



# Thematic call for research projects in the field of bioeconomy

## Objective

The aim of research projects within the Bioeconomy Impulse Programme is to initiate technological developments with high potential for economic or societal valorization that are still at a low TRL level (maximum TRL level at the start of the research project is 3) and to determine the optimal direction in which the innovation trajectory has the best chance to succeed. The project may cover several research actions:

- Further technological development: It is possible to include research actions for further development phases that are necessary for the next innovation steps. Possible examples include:
  - Further development of technology at low TRL levels in complementarity with activities in European projects. This includes preliminary tests as a result of new European collaborations, or translation of technological results at low TRL levels into a Flemish context.
  - Preliminary development in a lab environment to facilitate future collaborations with Flemish industrial partners.
- Economic valorization potential: based on interdisciplinary collaboration, an optimal value chain is defined, the partners are identified and involved, and the impact on the technology development worked out. Since it is often not possible to calculate environmental impact or process efficiency at low TRL levels from lab tests, the technology is analysed as part of a new value chain. For the valorization potential alternative value chains are described. Based on the identification of players and market information about product inputs and outputs, concrete limit values must be obtained for process efficiency. These limit values are yet to be reached by the process before a scalable technology can be achieved.
- Societal acceptance and added value: The impact of the technology is worked out through environmental analysis and dialogue with societal actors and citizens.

It is not required to include all research actions. Each project decides which research actions are to be included in the work programme. The application must justify the choice made regarding the balance between the selected actions.

The research is based on an interdisciplinary and holistic approach to serve as a basis for direct dialogue with citizens and social representatives. The aim of this dialogue is to gain insights into societal concerns and expectations.

The budget allocated by the Flemish Government for the research programme should have a leveraging effect on other sources of funding. As part of the project execution, private and public partners need to be involved for the purpose of speeding up the application of the results during an innovation trajectory.

The objective requires that a technology developed within a research institution is confronted with practical, societal and environmental framework conditions that exist outside the research institution. This means that the researcher, specialised in the technology, will have to work with experts from other research teams, from industry associations, civil organisations or intermediary actors. As a result, the work cannot be carried out within the boundary conditions of a traditional personal research fellowship. Instead, it must be designed for a team where the original developers of the technology will only be part of.

## Scopes

Projects under the bioeconomy call must fall within one of the four research themes defined in the [policy plan](#).

### a. Non-food biomass production

This theme focuses on research into the primary production of biomass for non-food applications. The growing scarcity of raw materials such as water and land highlight the need for efficient use of these natural resources. Improved yield and quality of a primary production system is to be achieved taking into account agro-ecological principles. Any innovation in biomass production must, of course, also guarantee a fair income for farmers.

### b. Synthetic biology

This theme combines synthetic biology and active application-oriented screening of existing organisms that could improve the yield of valuable biobased raw materials and products. The application domain can focus on organisms or components (microorganisms, or enzymes, etc.) and the natural environment where they occur (lab creation, land, marine environments, etc.). Both domains share the development and use of large genomic databases, advanced computer techniques to expedite the identification of solutions, and direct focus on specific industrial issues.

### c. Technological and chemical transformation of biomass and waste streams

This theme covers initiatives aimed at valorizing biomass for non-food applications via technological and chemical transformation. This process is used to convert the biomass raw material into useful building blocks or finished products. These technologies focus on the valorization of biomass, waste gases or waste streams. They form a highly diverse group, ranging from catalytic (chemical) processing over thermo-chemical conversion to various fermentation applications.

### d. Supporting technology for biobased value chains

This theme covers all developments ranging from pre-treatment over digitization and process automation of different transformation steps, to filtration and purification, preparation for product design, and recycling. This knowledge is essential in the process and product development of new products for the bioeconomy.

# Selection criteria

Project applications are evaluated based on the following criteria:

- 1° the scientific quality of the project proposal, this is evaluated based on the following criteria:
  - a) The problem definition and technological developments are original and innovative and have a high potential scientific impact.
  - b) The interdisciplinary project approach makes a convincing contribution to the achievement of the envisaged scientific breakthrough.
  - c) the effectiveness and quality of the research approach, the project planning, the work programme and the planned project management. These are evaluated based on the following criteria:
    - 1) the research approach and its alignment with the project goals;
    - 2) the description of the further technological development;
    - 3) the broad and interdisciplinary analysis of the economic valorization potential, environmental impact, societal acceptance;
    - 4) the project's risk analysis and the proposed risk mitigation measures;
  - d) the scientific experience of the consortium;
- 2° the utilisation perspectives of the project proposal, more specifically the potential uses of the results in the longer term and after further research by economic, societal or governmental actors. These are evaluated based on the following criteria:
  - a) the importance and scope of the anticipated economic valorization potential
    - 1) the technological development has potential for broad application in Flanders and internationally. The potential is underpinned by benchmarking with application of existing alternative technologies, and the research approach is strategically relevant in allowing the technology to emerge as an innovative technology;
    - 2) the potential is demonstrated for follow-up research and development projects with economic actors, together with concrete actions to ensure the commitment of the actors. In addition, the research approach includes the necessary steps to estimate the feasibility of the inclusion of new economic actors;
  - b) the assessment against societal expectations and concerns. To this end, the following elements are demonstrated:
    - 1) the project gives a clear overview of the main societal expectations and concerns that are addressed in the project;
    - 2) the project approach to entering into a public dialogue is broad enough and capable of appealing to a wide range of stakeholders;
    - 3) the project approach has sufficient flexibility to adapt the optimal development trajectories based on the public dialogue;
  - c) sustainable development. To this end, the following elements are demonstrated:
    - 1) the project falls within the scope as set out in the project call;
    - 2) the research includes an estimation of the environmental impact over the entire value chain, including the potential to close material loops. The project

approach has sufficient flexibility to enhance the sustainability of the optimal development trajectories based on these estimations.

