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ALIGNED

CONSTRUCTION - PULP AND PAPER - WOODWORKING - TEXTILE - BIO-CHEMICALS.

Aligning Life Cycle Assessment methods and bio-based sectors for improved environmental performance



Funded by the
European Union

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ALIGNED **advances** the scientific field of Life Cycle Assessment (LCA) **and collaborates** with industries and representatives from five bio-based sectors

About ALIGNED



ALIGNED consortium in Lisbon, October 2024.



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- **13 partners**
- **5 Scientific**
- **8 Industrial**
- **9 Countries**
- **5 Sectors**
- **3.7 M euro**
- **3 years**

ALIGNED in numbers



CONSTRUCTION



WOODWORKING



PULP AND
PAPER



TEXTILE



BIO-CHEMICALS



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Objectives

1

Improve, harmonize, and align LCA methodology for the assessment of bio-based industries covering environmental and socioeconomic aspects.

2

Demonstrate the power of the methodology on five specific technology development cases in industries within these sectors, to improve their environmental performance.

3

Inform, involve, and empower all relevant stakeholders, enabling an efficient methodological uptake and practice improvement to support a sustainable growth of the bio-based sector in Europe.



Impacts

- Aligned and **applicable methods** to assess Environmental Performance (EP) in the five industrial bio-based sectors on several key aspects that are relevant to all, namely **biomass competition, carbon and biodiversity accounting, socio-economic impacts, and uncertainty handling**
- Directly **improve the EP** in five exemplary industrial processes in said bio-based sectors, by disseminating the proposed solutions to key stakeholders in these sectors
- Method uptake by stakeholders, **recommendations** on improved EP in the five industrial EU bio-based sectors, better standards and policy.





ALIGNED STRUCTURE

WP1:
Shared modelling
framework and
learnings

(AAU)



WP2: Bio-based construction (INSAT)

- Case study: Insulation Industrial partner: Kingspan (Netherlands)

WP3: Woodworking (ANTW)

- Case study: Insulation Industrial partner: Kingspan (Netherlands)

WP4: Bio-based textiles (BTG)

- Case study: work clothing. Industrial p. Centexbel and Utexbel (Belgium)

WP5: Pulp and paper (AAU)

- Case study: lignin products. Industrial partner: BLOOM (Switzerland)

WP6: Bio-based chemicals (NTNU)

- Case study: Oleochemicals Industrial partner: OLEON (France)

WP9: Microalgae (A4F)

- Case study: Microalgae cultivation tech. Industrial partner: A4F (Portugal)



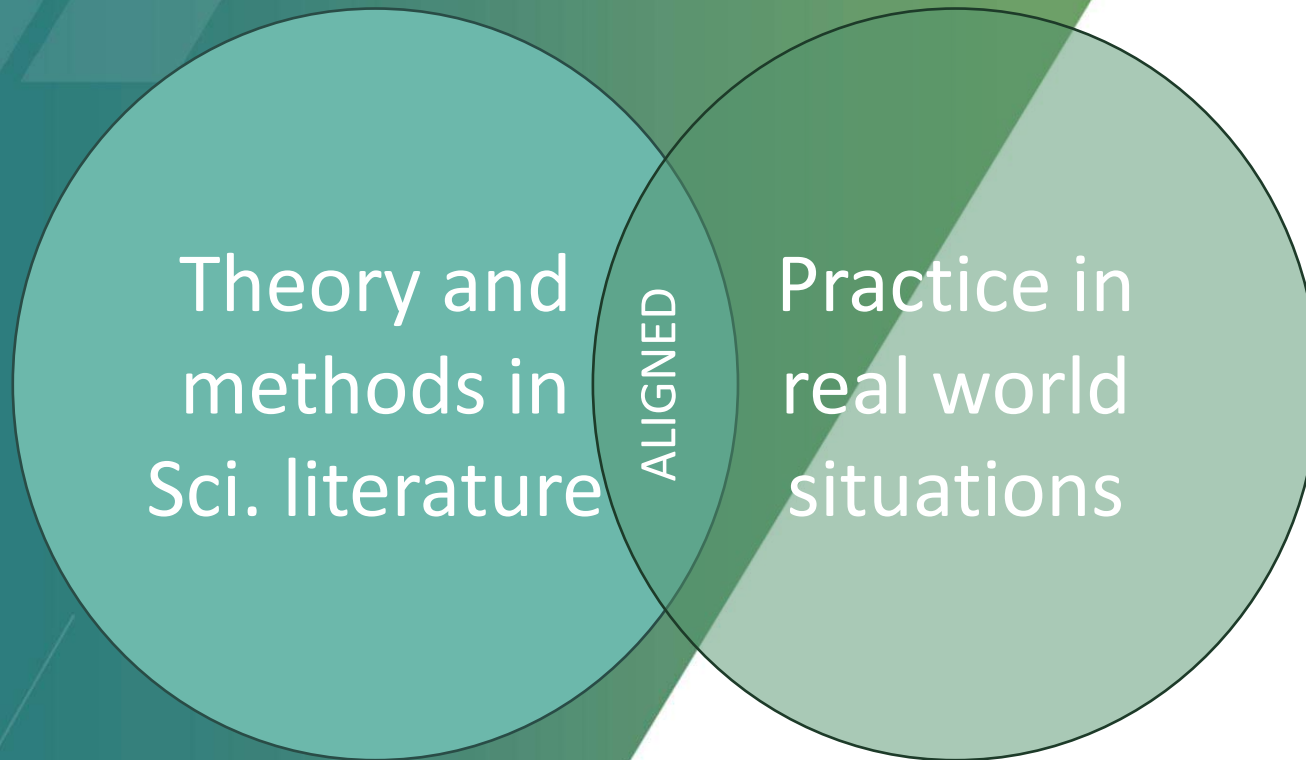
WP7: stakeholder involvement, dissemination, communication (SIE)



