Call for partners
Chemicals, Materials & Water

Public-Private-Partnerships with Wageningen Food & Biobased Research (WFBR) for project ideas to start in 2026.

Each year, Wageningen Food and Biobased Research (WFBR) partners with Industry, research institutes, NGOs, and other stakeholders in Topsector Agri & Food consortium projects. In this document, the WFBR programmes in the biobased domain present their Public-Private-Partnership project ideas to start in 2026.

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Chemicals, Materials & Water

Project ideas for:

- Nature Based Materials and Plastics
- Circular Water Technology
- Safe and Circular Biobased Products

The project ideas are still in their early stages, which has the advantage that they can be adjusted to the research needs of partners who would like to join the consortium. If you would like more information or if you want to express your interest in joining any of the project consortia, please contact the relevant Programme Manager before the end of May 2025.

The submission deadline for the project proposals to the funding agency is 1 September 2025. The main general terms, conditions, and timeline for consortium projects can be found at the end of this document.

Chemicals, Materials & Water

WFBR not only has Public-Private-Partnerships for Chemicals, Materials & Water, but also for Healthy & Sustainable Foods:

- Food Chains
- Food Product and Process
- Consumer and Health

A full overview of all WFBR project ideas are available at www.wur.eu/call-for-partners.

Wageningen Food and Biobased Research

Together with our clients and partners, WFBR creates economically viable and sustainable solutions to contribute to supplying a rapidly growing world population with healthy, delicious, sustainably produced food and high-quality materials, chemicals, and fuels made from biomass. As a contract research organization, WFBR conducts applied and pre-competitive research for NGOs, governments and industrial partners. This work is conducted within bilateral projects and scientific grants, as well as Public-Private-Partnerships such as Topsector Agri & Food consortia.

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Nature Based Materials and Plastics

Project ideas:

1. Creating understanding of biodegradation and safety aspects
2. Sustainable biobased additives
3. Reactive biobased chain extenders
4. New circular products based on thermoplastic elastomers
5. Expanding the processing opportunities of PHA plastics
6. Safe biodegradable products for outdoor applications
7. RELEASY: Non-accumulating slow-release delivery systems that are safe for nature
8. Biodegradable foam from waste and side streams
9. EDPACKNEXT (Edible Packaging, Next Steps)
10. Binder, done that
11. Stronger biocomposites
12. Biowaste to building materials
13. Flame retardants for biobased building
14. Biobased and water-tight coating for flax panels
15. Decision support for future-proof products with sustainable material strategies
16. Safe and sustainable by design biobased chemicals and materials in NL
17. Legislation and the impact on industries
18. Balancing carbon to soil and biobased applications

Please find below the project ideas for 2026.

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Nature Based Materials and Plastics is working on the development of products from renewable raw materials, which are easy to recycle and do not accumulate in the environment.

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Creating understanding of biodegradation and safety aspects

Idea #1

Nature Based Materials and Plastics

WAGENINGEN UNIVERSITY & RESEARCH

The societal acceptance of biodegradable products is notably affected by growing concerns on the amounts of microplastics found in the environment, their accumulation and their impact on ecosystems or human health. Biodegradable plastics typically fragment during use or at end-of-life, to be subsequently further metabolized and taken up in the biological carbon cycle.

This project will develop methods that provide insight into the environmental fate of disintegrated (intermediate) degradation products when we can no longer see them. Material producers, product developers and brand owners can use these methods to show whether their products potentially contribute to environmental safety aspects.

Sustainable biobased additives

Idea #2

Nature Based Materials and Plastics

WAGENINGEN UNIVERSITY & RESEARCH

In this project, we will develop biobased additives that can modify toughness and improve impact resistance. Biobased plastics, made of for example starch or PLA, are often complemented by additives from fossil origin.

The newly to be developed additives are derived from natural sources, such as functionalized cork, vegetable oils, custom-made cellulose fibers, cardanol or lignin. These biobased additives will increase processing and product properties to be able to compete with fossil-based counterparts and reduce environmental impact.

