

INSIGHTS REPORT



BIOTEXFUTURE⁷
TRANSITION LAB

TRANSITIONLAB 2 KEY INSIGHTS RECAP AND OUTLOOK

STO – 20.01.2023

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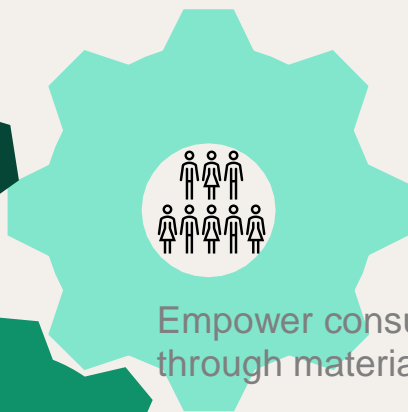
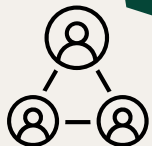
An aerial photograph of a pedestrian bridge. The bridge's surface is decorated with a repeating pattern of large green leaves on a dark, starry background. Several people are walking across the bridge. A dark green horizontal bar is overlaid in the center of the image, containing the word "INTRO" in white, bold, sans-serif capital letters.

INTRO

RESEARCH / TECHNOLOGY FOCUS

MARKET / SOCIETY FOCUS

Empower innovators through collaboration



Empower consumers through material literacy



SOCIAL AND TECHNOLOGICAL CHANGE THROUGH COLLABORATIVE INNOVATION



Knowledge & perception	Brand strategy & perception
Buying Behaviour/ Motivation	Foresight
Communication Strategy	Bioeconomy Stakeholder / Collaboration

An aerial photograph of a pedestrian walkway. The ground is covered in a pattern of large green leaves, with white diagonal stripes running across it. Several people are walking on the path. A dark green rectangular banner is overlaid in the center, containing the text "WORKSTREAM RESULTS" in white, bold, uppercase letters.

WORKSTREAM RESULTS

Expert Interviews

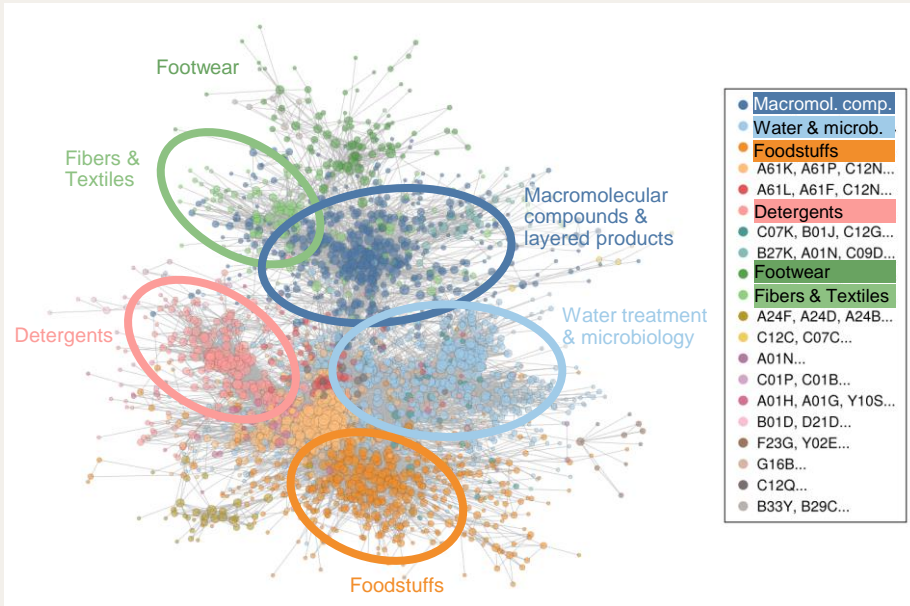
- Shift from bio-based to circular economy
- Importance of regulation
- Complexity of the value-chain a major obstacle
- Unclear role of bio-based materials
- No consensus about the meaning of „bio“
- Introducing new materials has to be justified

