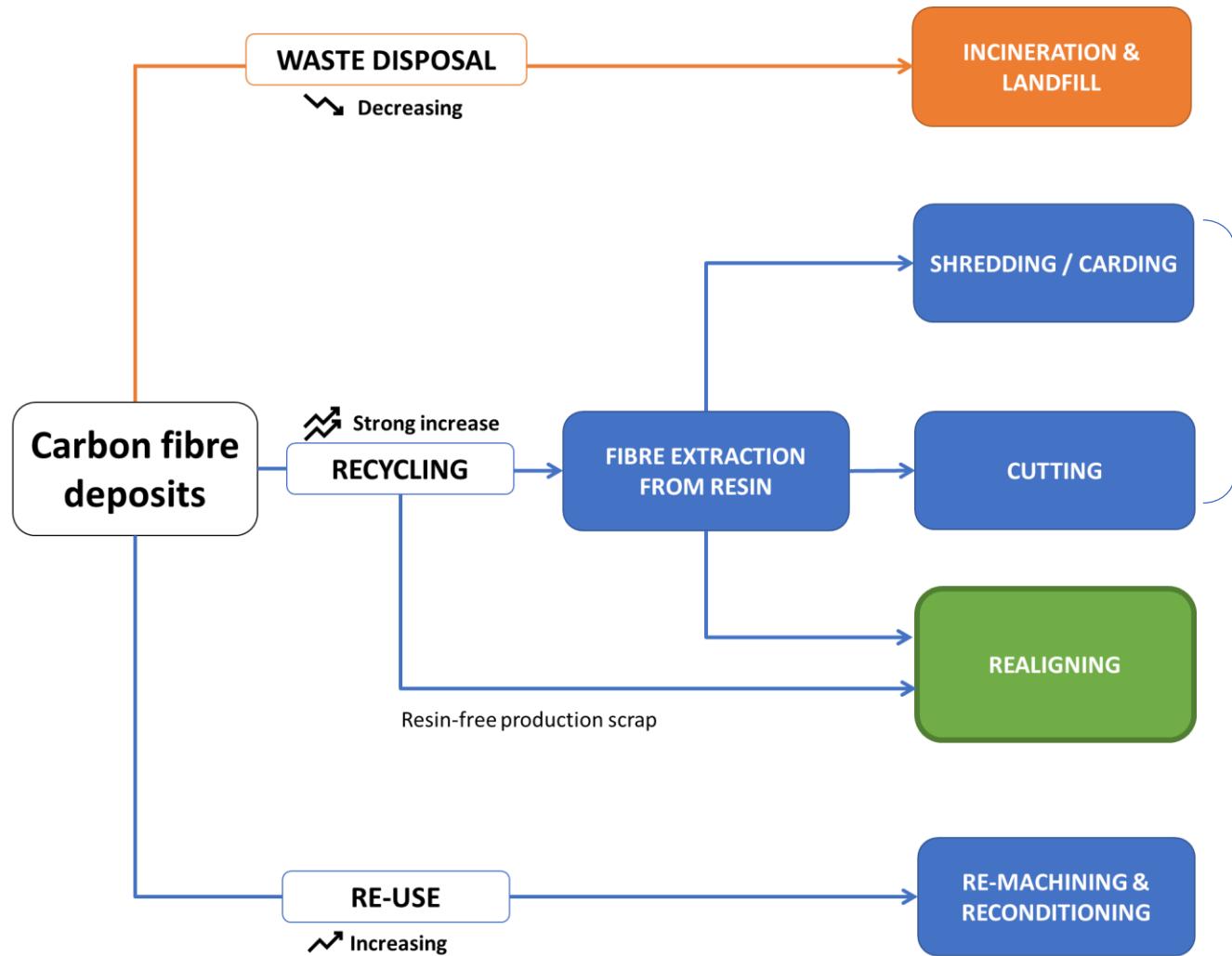
- ARC Technologies LLC (absorbing composite materials) : \$160M (2019)
- Structil SA (pultrusion process, French Company) : \$21M (2017)