Reactive biobased chain extenders

Idea #3

Nature Based Materials and Plastics

WAGENINGEN UNIVERSITY & RESEARCH

In this project, we will develop reactive biobased alternatives to replace fossil-based additives, such as chain-extenders. These reactive chain-extenders are helping to improve conversion of polymers (e.g. PLA) into films or foams and improving their mechanical properties. Chain-extenders contain 2 or more reactive groups and can include the entire range from phenols via tannins to lignins.

The aim is to develop biobased reactive additives for 100% biobased plastic products that are safe and will not accumulate in nature.

New circular products based on thermoplastic elastomers

Idea #4

Nature Based Materials and Plastics

WAGENINGEN UNIVERSITY & RESEARCH

Currently, most elastomers are derived from fossil feedstocks and very hard to recycle. They end up in the environment as microplastics due to their crosslinked nature. There is a specific need for new biobased, biodegradable thermoplastic elastomers (TPEs). By carefully tuning the polymer microstructure and architecture, such as the length of soft and hard blocks and hydrophilic / hydrophobic segments, specific properties can be targeted such as resilience, toughness and scratch resistance. The proposed TPEs, could be (re)processed using common melt processing techniques. Products that could benefit from these TPEs are used in the automotive industry, consumer goods or leisure products.

Expanding the processing opportunities of PHA plastics

Idea #5

Nature Based Materials and Plastics

WAGENINGEN UNIVERSITY & RESEARCH

Looking at biobased plastics that do not accumulate in nature, PHA polymers remain the only polymers that ‘tick’ both boxes by default. However, their processing behavior hampers their application window, which makes that they are not a suitable option for many applications. The challenge of this project would be to expand the processing opportunities of PHA, thereby making these materials suitable for a wider range of applications.

Topics that will be covered in this project are:
i) improved process stability at higher temperatures;
ii) enhanced flow behavior for injection molding applications;
iii) improving PHA melt strength for film blowing applications.

Safe biodegradable products for outdoor applications

Idea #6

Nature Based Materials and Plastics

WAGENINGEN UNIVERSITY & RESEARCH

This project will develop new strategies to program the biodegradation rate of plastic products that are being used in outdoor environments such as forestry, agriculture, lakes and oceans. These plastic products are often difficult to collect and recycle and even when they are, a high risk of leaving plastic residues in the environment remains.

This calls for new plastic materials that maintain their functionality during use while biodegrading as fast as possible during their end-of-life. Hence the project will develop new polymer formulations and processing routes towards products that maintain their intended performance while significantly reducing their pollution potential.

RELEASY: Non-accumulating slow-release delivery systems that are safe for nature

Idea #7

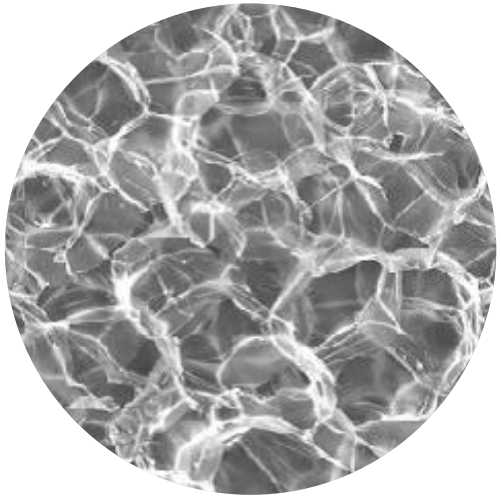
Nature Based Materials and Plastics

WAGENINGEN UNIVERSITY & RESEARCH

Biodegradable materials are indispensable for use in products which are intentionally placed into the environment (mulch films, fertilizers) and difficult to retrieve after use. Regulatory pressure to combat microplastics pollution leads to an increasing demand for sustainable alternatives.

RELEASY aims to use biodegradation as a tool for programmed / tuneable release of nutrients and bio stimulants in various plant growth support products. Using the polymer molecular architecture to direct the release rate allows the production of materials with novel tuneable and/or triggered (by pH or temperature) release profiles. This helps the industry to meet upcoming regulations and improve the efficiency of products.