Student Activist Focus Group

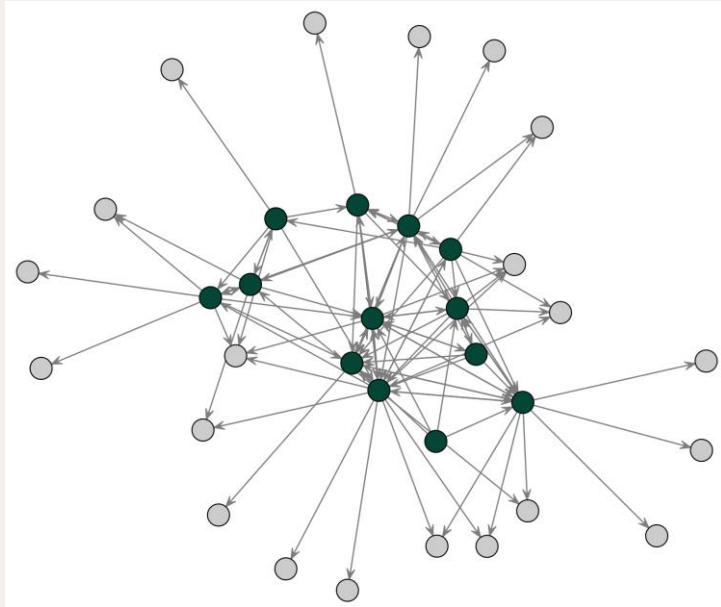
- Very low trust, expectations of greenwashing
- Knowledge of materials is very limited
- Asking or political regulation
- „Bio“ is considered a misleading label
- High interest in new approaches
- Wholistic sustainability concept

Local Network Development/Real-Lab

- Established student reallab in the city of Aachen „nACHhaltig angezogen“
- Established contacts with the city of Aachen for cooperation
- Mobile upcycling lab experience (MULE) concept developed and started



- **WP TETRA: Patent Analytics to Explore Technological Trajectories**
- **Key Insights:**
 - **A patent-based network study of the bioeconomy** has shown that in the early 2000s, technologies related to detergents highly central in the bioeconomy technological field but have become more peripheral recently. Fiber and textile technologies started out small and peripheral but have also shown exponential growth and are now above average in centrality. Strong patent applicants for the textile cluster include large American, Korean and Japanese chemical corporations (e.g. DuPont, P&G, Hyosung or Kolon); European specialist firms, such as Lenzing or Oerlikon also feature strongly.
 - **A patent landscaping study of the biopolymers technological field** has shown that pharmaceuticals and medical applications are still major innovation contexts for biopolymers. However, the last 5-10 years have shown an emancipation from this niche, as indicated by an increasing number of patents related to material science and related fields, such as textiles & packaging. Patenting also exhibits strong regional variation: Most strikingly, and triggered at least in part by strong governmental incentives, China shows exponential growth in patent applications, accompanied however by negative consequences for patent quality.
- **Outlook TLab3:**
 - Contribution to scenario analysis report (STO RWTH Aachen)
 - Short reports on topic-specific innovation trends



AlgaeTex member
 External/non-response/former
 Learning

WP SONA: Network Analysis of the Innovation Space

Key Insights:

- **A first network study for the AlgaeTex project** has shown that although there are many linkages in the network, knowledge brokering is concentrated on a few actors who serve as inward, outward and liaison brokers for the redirection of information. Despite existing cohesion, innovation collaboration will benefit from recognizing and using brokers as enablers for knowledge recombination. Brokers should act as tertius iungens, i.e., rewire new linkages between disconnected or mutually unaware peers to help address research and innovation challenges.
- **A more comprehensive study for the full Innovation Space** is initialized and preliminary results indicate that cross-project cooperation is perceived ambiguously. Some projects value it as an important asset to the Innovation Space, while others derive less direct added value from such interactions. Interviews with project leaders and PMO representatives have furthermore shown that the PMO is perceived as exhibiting a variety of roles, focusing more on controlling in some cases, or serving and partnering in others. This role stress indicates the differences in requirements of different innovation contexts and highlights the need for robust and flexible project governance.

Outlook TLab3:

- Analysis of innovation cooperation development over time in BIOTEXFUTURE.
- Comparison of the innovation cooperation in BIOTEXFUTURE with other innovation spaces.

Emotional approach

When sustainability aspects address consumers emotionally, purchases of biopolymer-based products increase.