Latest acquisitions by Teijin (Toho Tenax)

- Continental Structural Plastics (american automotive supplier) : \$825M (2017)
- Benet Automotive (Automotive parts) : > \$50M (2019)

Carbon fiber recycling : a fast-growing competitive landscape



Growth of traditional recycling technologies
due to favourable market environment

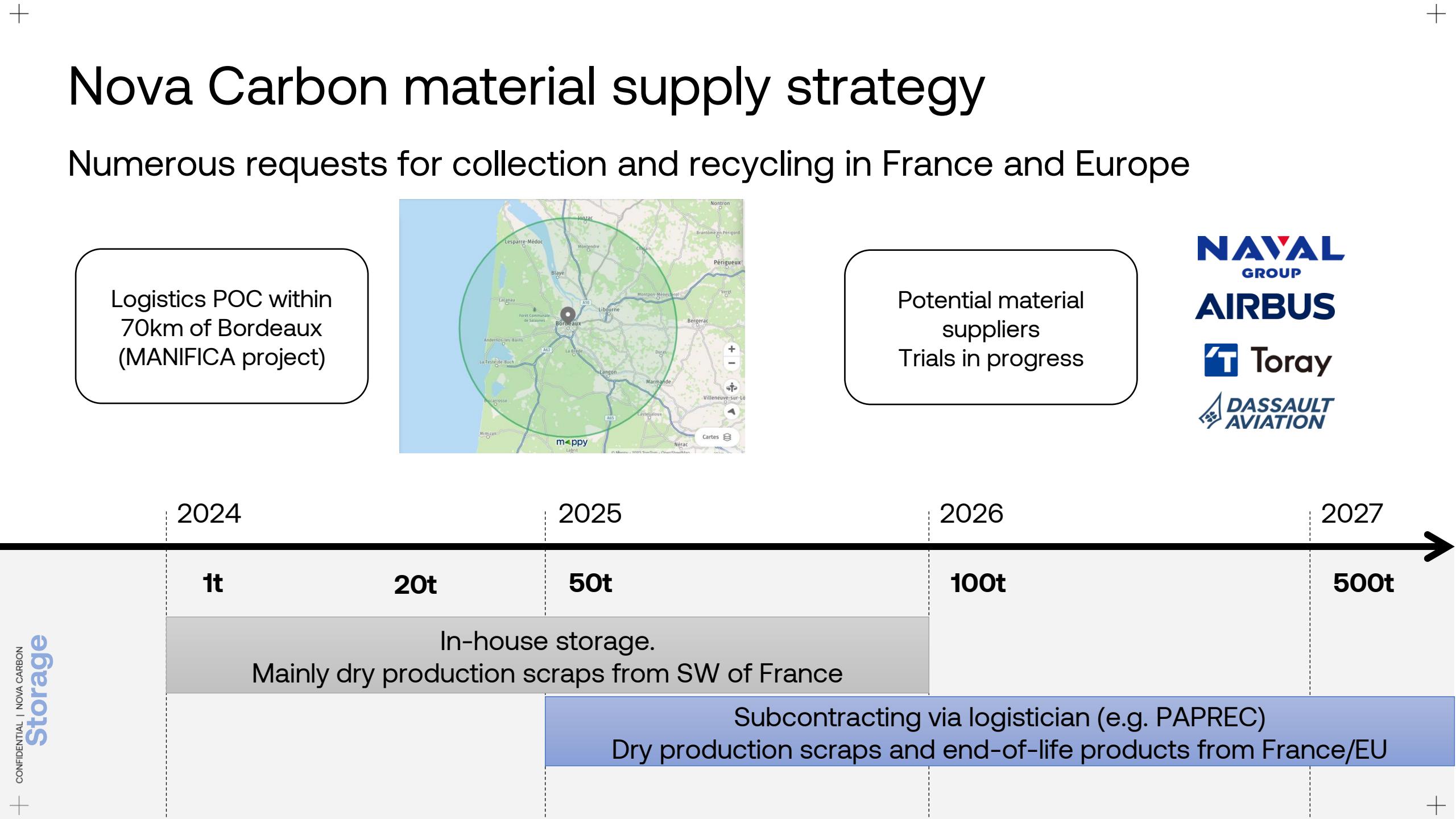


New generation of technology, range of
high added value products



Technical limitations





Comparison with FAIRMAT

FAIRMAT has raised \$43M to date.