Biodegradable foam from waste and side streams



Idea #8

Nature Based Materials and Plastics

WAGENINGEN UNIVERSITY & RESEARCH

Most polymeric foams are made from fossil-based polymers that are persistent when they end up in the environment. Often chemical blowing agents are used that contribute to global warming. It is known that natural polymers like starch can be foamed using water as a blowing agent. Biobased micro- and nano-additives can be used to improve foam properties. This project aims to develop biodegradable foams based on natural polymers like starches and other polysaccharides and eventually proteins retrieved from waste and side streams. Specific focus will be on extrusion foaming and applications where biodegradability is an advantage (e.g. agriculture, packaging).

EDPACKNEXT (Edible Packaging, Next Steps)

Idea #9

Nature Based Materials and Plastics

WAGENINGEN UNIVERSITY & RESEARCH

EDPACKNEXT (Edible Packaging, Next Steps) is a multidisciplinary initiative with significant potential to advance sustainable and secure food supply chains while minimizing food waste and the need for secondary packaging. This project focuses on enhancing and innovating edible packaging solutions, with emphasis on casings, coatings, and films. Derived from biobased sources, edible packaging is food-grade and readily biodegradable. While the development of edible films and coatings has growth in recent years, it remains a small fraction of the overall food packaging industry. Here we will study the use of biodegradable biopolymers, barrier properties and consumer acceptance for edible packaging.

Binder, done that

Idea #10

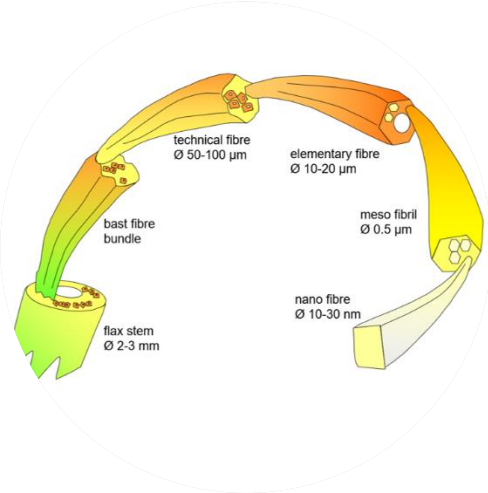
Nature Based Materials and Plastics

WAGENINGEN UNIVERSITY & RESEARCH

Thermoset resins are currently produced from extensive amounts of fossil-based, environmentally unfriendly and toxic binder chemicals. Lignocellulose can offer all the functionalities needed to produce fully biobased thermoset resin alternatives.

The ‘Binder, done that’ project will harness these functionalities, paying specific attention to the role of biobased aldehydes. New value-chains for lignocellulosic side streams will be explored, novel biobased resins will be developed and product properties will be tailored through synergistically combining biobased constituents.

Stronger biocomposites



This project aims to develop stronger natural fiber reinforced biocomposites and make them more competitive against glass fiber reinforced composites. Typically, the low strength of biocomposites is due to a very short fiber length that remains after the required harsh compounding conditions needed during production.

In this project methods will be developed to weaken the binding layer between plant cell fibers. This allows the use of a mild extrusion process to produce biocomposites, with an increased fiber length and up to 30% higher composite strength.

Idea #11

Nature Based Materials and Plastics

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Biowaste to building Materials

Idea #12

Nature Based Materials and Plastics

WAGENINGEN UNIVERSITY & RESEARCH

Biobased materials, specially building materials are currently mainly promoted and developed from agricultural (side-) streams. The use of residues and/or waste streams for this purpose opens interesting opportunities. For once They are already readily available, in large volumes. Optimizing separation technologies and improving processing will open this large resource group. Impurities and components outside the normal lignocellulosic matrix may even be used to provide additional properties, e.g. bonding, water resistance or fire retardancy.

This project will add “bio-waste” to the list of raw materials used for building.