## **Applicant profile and conditions**

A project proposal is submitted by a promotor affiliated with one of the five universities in the Flemish Community or/and a Flemish research institution (e.g. VITO, VIB, IMEC, Vito, VLIZ, Flemish university colleges, Flemish scientific institutions funded by the state, etc.)

In addition to the above institutions, non-Flemish research institutions can participate in the consortium for up to 20% of the budget, provided it is demonstrated that their participation as partner is necessary to ensure the proper execution of the project and the achievement of the project utilization objectives.

A project proposal is submitted by a consortium (two or more eligible institutions), which includes at least one of the five universities in the Flemish Community.

Each legal entity applicant must meet the definition of a research institution (i.e. a research and knowledge-dissemination organisation) as set out in Article 2(83) of Commission Regulation (EU) No 651/2014 of 17 June 2014).

***A researcher can participate in only one consortium, either as promotor or as co-promotor. Consequently, your name as promotor or co-promotor can appear only once in this entire call.***

## **Budget**

The eligible costs in this call are as follows:

- Personnel costs
- Operational costs (including subcontracting up to 30% of the total budget, and small equipment of less than €20,000).
- The overhead percentage allocated to the research institutions is 17%.

The maximum available budget per project is €420,000 for a maximum project duration of 24 months.

Up to 20% of the budget can be allocated to a non-Flemish partner, provided it is demonstrated that the latter's participation is necessary to ensure the proper execution of the project and the achievement of the project utilization objectives.

Approved projects will have a fixed starting date on January, 1<sup>st</sup> 2022. Positive balances of the awarded staff and consumables funding may be used for the charging of costs up to two years after the end date of the agreement.

## **Intellectual property rights**

The project developers remain the owner of the obtained results. Any transfer of intellectual property rights to the results from a research institution to a company must always be carried out at market-compliant conditions.

## Scope of the call with respect to the food chain

The bioeconomy policy plan encourages innovation for new value chains based on biomass or using biological organisms. It is clear that many of these value chains are intimately linked to the existing value chains responsible for food supply. To avoid overlapping with the Flemish food policy, it is necessary to define the field of activities covered by the bioeconomy policy plan. While such a definition cannot take into account all possible borderline cases, it does highlight a number of key issues that are relevant in this respect.

The policy plan primarily encourages these new initiatives to create more biobased value from existing food and non-food value chains, and to set up new non-food value chains. Both these elements need to be worked out within the activities of the policy plan.

### *Primary production and processing of food does not fall under the bioeconomy policy plan*

The first theme focuses specifically on primary production for biomass for direct application in non-food use. All research into the primary production for direct food and feed purposes does not fall within the scope of this policy plan. This applies both to traditional and innovative food production methods. Below are some examples of projects that are not included within the bioeconomy policy plan, and fit within the food policy:

Soil-based production of crops and livestock for human or animal consumption or for subsequent use as food supplements and additives.

- Processing of vegetables and fruits for human consumption
- Cultivation of seaweed for human consumption as food
- Synthetic biology for the production of meat products or meat substitutes for human consumption.

Also the production of biological organisms for use as food or feed does not fall within the scope of the bioeconomy policy plan, because the envisaged food or feed application is the reason why the organism is produced.

### *Primary production and processing of biological organisms for non-food applications, by contrast, are possible under the bioeconomy policy plan*

This falls under the first theme within the policy plan. In addition, there are links for the processing of these streams within the other themes. Possible examples include:

- Soil-based production of plants for processing into chemical raw materials
- Innovative production of biological fibres for non-food applications
- Innovative application of woody biomass streams from forest management and agroforestry.

### *Valorization and processing of waste and residue streams from the food chain, by contrast, are possible under the bioeconomy policy plan.*

The valorization of residue and waste streams from the food chain holds great potential for new biobased activity. In this context, medical applications and food applications offer high value applications for reuse of materials. Examples include:

- Extraction of proteins from roadside clippings and residue streams from nature management
- Valorization of unsold products via fermentation or juice extraction
- Production of food additives from organic waste streams

This is more specifically the processing and valorization of biological material for use as food or feed. The envisaged food or feed application in these initiatives is not the original reason why the organism is produced. The organism is originally produced for some other use in the food chain (usually for direct supply to the food distribution industry). The initiative that is included within the policy plan is built on the basis of the waste or the residue stream of an existing food chain, and thus constitutes an additional value stream.

*The same distinction is used for initiatives within theme 3 “Technological and chemical transformation” and 4 “Supporting technology for biobased value chains”*

Initiatives under themes 3 and 4 are supporting technologies for new value chains within the bioeconomy. To define the application domain, the same distinction is made between value chains as for the production and processing of biomass.

This means that initiatives for supporting technology for primary production and harvesting of biomass for food do not fall under the policy plan, whereas initiatives for supporting technology for the processing of residue and waste streams do fall under the policy plan.

## **Do No Significant Harm test**

The financial resources for the bioeconomy impulse call come from the [Recovery and Resilience Facility](#) within the framework of the [recovery plan](#)

To qualify for funding, the project must comply with the “Do No Significant Harm” (DNSH) principle. The grants received may only be used in a way that does not lead to significant harm to the following six environmental objectives: 1) climate change mitigation; 2) climate change adaptation; 3) water and marine resources (including groundwater); 4) circular economy; 5) pollution prevention and control, and 6) biodiversity and ecosystems.

With regard to the detailed modalities and excluded activities we refer to the Dutch version on our website.

## **What after the support decision?**

The FWO regulations concerning [ethical aspects](#) of the research also apply in their entirety to this call.

After approval of the project, a [data management plan](#) must be drawn up