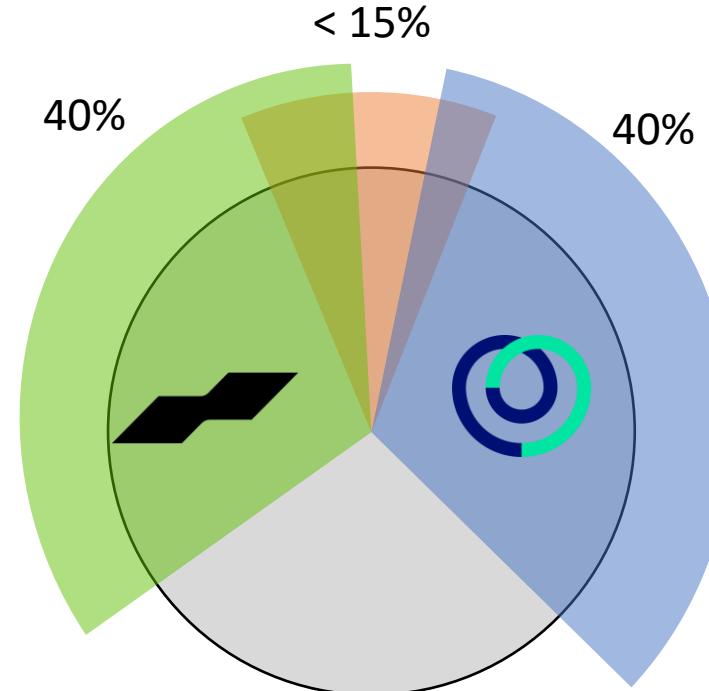
Category	 FAIRMAT	 Nova Carbon
Technology	Mechanical recycling (chips) or reuse of preprints.	Unweaving and realigning of the carbon fibres after composites extraction.
Waste	Mainly preprints scraps and pultruded plates.	Dry scraps and depolymerized composites.
Sale	Composites parts (finished products)	Semi-products for composites industrials.