Flame retardants for biobased building

Idea #13

Nature Based Materials and Plastics

WAGENINGEN UNIVERSITY & RESEARCH

Biobased insulation materials, like insulation mats based on hemp or grass fiber, are gaining traction. However, very often these products still contain fossil or mineral components. Particularly the binder (often a fossil-based plastic like PET) which binds the fibers and the addition of flame retardants (often of mineral origin).

This project aims to develop a biobased binder and/or biobased flame retardants for biobased insulation mats and potentially other biobased building materials. The project builds on WFBR's experience in biobased plastics and on earlier project on biobased flame retardants.

Biobased and water-tight coating for flax panels

In pre-fab building processes, nature-based materials have an increasing market share. Panels for walls, ceilings, and facades made from cement have a large CO2 footprint. Flax is a biobased material that is well suited to be the core of such panels. An important downside is the vulnerability of flax-cored panels for rain. With a temporary, biobased and water-tight coating, the potential to apply flax-cored panels could be increased to sectors where exposure to the outside environment is expected.

In this project we will evaluate which materials could protect the panels and application methods.

Idea #14

Nature Based Materials and Plastics

WAGENINGEN
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Decision support for future-proof products with sustainable material strategies

Idea #15

Nature Based Materials and Plastics

WAGENINGEN UNIVERSITY & RESEARCH

Producers in material development and product design face significant challenges when making decisions about which materials to apply for specific products, especially in terms of sustainability. The current systems are ill-prepared to accommodate novel polymers and sustainable innovations. As a result, many companies and entire sectors are resorting to sub-optimal choices, prioritizing short-term system compatibility over long-term sustainability.

This project will leverage a suite of innovative tools to address the challenges of sustainable material selection. By doing so, companies and sectors will be supported in making sustainable material choices for their current products and in developing an action plan for future product innovations.

Safe and sustainable by design biobased chemicals and materials in NL

Idea #16

Nature Based Materials and Plastics

WAGENINGEN UNIVERSITY & RESEARCH

The 'safe and sustainable by design' (SSbD framework) of the European Commission is a voluntary approach to guide the innovation process for chemicals and materials. With the increasing emphasis towards transition to circular biobased economy, this framework can facilitate the shift to happen in a sustainable and safe manner. While this framework offers many opportunities and benefits, how can it be effectively applied by companies?

Therefore, the aim of this project is to support the uptake and utilization of the SSbD Framework in the Netherlands and facilitate its implementation.

Legislation and the impact on industries

Idea #17

Nature Based Materials and Plastics

WAGENINGEN UNIVERSITY & RESEARCH

New European regulations and directives have an increased impact on European industries. Examples are the Packaging and Packaging Waste Regulation (PPWR), SUP directive and fertilizer regulation. Although these policies aim to create a more sustainable future, they may result in various challenges, like for example: difficult implementation and monitoring, increased costs, blocking of innovations and regrettable substitutions.

The aim of this project is to provide clear insights from an industry perspective that can be used to improve the implementation of new legal frameworks and shape future adjustments to make them more effective.

Balancing carbon to soil and biobased applications

Idea #18

Nature Based Materials and Plastics

WAGENINGEN UNIVERSITY & RESEARCH

The biobased economy needs sustainable biomass for production of chemicals, SAF, and other material or energy uses. Residues or wastes are generally the most sustainable feedstock choice. A potential conflict emerges with soil quality maintenance which also requires biomass input.

Still, optimization strategies are possible and need to be tested and evaluated. As soils vary considerably in the need for inputs and the timing of the input the topic is complex, and case specific solutions are required.

Circular Water Technology

Project ideas:

19. SepticTankUpgrade
20. Integrated approaches for agri-food brine valorization- Salt recovery and de-watering
21. A comprehensive approach for sustainable nitrogen recovery and valorization
22. Magnetic adsorption-desorption of phosphorus from residual streams

Please find below the project ideas for 2026.

Circular Water Technology focuses on new water treatment solutions that are affordable and efficient. We develop technological onsite solutions for water purification, nutrient recovery, micro-biological safe water, as well as biobased, biodegradable and safe water treatment products.

