Bijlage – Handleiding Moonshot Later Stage Innovation Projecten

Manual for Later-Stage Innovation projects within the MOONSHOT program

VERSION 1.4 (APRIL, 2023)

AGENTSCHAP
INNOVEREN & ONDERNEMEN

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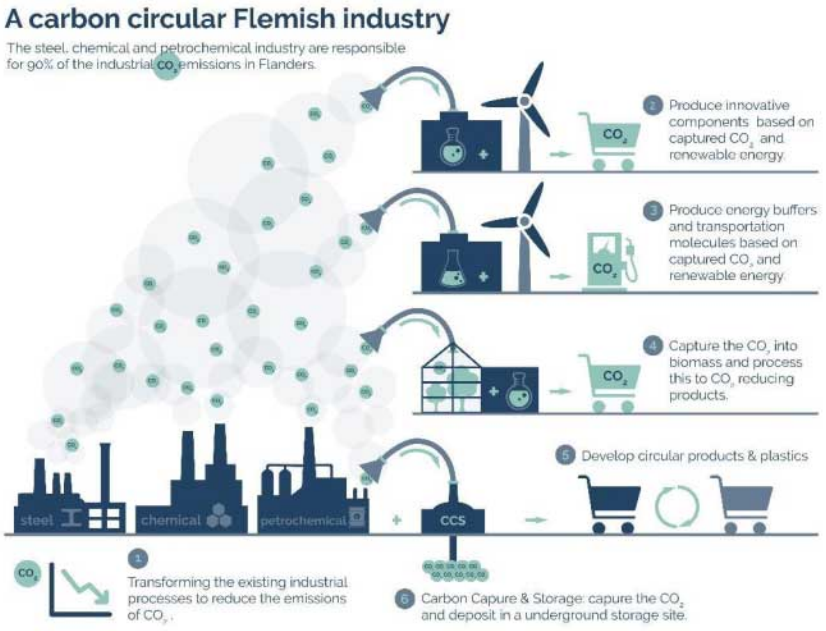
Context

The Flemish minister for economy and innovation has launched in March 2019 the "Flanders industry innovation MOONSHOT program[1]", which is an ambitious, integrated and widely supported effort of € 400 million in innovation and research to make the Flemish industry (focusing in first instance on the chemical, petrochemical and steel sectors) succeed in the big leap that is required to successfully meet the climate and energy challenge.

With this long-term investment of 20 million euros recurrent for the next 20 years, Flanders is challenging promising research to develop breakthrough technologies. Innovations that can demonstrate that they can significantly reduce CO_2 emissions, capture more CO_2, or improve CO_2 recovery and carbon circularity are eligible to receive further support in the MOONSHOT program. By fully re-thinking and transforming the current processes, it is feasible to greatly reduce the net emissions of CO_2. We also need to look for an efficient way to capture and (temporarily) store CO_2, initially at point sources/large emitters (CCS, Carbon Capture and Storage). Another necessary step to realize a carbon-circular industry is the ability to reuse CO_2 as a building block in the production process (CCU, Carbon Capture and Utilization), and this at a cost that is competitive with the use of fossil carbon sources (oil and gas). Other viable options are to capture CO_2 into biomass and subsequently process this biomass into added-value products, and/or to develop circular products (such as plastics).



However, many of the MOONSHOT-relevant technologies/processes shown above also depend on the availability of cheap, carbon-free energy for commercial success. This need for sustainable energy generation poses several challenges for the energy system: increasing electrification, increasing energy efficiency, and switching to carbon-free energy requires additional innovations. These challenges also need to be addressed.

[1] https://www.philippemuyters.be/nieuws/moonshot-van-400-miljoen-voor-co2-neutraalvlaanderen?pq=nieuws/archief/2019&page=0#views-row-8

The MOONSHOT innovation program, with the ambition to make Flanders carbon circular and low in CO_2 by 2050, is not only very challenging, but also offers an economic opportunity. With the technological breakthroughs and innovations that result from this, Flanders will position itself as a top region for research and innovation for the energy-intensive sectors.