WP8: Management (AAU, BTG)



The ALIGNED scientific framework



- For biobased products
- Based on best available science
- Selected and harmonised
- Approaches, methods, and tools
- Openly available
- Applied and tested
- Applicable across five sectors



Mirroring the ISO 14040 in scope

GOAL AND SCOPE

Identification of constraints to biomass

LIFE CYCLE INVENTORY

Prospective background systems

Time and space-dependent carbon accounting

Inventory data sharing

LIFE CYCLE IMPACT ASSESSMENT

Dynamic characterization (climate change, biodiversity)

Biogenic carbon accounting

INTERPRETATION

Uncertainty and sensitivity analysis

Socio-economic assessment



Where: <https://zenodo.org/communities/aligned-he/>

zenodo

ALIGNED Project - Aligning Life Cycle Assessment methods and bio-based sectors for improved environmental performance

Part of EU Open Research Repository | <https://doi.org/10.21203/3.10000000000000000000> | [fhberglin.de](https://www.fhberglin.de/) and 4 more organisations

18 results found

Sort by: newest

ALIGNED D1.2 Description of scientific methods (T1.3 Framework for Life Cycle Impact Assessment)

Harald Lohr | Johannes Ugo | Abdul, Damien

ALIGNED D1.2 - Description of scientific methods (Task 1.5 Framework for socio-economic assessment)

Taruško, Maren

ALIGNED D1.2 Description of scientific methods (Task 1.2 Framework for foreground life cycle inventory of bio-based sectors - Constraints to biomass availability)

Pizzi, Massimo | Ghisla, Agnese | Neigard-Bollwein, Eileen

Repository contains: · Guide on the change assessment framework...

731 1570

Method for socio-economic assessment, assessing the socio-economic assessment for...

322 545

ALIGNED CASES



Sector	Partners involved (WPL + industrial partners)	Subfield and location	Short summary of the case study
Construction	INSAT, KING (WP2)	Insulation, Netherlands	<ul style="list-style-type: none"> Bio-based phenolic foams used as insulation materials. Phenol replaced by lignin and phenol fully replaced by bio-based oil New mechanical recycling process
Woodworking	ANTW, FOR (WP3)	Chemical treatment, Netherlands	<ul style="list-style-type: none"> Use alternative wood-working feedstocks such as untreated, treated, and painted timber for façade applications. New types of fencing applications
Bio-based textiles	BTG, UTEX, CENT (WP4)	Work clothing, Belgium	<ul style="list-style-type: none"> Recycling of work clothing containing both polyester and cotton fibres Valorisation of waste cotton fibres from shredding
Pulp and paper	AAU, BLOOM (WP5)	Lignin products, Switzerland	<ul style="list-style-type: none"> Biorefinery focusing on lignin valorization using aldehyde assisted fractionation to produce multiple products such as lignin polymers, oligomers, cellulose.
Bio-based chemicals	NTNU, OLEON (WP6) A4F (WP9)	Oleochemicals, France Microalgae, Portugal	<ul style="list-style-type: none"> Impact of different vegetable oil use in the production of consumer products. Impact of different improvements for energy and water savings in the production of microalgal-based biochemicals

ALIGNED so far...

- One scientific framework open and beta version
- Testing done in all case studies in a coordinated effort
- Feedback received both internal and external (via methodology workshops, surveys, interviews)
- Several performance improvements assessed and demonstrated
- Intense D&C activities
- Contact with different standardization initiatives
- Being used by industry already



ALIGNED so far...

- Close collaboration with sister Projects
- [Horizon Results Booster](#) with CALIMERO
- Three Methodology Workshops
- ALIGNED presentation at several [events](#) and [webinars](#)



THANK YOU



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