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SepticTankUpgrade

Idea #19

Circular Water Technology

Septic tanks are known to be suboptimal for the removal of excreted medicines, hormones and other pharmaceutical compounds. Yet, even in the EU a large fraction of sewage in rural areas is treated in on-site septic tanks. Within the SepticTankUpgrade project our aim is to develop bacterial cultures specifically to enhance removal of pharmaceutical residues from sewage. For this we will 1.) identify and characterize the bacterial species that can degrade these compounds efficiently, 2.) investigate if they can proliferate in current conventional septic tank systems and 3.) produce spray-dried culture that could be part of septic tank formulation.

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Agri-Food Brine Valorization: Integrated Approaches for Salt Recovery and Dewatering

Idea #20

Circular Water Technology

Food and Biobased industries produce large quantities of brine waste. Currently, companies dilute and discharge these streams, resulting in resource loss and environmental concerns.

Our project proposes innovative technologies to recover valuable resources from these brines—including salt, acids, bases, and purified water. This integrated approach enhances sustainability, reduces environmental impact, and promotes circular economy practices in the agri-food sector.

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A comprehensive approach for sustainable nitrogen recovery and valorization

This forward-thinking initiative goes beyond basic nitrogen recovery, aiming to develop solutions that produce high-value nitrogen-based products. Specifically, we will focus on advanced methods to separate nitrogen (N) and potassium (K) effectively, enabling the production of valuable fertilizers such as ammonium nitrate (NH_4NO_3), or ammonia as product. The outcome will deliver practical and profitable solutions supporting sustainable agriculture, closing nutrient cycles, and reducing dependency on conventional chemical fertilizers.

Idea #21

Circular Water Technology

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Recovery of valuable products, Phosphorus with Magnetic Adsorption-Desorption

Idea #22

Circular Water Technology

Effective recovery of phosphorus from wastewater streams is essential for environmental sustainability and circular economy goals. Our innovative Magnetic Adsorption-Desorption (MAD) technology selectively captures phosphorus using magnetizable particles (magnetite). These particles are separated magnetically and regenerated, allowing phosphorus to be valorized into high-quality fertilizers. The MAD process significantly reduces chemical usage and sludge production, providing a sustainable and economically attractive solution for phosphorus recovery from both influent and effluent wastewater streams. In addition, the technology will be evaluated for selective recovery of other valuable products by chemical modification of the magnetite particles.

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Safe and Circular Biobased Products

Project ideas:

23. ScCO2 as alternative to hexane in oil extraction
24. Lactomax; delactosed permeate valorization
25. Probiotics for Animal Well-being and Sustainability (PAWS)
26. Alternative host identification
27. Gluecose; sugar based resins
28. Thermoset Resins: Innovatively Designed for Degradation on Demand - TRID3
29. Valorization of di- and tetracarboxylates formed via cathodic hydrocoupling
30. Role of metal ions in NIAS formation
31. Methodologies for microplastic detection in food and feed
32. Waterdispersable Polysaccharides
33. bioCHAMP (biodegradable and circular hybrid aqueous multifunctional polymers)
34. Enzymatic remodeling of polysaccharides
35. Leuckard-Enhanced Amino Functionalized polysaccharides (LEAF)
36. ECODIME: Electrocatalytic conversion of CO(2) to dimethyl carbonate

Please find below the project ideas for 2025.

Safe and Circular Biobased Products is focused on helping industry with safe and circular biobased solutions to develop a more sustainable, safe and circular economy.

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ScCO2 as alternative to hexane in oil extraction

Idea #23

Safe and Circular Biobased Products

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The project will focus on the potential of benign solvents such as supercritical CO2 as a hexane-free alternative for oilseed processing. While hexane is widely used for oil extraction, its toxicity raises environmental and health concerns. Supercritical CO2 has already been successfully applied in other industries and offers advantages like improved protein quality without severe heat treatment. This method enhances protein functionality, making it suitable for food applications. The project aims to validate the technology, assess its sustainability and economic feasibility, and test its applications.