The MOONSHOT innovation program is currently hosted by CATALISTI, the Flemish spearhead cluster for Chemistry & Plastics (www.catalisti.be). More background information concerning the MOONSHOT innovation program (such as the high-level objectives of the program and the specific objectives of the four MOONSHOT research trajectories) can be found in the context document "The Flemish industry carbon circular and low in CO_2 by 2050 through the development of marketable innovative technologies in Flanders by 2040". This document is available upon simple request (moonshot@catalisti.be) and accessible at www.catalisti.be/moonshot-downloads/.

Within the MOONSHOT innovation program, funding is available for so-called "Later-Stage Innovation (LSI)" projects. The present manual outlines the basic characteristics of such projects, the handling of the submitted projects and the main assessment criteria that will be used for evaluation of the submitted proposals.

1. Basic characteristics

1.1 Positioning and goals

Whilst Flemish research organizations generate world-class research and have a considerable track record in the R&D domain, they often have substantial difficulties to transform their knowledge (generated by their R&D) into experimentally validated products, which then can be further developed by other actors into marketable products. Turning an idea into business generally requires a multistage strategy comprising of 1) technological research, 2) product development & demonstration, and 3) world-class, advanced manufacturing.

The first stage, i.e. “Technological research”, typically consists of taking best advantage of scientific excellence in transforming the ideas arising from fundamental research into technologies competitive at world level. This stage typically comprises activities such as basic research, formulation of a technology concept, experimental proof-of-concept, and technology validation on lab-scale. This “technological research” stage is typically the natural habitat of research and knowledge dissemination organizations.

The second stage, i.e. “Product demonstration”, allows the use and exploitation of these stage-one technologies to make innovative and performing process and product prototypes available. This typically requires firstly putting in place experimental pilot lines to enable the fabrication of a certain quantity or scale of innovative product prototypes. Secondly, establishing the prototype, product validation in terms of its user performance requires both experimental validation and demonstration operations at appropriate scale and in relevant experimental environments. Research and knowledge dissemination organizations need to take up a huge role in this stage to experimentally explore the benefits and potential of their own innovations before the technology and related IPR can be (successfully) transferred.

The third stage, i.e. “Competitive manufacturing”, consists of, starting from product prototypes duly validated experimentally during the “Product demonstration” phase, the conceptual development and creation of globally competitive production facilities & industries to transform experimentallyvalidated prototypes/products into real commercial products. This stage is typically the natural habitat of industrial companies and manufacturers.

For research organizations, particularly the (second) stage of “product demonstration” is a big hurdle to take. This is because the realization of a test-series of products (by setting up pilot lines) and experimental validation of their processes and products in relevant environments (by setting up demonstrators) requires significant investment, while the benefits of the envisioned innovation are not entirely clear. In addition, the result of this product demonstration stage is still a pre-mature product/process, that cannot be directly commercialized. At this “later stage” of the innovation, the risk is still high, which has proved to be a major barrier for research and knowledge dissemination organizations to the further development of their own innovations.

One of the ambitions of the MOONSHOT innovation program is, therefore, to support research and knowledge dissemination organizations in their experimental product demonstration stage to accelerate future market introduction of their innovative products, processes and services that significantly contribute to the MOONSHOT goals regarding carbon circularity and reduction or avoidance of CO_2 emissions. To achieve this ambition, so-called “Later-Stage Innovation” projects are initiated within the MOONSHOT innovation program.

These projects can be considered as important instruments to bridge the gap between process/product development and implementation with economic valorization in Flanders and possibly internationally. This must result in more new and innovative products, processes and services, in greater economic and social added value and in a more important international valorization of knowledge generated by Flemish research and knowledge dissemination organizations. Later-Stage Innovation projects thus have a bridging function between the completion of the development & demonstration process and the rollout of innovation throughout Flanders. In this way, Later-Stage Innovation projects are in fact experimental demonstration projects in which the term "demonstration" can be interpreted broadly, as it can take place in the setting of an experimental pilot installation, a test line or an integrated demonstrator.