Address responsibility

Sustainability aspects that refer to what consumers feel responsible for (e.g. end-of-life) outshine manufacturing aspects.

Highlight advantages

Visualizing and highlighting advantages increase purchases of biopolymer-based products.

High quality expectations

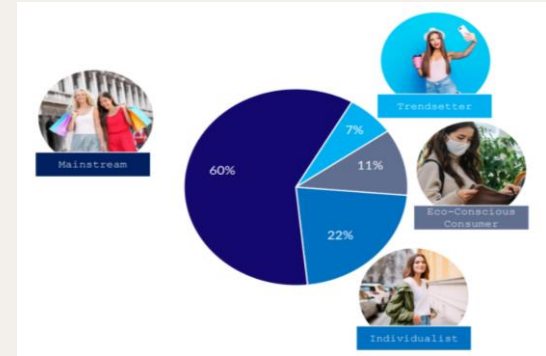
Purchases of biopolymer-based sneakers decrease when functional disadvantages are mentioned.

KEY INSIGHTS TLAB 2: FAU (AND SYMANTO)

Prof. Dr. Kai-Ingo Voigt, Lauren Anne Mackintosh, Hannah Altenburg

How do consumers think and talk about bio-based products online?

- Study of 350.000 social media posts using deep learning algorithms in collaboration with symanto
- Analysis of current and potential consumers' attitudes towards bio-based technologies and products (**positive attitude, high quality expectations**)
- Identification of emotions (**joy**), motivations (**quality, environment**) and criticisms (**price**)
- AI-based consumer segmentation (**mainstream, trendsetter, eco-conscious consumer, individualists**)

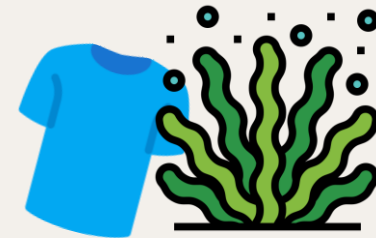


How do consumers perceive NPO company collaborations?

- Investigation of the perception of sustainable NPO-Company Collaborations in experimental studies
- Focus on joint product development (open innovation) and its influence on purchase intention (**future research**)

What is the effect of bio-based product attributes on consumers' purchase intention for textiles?

- Examination of perception of bio-based products (esp. algae-based textiles) in experimental studies (**very positive perception, high quality expectations**)
- Further qualitative studies surrounding associations and workshops at the GreenLab in Berlin to find out more about consumer perceptions of algae (**specific material associations are important**)



STAKEHOLDER COMMUNICATION ON TWITTER

Focus: Sustainable fashion & biobased materials

Stakeholder	%	Definition
Private Person	88,1%	Engaging in communication about sustainable fashion
Company	5,2%	Producing/selling sustainable textiles
Other Company	2,6%	Communicating about sustainable fashion but without producing/selling it
Media	1,2%	Media organizations, journalists or bloggers that report or communicate about sustainable fashion
Social movements	1,0%	NGOs or activists related to climate or sustainability
Influencer	0,9%	Actors with many followers and influence on organizational stakeholders through, e.g. content distribution
Investor	0,5%	All actors and actions of the financial market that can have an impact on sustainability efforts of a company
Institution	0,2%	Public institutions or organisations
Research	0,2%	Academical institutions or researchers
Policy makers	>0,1	All legislators who can influence a company's business operations through statutory provisions or regulations