The initiative seeks partners from the oil, food, and supercritical CO2 extraction industries to drive innovation forward.

Lactomax; delactosed permeate valorization

Idea #24

Safe and Circular Biobased Products

WAGENINGEN UNIVERSITY & RESEARCH

Delactosed permeate (DLP) is a side stream of dairy processing, currently applied in animal feed with little added value. WFBR developed a cost-effective partial demineralization technique for DLP and combined this with a fermentation, to produce microbial biomass. This biomass can be used as ingredient for pet-food or feed, with similar properties compared to yeast extract.

The next step in research will investigate if and how DLP can be of added value for the feed and petfood industry. For this, we will start a PPP project called LactoMax to bring the TRL closer to the market.

Probiotics for Animal Well-being and Sustainability (PAWS)

Idea #25

Safe and Circular Biobased Products

WAGENINGEN UNIVERSITY & RESEARCH

Probiotics for animal well- being and sustainability (PAWS) aims at (partly) substitution of soy and maize with agricultural side streams such as Brewers Spent Grain. They will be processed by e.g. fermentation and/or the addition of probiotics to make it suitable feed for pigs and poultry, which are both consumed in large amounts globally. Changes in these sectors by using more sustainable feed with health-beneficial components, will have a big positive impact in the agricultural sector.

Topics covered: fermentation, pre-treatment and down-stream processing, feed uptake and digestion, (probiotic) effects on animal health and gut-microbiota, and studies on sustainability and economic feasibility.

Alternative host identification

Idea #26

Safe and Circular Biobased Products

WAGENINGEN UNIVERSITY & RESEARCH

To improve production of biobased chemicals and polymers from less refined feedstocks through fermentation, robust microbial production hosts are required. These microbial platforms should be able to convert the feedstock, as well as withstand the required (harsh) environmental conditions in industrial processes and any inhibitors that may be present in the feedstock. This project will focus on screening a wide range of both well-known and less conventional microorganisms for performance on various feedstocks that are pre-processed to different degrees. This will result in a mix-and-match database to find suitable microorganisms for valorization of specific waste streams, as well as expert advice on expected product spectra and potential for further metabolic engineering.

Gluecose; sugar based resins

Idea #27

Safe and Circular Biobased Products

WAGENINGEN UNIVERSITY & RESEARCH

Wood panels are currently manufactured using fossil-based thermoset resins that rely on harmful formaldehyde or isocyanates. In this project, fully biobased and safe resins for wood-panels will be developed from carbohydrate-rich agricultural and food side-streams. More specifically, the production of furanics as biobased building block will be targeted. Hemicellulose-rich side-streams could offer a great opportunity as pool of saccharides for conversion to furanics.

The Gluecose project will establish new value-chains for hemicellulosic feedstocks, will improve sustainable production of furanics and will develop sugar-based thermoset resins.

Thermoset Resins: Innovatively Designed for Degradation on Demand - TRID3

Idea #28

Safe and Circular Biobased Products

WAGENINGEN UNIVERSITY & RESEARCH

Epoxy thermosets have outstanding thermal and mechanical properties, but nearly 90% of them are formulated using the bisphenol A (BPA) building block. Because of its Endocrine Disrupting effects, the use of BPA will be restricted or phased out in many applications.

As an answer to this need, TRID3 aims to develop circular and sustainable thermoset materials with performance comparable to benchmarks. To address the issue of recyclability of epoxy resins, besides health, the thermosets will be designed with linkages that allow degradation of the polymer network on demand too. Permitting the reuse of monomers in virgin thermosets or in other applications.