1.2 Basic characteristics

Later-Stage Innovation projects for Flemish research and knowledge dissemination organizations within the MOONSHOT innovation program have the following key characteristics:

- Support for innovations, that significantly contribute to the MOONSHOT goals regarding carbon circularity and reduction or avoidance of CO_2 emissions, to considerably increase the chances they reach full potential and scale.
- Support for Flemish research and knowledge dissemination organizations with funding:
  - (i) for further technological development and experimental product demonstration to achieve a higher TRL for their innovations that are unique and the result of own development (based on a demonstrable track record);
  - (ii) to (further) de-risk the demonstration of their own innovations, thereby reducing the financial, technical and business risk associated with the implementation stages of innovation and increasing attractiveness for the private sector to investment.
- Intended innovations must have sufficient maturity at the start. As such, applicants must already have demonstrated a proof-of-concept of their own innovation on a smaller scale, but a commercial rollout is not yet possible because the technology (and its resulting products/services) needs to be experimentally validated and demonstrated on a higher readiness level in relevant environments.
- Outcome of the projects must contribute to the realization of the strategic objectives of the MOONSHOT innovation program and its roadmap.
- A project proposal must be additional to the existing range of tools, services and products that are already on the market.
- Projects aiming at pure investments in the development of production equipment for the commercial roll-out of innovations are not the subject of the Later-Stage Innovation projects pursued within the MOONSHOT innovation program.
- For activities to be supportable, it is essential that knowledge is built up in a structured way to achieve the envisioned goals. Typical activities might include:
  - Research or critical investigation aimed at the acquisition of new knowledge for developing new products, processes or services.
  - The creation of components and parts of prototypes, and the construction of prototypes in an experimental environment or in an environment with simulated interfaces to existing systems as well as of pilot lines, when necessary for generic technology validation.

- Acquiring, combining, shaping and using existing scientific, technological, business and other relevant knowledge and skills with the aim of developing new or improved products, processes or services.
- Experimental development may comprise prototyping, demonstrating, piloting, testing and validation of new or improved products, processes or services in environments representative of real life operating conditions where the primary objective is to make further technical improvements on products, processes or services that are not substantially set.

- The following activities are <u>not</u> supported if they form the main part of the project:
  - Engineering activities, routine improvements and technology implementation:
    - putting into practice or using existing knowledge/techniques without this being accompanied by a clear acquisition of knowledge or an important challenge.
    - routine or periodic changes to existing products, processes or services and other current activities, even if they are improvements.
    - activities that do not contribute to a clear increase in knowledge.
  - General support activities (e.g., human resource management, financial management, logistics, etc.).
  - Training and general knowledge acquisition that are not specific to the project.
  - Activities aimed at bringing to the market the products, processes or services studied or developed in the project, including the making of a definitive design, user interfaces, product documentation, manuals, etc.
  - Market research and marketing activities that go beyond determining the orientation during the research and development process itself.
  - All activities to comply with state aid regulations, standards, labels, accreditations, registrations or other legal obligations, within particular clinical research for registration purposes.
  - Activities of preparation and implementation of investments for production facilities. Expansion of and investments in research facilities necessary for carrying out the R&D project are eligible.
  - Such activities can only be supported within an R&D trajectory if they directly support knowledge generation.

2. <u>Handling of project application</u>

2.1 <u>Formal eligibility criteria</u>

- The project proposal must be submitted at the latest on the set limit date and is complete and in accordance with the requirements of the application template. Deadline for submission for Later-Stage Innovation projects is June 30th, 2023. The application must be submitted electronically via the spearhead cluster CATALISTI to the Agency for Innovation and Entrepreneurship, acting for the decision-making committee at the fund for innovation and Entrepreneurship, together with all the signed statements that are required. It is this version that is used to determine the date of submission. Keep in mind that only files up to 15 MB are allowed via e-mail. Please use moonshot@catalisti.be to submit your proposal.
- The applicant(s) is/are a research and knowledge dissemination organization in accordance with the rules of the State Aid Framework for R&D&I[2], point 15ff.

[2] Framework for State Aid for Research and Development and Innovation (2022/C 414/01).

Universities and strategic research centres (SOCs) should not specifically demonstrate this, the other research organizations must prepare a "Declaration of organization for research and knowledge dissemination".