Tab 1. *Who talks about sustainable fashion, especially bio-based materials?*

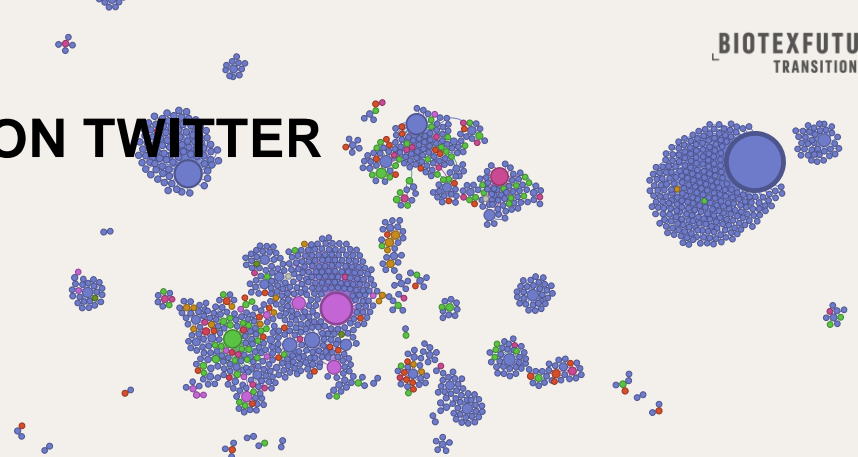


Fig 1. *Interaction between Stakeholders*

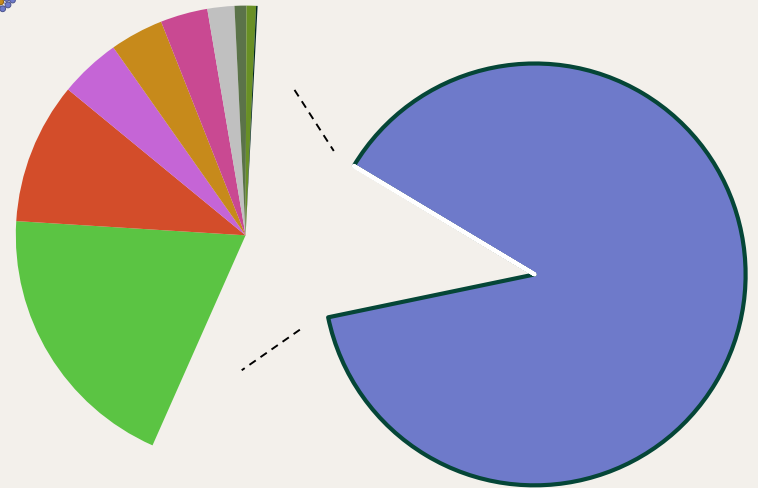


Fig 2. *Stakeholder Distribution*

Demonstrator Development



Research Focus

- Established processes for strategy impact (with PMO)
- Established internal reflection processes
- Established processes for member and project feedback (Research question tool, check-ins, workshops)

An aerial, high-angle photograph of a pedestrian crossing. The crossing is marked with white diagonal stripes on a dark, starry background. The stripes are filled with a vibrant green leaf pattern, likely from a large plant like a banana leaf. Several people are walking across the crossing. A central figure is a man in a white t-shirt and dark pants, walking towards the right. To his left, a woman in a light-colored top is walking away. To his right, a man in a grey hoodie and dark pants is walking towards him. In the lower half of the image, a person in a pink shirt and blue jeans with a black backpack is walking away from the camera. Other people are partially visible at the bottom corners. A dark green horizontal bar is overlaid across the middle of the image, containing the text 'EXECUTIVE SUMMARY' in white, bold, sans-serif capital letters.

EXECUTIVE SUMMARY

RESULTS OVERVIEW

Knowledge & perception

Lack of knowledge, high expectations, positive attitude

Buying Behaviour/ Motivation

Quality, emotions and environment vs. price and loss-aversion

Communication Strategy

Greenwashing concerns; consumer and stakeholder segmentation

Brand strategy & perception

Trust and transparency; first mover advantages

Foresight

From bioeconomy and bio-based to circularity and renewable carbon

Bioeconomy Stakeholder / Collaboration

Time and resources; trust and open spaces

An aerial photograph of a pedestrian crossing. The crossing is marked with white diagonal stripes on a dark, starry background. The stripes are filled with a vibrant green leaf pattern, likely tobacco leaves. Several people are walking across the crossing. A central green banner with white text is overlaid on the image.

TRANSITIONLAB 3 OUTLOOK

Synergies

- Search for integration of results
- Shared publications
- Building insights into innovations
- Integrate demonstrators and research questions into the MULE approach

Scenarios

- Develop evidence-based outlooks for a bio-based textile economy
- Identify pathways and necessary innovations
- Provide orientation for companies, research, policy-makers and the public

Other Application Areas

- More engagement in the areas of automotive, home textiles and technical textiles
- Broaden stakeholder involvement
- Integration of other perspectives (international, european, NPO, etc.)

THANK YOU FOR YOUR KIND ATTENTION

FOR FURTHER INFORMATION ON BIOTEXFUTURE CONTACT

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