Valorization of di- and tetracarboxylates formed via cathodic hydrocoupling

Idea #29

Safe and Circular Biobased Products

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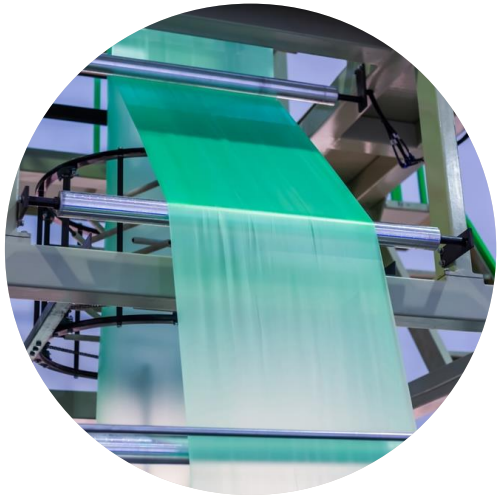
To reduce GHG emissions several transitions are required including electrification, utilizing renewable electrical energy, and the use renewable feedstocks. Unsaturated biobased carboxylates are an interesting source for electro-organic synthesis to yield hydrodimers, di- and tetracarboxylates. This project will build on previous work at WFBR, in which a proof-of-principle was established. The produced hydrocoupling product will be used as building block in e.g. biobased coatings, adhesives, sealants, elastomers, complexing agents, soil release agent, finishing agent and fragrance.

Role of metal ions in NIAS formation



Idea #30

Safe and Circular Biobased Products

WAGENINGEN UNIVERSITY & RESEARCH

During recycling of plastics, even in case the process results in colourless materials with good mechanical properties, the formation of NIAS (non-intentionally added substances), might occur during re-extrusion. These NIAS may include “substances of very high concern”. In case they exceed certain thresholds, the product will be rejected. The origin of the NIAS is still largely elusive as various contaminants are suggested to catalyse their formation. A better understanding of this formation process and especially the role of transition metal ions will help society and industries to create less-polluted recycled plastics.

Methodologies for microplastic detection in food and feed

Idea #31

Safe and Circular Biobased Products

WAGENINGEN UNIVERSITY & RESEARCH

With microplastics accumulating in human and animal tissue, it is only a matter of time before legal limits may be established. Exposure may occur through food and drinks, while health risks are still unclear. Detection of microplastics was already a subject of attention for the European Commission (Decision 2024/1441), but for food and feed matrices, method development and standardization is necessary. Increased insight in microplastic incidence in food and feed products can help companies to better address this issue of major public concern. Besides analytical quantification and qualification, a 'root-cause analysis' approach could identify possible origin sources and enabling risk mitigation strategies.

Waterdispersable Polysaccharides

Idea #32

Safe and Circular Biobased Products

WAGENINGEN UNIVERSITY & RESEARCH

Home and Personal Care (HPC) products need to become readily biodegradable in the near future. The use of renewable feedstocks, such as polysaccharides, offers many advantages for developing such products. However, in many cases the performance and storage stability requirements of these products are conflicting with the biodegradability at End-of-Life requirements.

This project aims to develop new types of biobased functional linkers for the modification of polysaccharides to HPC products. The proposed linker technology will allow for flexibility in modification, thus enabling to tune the material properties to specific requirements, while at the same time having a molecular structure that ensures biodegradability.

bioCHAMP (biodegradable and circular hybrid aqueous multifunctional polymers)

Idea #33

Safe and Circular Biobased Products

WAGENINGEN UNIVERSITY & RESEARCH

Ingredients for Home Care (HC) products such as laundry detergents and dishwasher tablets need to become readily biodegradable in the near future. Many of these products contain ingredients such as polyacrylates and polyamines, that are very effective in the cleaning process but are not (sufficiently) biodegradable. The objective of this project is to develop new, bio-renewable, water borne multi-functional polymers for HC products that meet both performance and biodegradability requirements.

The bioCHAMP concept is based on combining water soluble and biodegradable biobased polymers with reversibly linked functional groups that will allow for flexibility in design and hence in tuning the specific properties.

Enzymatic remodeling of polysaccharides

Idea #34

Safe and Circular Biobased Products

WAGENINGEN UNIVERSITY & RESEARCH

The demand for sustainable, high-performance polysaccharides is rising in the food sector as well as other industrial application areas like the home and personal care industry. Enzymatic modification offers a precise solution to tailor polysaccharide functionality with minimal environmental impact and maintaining biodegradability. Already, enzymes are widely leveraged for modifying starch to enhance properties such as viscosity, gelling, and stability. Pectin and guar gum hold potential to be enhanced enzymatically as well, with applications ranging from clean-label thickeners and stabilizers, to customized industrial uses complying with green chemistry regulations. To unlock this potential, we at WFBR combine knowledge of currently unused enzymes, process development expertise, and polysaccharide testing capacity.