Complementary supply of carbon fiber waste

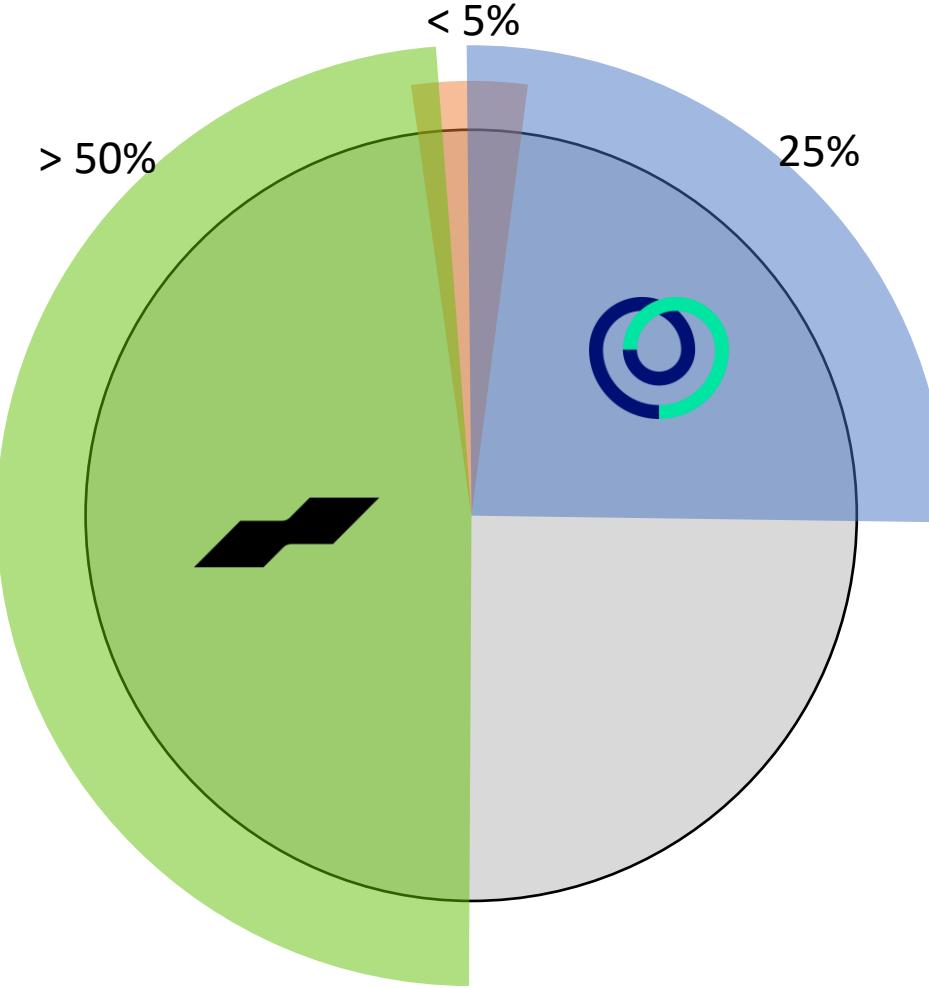
Traditional recycling

Targeted sources by
 **FAIRMAT**
(43M€ in funds raised)

 **Nova Carbon**



Production scraps



End-of-life products

Traction - 1/2

Companies	Has contacted Nova Carbon	Want to provide carbon fiber supply	Has provided carbon fiber supply	Want to test Nova Carbon® products	Has already tested Nova Carbon®	Letter of intention / collab
Manufacturers of carbon fibres and/or semi-finished products for the composites industry						
Toray/Zoltek	✓		✓			
Teijin	✓		✓	✓		
Hexcel	✓					
Chomarat	✓					
CompPair	✓				✓	
Collection, sorting, storage and processing of carbon composites						
Alpha Recyclage	✓		✓			
Extracthive			✓			
Procotex	✓	✓				
Paprec	✓		✓			
Suez	✓	✓				
Nautical						
Time for Oceans (Multiplast)		✓			✓	✓
Sunreef Yachts	✓		✓	✓		✓
MerConcept	✓	✓		✓		
Naval Group	✓	✓		✓		✓
Automotive, hydrogen storage						
Forvia	✓		✓	✓		
Porsche	✓			✓		
Polestar	✓			✓		

Traction - 2/2

Companies	Has contacted Nova Carbon	Want to provide carbon fiber supply	Has provided carbon fiber supply	Want to test Nova Carbon® products	Has already tested Nova Carbon®	Letter of intention / collab
Sports						
Décathlon	✓				✓	✓
Scott	✓			✓		✓
FLK Composites					✓	
Alltricks		✓				
Salomon	✓			✓		
Rossignol				✓		
Aeronautics and aerospace						
Dassault Aviation	✓		✓			
Safran (Aircraft Egnines, Nacelle)	✓		✓			
Leonardo	✓			✓		
Collins Aerospace	✓			✓		
Airbus Helicopters	✓	✓				
ArianeGroup	✓	✓				
Manufacturers of composite parts, subcontractors and composite start-ups.						
Natec		✓		✓		
CMP Composites		✓		✓		
Hutchinson	✓			✓		
Epsilon Composite		✓			✓	
Freyssinet					✓	
3Ditex				✓		
Nobrak				✓		
Others						
Materio.com	✓				✓	

Full history of the development of unwrapping and realignment technology

