



2026 PCA INTERNATIONAL CONFERENCE

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RN21: Powering Innovation Across the Natural Resin Value Chain

Expanding New Possibilities

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WHO WE ARE

CoLAB ForestWISE

What is a Collaborative Laboratory?

A Collaborative Laboratory (CoLAB) is an entity dedicated to producing, disseminating and transferring knowledge through its own research and innovation agenda.

Based on a portfolio of higher value-added products and systems, a CoLAB helps companies reach global markets through exports and supports the attraction of foreign investment in technology-intensive areas.

CoLABs may be national, regional or entrepreneurial, and steer their activity towards qualified employment and economic and social value.

The only CoLAB that brings together all forest and fire-related efforts in Portugal.



Vision

To be a national and international reference in the aggregation, cogeneration and transfer of knowledge and technologies for the integrated management of forests and fire, acting as the main link between companies, academia, policy-makers, territory and society in Portugal.

An interface organisation

What we do

- WE DRIVE a networked ecosystem with leading national and international partners
- WE BRING scientific knowledge closer to the real problems of companies and of public and private entities, and to the pressing needs of the forest and fire domains
- WE TRANSFER knowledge and innovation at high TRLs

How we do it

- A technical team organised into four work lines that cover the whole forest-and-fire domain
- WE RUN collaborative projects and provide tailored consultancy, anchored in the results of those projects
- One third of our funding is public, through the Portuguese competitive CoLAB programme

36

people in the technical team

4

work lines

1/3

public funding

THE PARTNERSHIP

Our members

Together they represent the R&D value chain for forests and fire in Portugal.





INTEGRATED PROJECT



An integrated project to foster maritime pine production, strengthen its industry and markets, and achieve a positive differentiation of resin-based products.

THE PROJECT IN NUMBERS

RN21 at a glance

55

months

June 2022 – Dec. 2026

36

partners

22

projects

3

pillars

38

research lines

20

new products

26.5
M€

total investment

17.5
M€

PRR grant

WHY RN21

From challenge to ambition

The challenge

Forest under-management and declining profitability

Geopolitical vulnerability and dependence on fossil carbon

A traditional sector with fragmented value chains



RN21 ambition

Productive and resilient pine forests, creating value and supporting carbon neutrality

Stronger national resin production for economic resilience and a sustainable bioeconomy

A connected and innovative value chain that supports territorial cohesion

PROJECT STRUCTURE

Three pillars, one value chain

I

Promoting the production of Portuguese Natural Resin

- Reinforcing the productive capacity of pine forests
- Increasing resin extraction productivity
- Training program for resin tapping
- Making resin extraction more attractive to forest owners

II

Strengthening the sustainability of the transformation industry

- Industrial investment and value chain support
- New products and applications from gum rosin derivatives
- Industrial symbioses

III

Positive differentiation of Natural Resin and its derivatives

- A new brand for products containing Natural Resin
- Technical journal
- Marketing campaign

IN THE FOREST

More resin, better resin



PILLAR I

- More efficient resin tapping through improved techniques and mechanisation
- Closed collection systems that reduce water, impurities and resin losses
- Higher resin recovery per tree and per tapping season

OUTCOME

Better resin recovery and higher-quality Natural Resin at the factory gate

IN THE INDUSTRY

From raw resin to bio-based materials



PILLAR II

- New formulations and processes for Natural Resin transformation
- Optimisation of industrial processes through digitalisation, better use of resources and efficiency gains
- Scale-up of rosin and turpentine derivatives for new market applications

OUTCOME

Replacing fossil-based materials with bio-based materials

FROM PINE RESIN

Resin derivatives

Two natural compounds, countless industrial applications



Rosin

- Hydrogenated rosin
- Rosin esters
- Rosin derivatives compatible with metallocene polyolefins
- New biopolymer formulations, incorporating 5 % to 30 % rosin derivatives



Turpentine

- New polyterpene resins for adhesives
- New polyterpene resins with selected solvents, for chewing gum and food-packaging coatings

NEW OPPORTUNITIES

New markets for rosin



01

FOOD

Packaging · Protection

02

AUTOMOTIVE

Functional and decorative components

03

FOOTWEAR

Structural components · Adhesives

04

TEXTILE

Fibres · Finishes · Coatings

APPLICATION

Food

Product

- Films containing 20 % rosin derivatives
- Capsules based on modified rosin containing limonene, a natural antioxidant, for use in films and packaging



IMPACT

Reduced gas permeability — longer shelf life and less food waste.

APPLICATION

Automotive

Product

- New biopolymers based on rosin derivatives
- Injection-moulded biopolymer components for automotive applications



IMPACT

Smaller carbon footprint and reduced consumption of non-renewable resources.

APPLICATION

Footwear

Product

- Modified rosin-based adhesives for footwear
- Development and production of biopolymers for footwear soles



IMPACT

Higher renewable content, lower carbon footprint and stronger industrial symbiosis.

APPLICATION

Textile

Product

- Fibres and textile structures with up to 70 % bio-based content
- Dyeing aids (mordants) for textile structures in water-based processes
- Lamination of textile structures incorporating 40–50 % rosin derivatives
- 100 % cotton textile coatings incorporating 40–50 % rosin derivatives



IMPACT

Increased renewable content, antimicrobial activity and reduced use of solvents.

IN THE MARKET

From innovation to market recognition



PILLAR III

- Quality and traceability as market differentiators
- A distinctive brand for Natural Resin-based products
- Technical communication and market visibility across the value chain

OUTCOME

Turning innovation into recognition and market value

NATURAL RESIN BRAND

A brand for European Natural Resin



The resinae® brand brings value and recognition to Natural Pinus pinaster Resin sourced from Europe, reinforcing the whole value chain's commitment to the highest standards of quality and sustainability.

What the brand stands for

- Economic valuation of the value chain

- Forest management

- Commitment

- Smaller ecological footprint

- Sustainability

- Competitiveness

- Publicity and promotion

- Recognition and credibility

- Quality assurance

- Traceability

DELIVERED

Final results





Thank you

for your attention



rn21.forestwise.pt