Leuckart-Enhanced Amino Functionalized polysaccharides (LEAF)

Idea #35

Safe and Circular Biobased Products

WAGENINGEN UNIVERSITY & RESEARCH

Cationic polymers play an important role in many Home & Personal Care products (e.g. fabric softeners). Cationic polymers are also used in various other (industrial) applications like paper sizing or used in water technology as flocculants to clean (waste) water.

Currently, most cationic polymers are fully fossil based and/or have difficulty in biodegradation. LEAF aims to develop a novel technique to modify natural polysaccharides in such a way that an amino functionality is introduced onto polysaccharides (which will result in cationic polymers under neutral to acidic conditions). The two-step conversion will be a combination of a catalytic oxidation and a green chemical conversion step.

ECODIME: Electrocatalytic conversion of CO(2) to dimethyl carbonate

Idea #36

Safe and Circular Biobased Products

WAGENINGEN UNIVERSITY & RESEARCH

Electrochemical CO_2 valorization allows mitigation of the greenhouse effect, while generating organic compounds in a carbon-neutral manner. A possible target is dimethyl carbonate (DMC), a versatile carbonate ester for various applications. Electrochemical CO_2 reduction to DMC is currently limited to small-scale, proof-of-concept systems are characterized by low electrical current densities and yield.

With this project, WFBR aims to address the bottlenecks by scaling up electrocatalytic CO2 conversion to DMC in an electrochemical flow reactor under industrially-relevant conditions. The resulting DMC will be isolated, purified and utilized for various applications.

Public-Private-Partnerships in general
Subsidy conditions

- The above-described projects are being developed for application to the TKI subsidy, a Dutch governmental program sponsoring applied research. Each project requires at least one Dutch company partner, but additional partners from abroad are welcome to join.
- Granted projects receive 50% subsidy funding. The other 50% is contributed by industry partners, of which up to half (25% of total) may be in-kind.
- TKI projects typically have a running time between 2 and 4 years.

Public-Private-Partnerships in general
Expected contribution

- Total project budgets are typically between 0.8 and 2.0 M€.
- Participation costs per partner range from 20-50 k€ cash per year, with exceptions for small and medium enterprises (SME).
- Partners also contribute in-kind through participation in project meetings, contribution of materials, and/or performance of own experimental work.

Public-Private-Partnerships in general **Timelines**

- 1 April 2025 the TKI call was published. The full call text is available online.
- Partners are kindly requested to express their interest in joining proposals prior to 1 June 2025, at which time a selection will be made of proposals with sufficient support to continue.
- The deadline for full proposal submissions is 1 September 2025. At this time partner commitment must be firm.
- Early November 2025, consortia are notified if they have received the subsidy grant. Upon notification, the contracting phase starts.
- Projects kick-off as soon as contracting is completed (deadline: 1 April 2026).

Public-Private-Partnerships in general
Contracting terms

The IP terms for a PPS consortium are governed by European state aid regulation. As specified on the TKI site, the consortium agreement template is mandatory and IP terms will not be modified. Parties engaging are advised to check the terms well in advance. For your convenience, the main concepts are summarized below:

- Foreground developed in the project accrues to the inventing party, most frequently the executing knowledge institute(s).
- Industry partners co-financing the consortium receive the right to apply non-protected Foreground directly and the first right to license any resulting protected Foreground (IP) for their field of use.
- Projects receiving subsidy are obliged to publish part of the results. A project steering committee with one representative per partner governs publication of project results.

We look forward to collaborating!

For more information on any of these initiatives,

please contact the relevant Programme Manager

or have a look at our website:

www.wur.eu/call-for-partners

For general questions,

please contact Business Development Support:

wfbr.bd-support@wur.nl

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