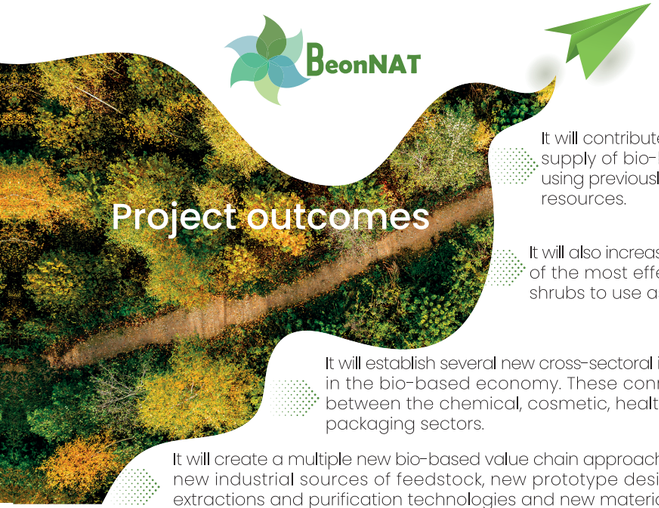
BeonNAT



Project outcomes

It will contribute to increase the supply of bio-based products using previously untapped land resources.

It will also increase the knowledge of the most effective trees and shrubs to use as feedstock.

It will establish several new cross-sectoral interconnections in the bio-based economy. These connections will be between the chemical, cosmetic, health care, pet and packaging sectors.

It will create a multiple new bio-based value chain approach. This will feature new industrial sources of feedstock, new prototype designs, new green extractions and purification technologies and new materials (or products) with new properties (and characteristics).

Environmental outcomes

It will diversify the range of forest-based biomass that can be exploited for bio-based value chains while avoiding indirect land use change (ILUC) issues.

It will positively impact biodiversity and the ecosystem by restoring marginal lands, reducing deforestation and forest degradation and preserving forest genetics.

It will mitigate against climate change and the impact of extreme weather events

PARTNERS

Coordinator. Biomass cultivation, harvesting, supply (Northern Spain), lignocellulosic biomass saccharification and feedstock LCSA*

Paper and particleboard tester. Marginal land assessment.

Responsible for Biochar production

Responsible for tailor-made Poly-lactic acid synthesis and characterization

Responsible for Lactic acid production. By-product supplier.

Responsible for biomass cultivation, harvesting and supply (Germany) to CIEMAT. Great expertise in marginal lands soil quality assessment.

Responsible for biomass cultivation, harvesting and supply Romania to CIEMAT. Great expertise in biodiversity assessment.

Responsible for bioactivity assays.

Communication, dissemination & Exploitation manager. LCSA

Responsible for extraction and purification of phytochemicals from biomass

End user. Essential oils extraction prototype, primary producer, expertise in essential oils. Biomass cultivation, harvesting and supply (Southern Spain) to CIEMAT.

Active carbon producer. By-product supplier.

Consultancy in bioeconomy.

End user. Absorbent for pet tester and developer.

End user. PLA-bottle producer for cosmetic use.

Consultancy in forest management.

Get in touch with us for further information: luis.esteban@ciemat.es

BeonNAT

Innovative value chains from tree and shrub species grown in marginal lands as a source of biomass for bio-based industries.

This project has received funding from the Bio Based Industries Joint Undertaking (JU) under grant agreement No 887917. The JU receives support from the European Union's Horizon 2020 research and innovation programme and the Bio Based Industries Consortium

The concept

BeonNAT proposes to use marginal lands in Europe to obtain forest biomass for the production of **8 products based** on **7 new bio-based value chains**.

BeonNAT will allow the production of biodegradable bio-based products and bioactive compounds that will play an important role to replace fossil-based competing substitute products.

The plantation of tree and shrub species in marginal lands, following **intercropping techniques**, will contribute to the **biodiversity protection** while **improving soil fertility and organic carbon stocks**.

BeonNAT will help to mitigate the impacts of climate change, enabling smarter and more sustainable products and materials, to make the most efficient use of our renewable natural resources, as well as providing huge economic opportunities for the bio-based economy in Europe.

SCAN QR

BBI JU

Bio-based Industries Consortium

Horizon 2020 European Union Funding for Research & Innovation

SPAIN
6 SPECIES / 2 ORIGINS

GERMANY
6 SPECIES / 2 ORIGINS

ROMANIA
6 SPECIES / 2 ORIGINS

1st Wild species sampling

12 Samples | 12 Samples | 12 Samples

CHEMICAL CHARACTERISATION OF 36 SAMPLES

• Extracts · Essential oils • Cellulose, hemicellulose, lignin, extractives • Biochar, active carbon • Absorbent capacity

Selection of 4 species/country for cultivation, based on chemical characterisation for industrial applications.

SPAIN
4 SPECIES / 1 ORIGIN

GERMANY
4 SPECIES / 1 ORIGIN

ROMANIA
4 SPECIES / 1 ORIGIN

2nd Wild species sampling

4 Samples | 4 Samples | 4 Samples

EVALUATION TESTS OF 12 SAMPLES: FIRST BIO-BASED PRODUCTS PRODUCTION TESTS

• Extracts · Essential oils • Pulp • Lactic Acid And PLA • Biochar and Active Carbon • Absorbents

Selection of 6 species based on industrial applications and cultivation follow-up for biorefinery cascade design

3rd Wild species sampling – 6 samples

EVALUATION TESTS OF 6 SAMPLES: SECOND BIO-BASED PRODUCT'S PRODUCTION TRIALS

• Extracts · Essential oils • Pulp • Lactic Acid And PLA • Biochar and Active Carbon • Absorbents

1st Cultivated Species sampling – 6 samples

EVALUATION TESTS OF 6 SAMPLES: FINAL OPTIMISED BIO-BASED PRODUCT'S PRODUCTION TRIALS

• Extracts · Essential oils • Pulp • Lactic Acid And PLA • Biochar and Active Carbon • Absorbents

7 new bio-based value chains validated

Essential oils | Extracts | Pulp for paper | Wood board | Bioplastics | Biochar & active carbon | Absorbents for pets

BeonNAT

The Challenges

Bio-based products increasign demand

The **BeonNAT** project proposes to use **marginal lands** to obtain forest biomass for the production of new bio-based products.

Soil degradation and loss of biodiversity in marginal lands

The **BeonNAT** project will enhance biodiversity and soil quality in marginal lands, offering more environmental services.

Adaptation to global warming effects

BeonNAT selects trees and shrubs adapted to grow in marginal lands and changing environment, where limiting factors can be soils and /or extreme climate conditions.
Additionally, **BeonNAT** cultivation techniques are **expected to improve marginal land productivity**, therefore reducing economic losses that are consequence of climate change and/or marginal land low production.
Thus, the capacity of adaption to climate change is integrated into the forest management system.

Rural abandonment in Europe

BeonNAT will create new forest bio-based value chains for different markets, which will **generate employment in rural settings**, leading to significant positive effects in rural economy.

BBI JU

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