- For activities to be 100% supportable, they must comply with the definition for Research and Development as specified in the State Aid Framework for R&D&I.
- Activities performed are of a non-economic character, and must include:
  - ○ Independent R&D for more knowledge and better understanding, which is clearly linked to the own research agenda of the research organization; ○ Transfer of the acquired knowledge:
    - ✦ For results without any economic value: Wide dissemination of research results on a non-exclusive and non-discriminatory basis, for example through teaching, open-access databases, open publications or open software.
    - ✦ For results with economic value: any transfer of knowledge or IPR must take place under market conditions and non-discriminatory conditions.
- The research organisations must receive compensation equivalent to the market price for the IPR which result from their activities and are transferred to interested undertakings, or to which interested undertakings are allocated access rights.
- All profits from knowledge transfer activities by the research organisations need to be reinvested in the primary activities of the research organisations.
- When the research organization carries out activities of both economic and non-economic nature, the public funding of the non-economic activities (and their costs, funding and revenues) need to be clearly separated from the economic activities (and their costs, funding and revenues) so that cross-subsidisation of the economic activity is effectively avoided. Evidence of due allocation of costs, funding and revenues can consist of annual financial statements of the relevant entity.
- Because support is granted in accordance with the rules of the R&D&I Framework Regulation, no direct commercial activities[3] may be performed with the envisioned pilot/demonstrator and the resulting products.
- The project proposal is accompanied by the necessary declarations from the applicant(s). In the case of more than one applicant, it also contains a legally signed agreement note ("term sheet") between the participating consortium partners.
- There is no problem with the project applicant(s) in terms of financial capacity, compliance with government obligations, or the behaviour in response to previous VLAIO project proposals.
- There is no overlap with other grants received.

These eligibility criteria remain valid during the entire evaluation procedure.

2.2 Project application & evaluation flow

- Projects are carried out by an individual research and knowledge dissemination organization or a consortium of research and knowledge dissemination organizations.

[3] An economic activity is any activity that consists of offering goods or services on a given market and which, at least in principle, can be carried out by private actors to make a profit.

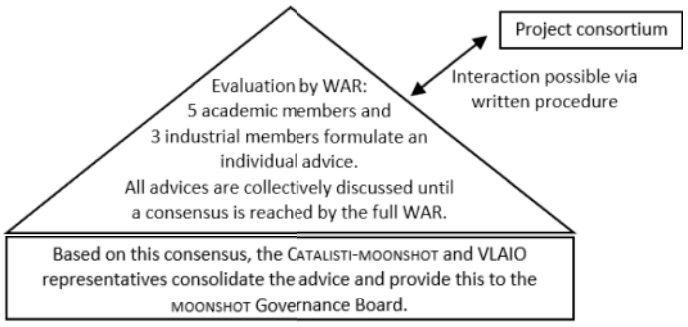
- The project duration of a Later-Stage Innovation project is three years maximum. The project can also have a shorter duration.
- The support percentage of a Later-Stage Innovation project executed by one or more research and knowledge dissemination organizations is 100% of the acceptable costs, provided that these research organizations and the activities they deploy fully meet the eligibility criteria (see Section 2.1).
- The maximal funding for each project amounts to 2 million euros.
- For the design of the budget and the clarification of the acceptable costs, reference is made to VLAIO's cost model and the available Excel template. The use of the available Excel file template for the project budget is mandatory. The template can be downloaded at:

  Template budget application: https://www.vlaio.be/nl/media/1763

  Guide to the cost model: https://www.vlaio.be/nl/media/1761

- The project applicants are the sole owners of the project results. In a consortium, every party executing R&D owns its own results without being entitled to the results of the other partners. With regard to a research group belonging to a university or a university college, the provisions of art. IV 48 of the Codex Higher Education[4] are valid.

For the detailed evaluation flow, please refer to the MOONSHOT concept note available at www.catalisti.be/moonshot-downloads/. The evaluation of project proposals is the responsibility of the Scientific Advisory Board (WAR).



2.3 Selection criteria

Applications for Later-Stage Innovation projects are assessed based on a set of selection criteria, including quality of the development approach, strategic fit with high-level objectives of the MOONSHOT innovation program, and valorization perspectives.

More specifically, the **selection criteria** are:

a) Development approach

- In accordance with the basic characteristics and modalities that apply to Later-Stage projects (see section 1.2 Basic characteristics.

[4] Coordinated decrees concerning higher education (citation heading: "Codex Higher Education") of October 11th, 2013.

- Do the goals of the proposal offer a substantial added value relative to the international stateof-the-art and the ongoing R&D activities? Does the proposal build upon own developments? Is enough prove provided by the applicant(s) that they have demonstrated a proof-of-concept of their own innovation on a smaller scale?
- Is the intended R&D focused on acquiring more knowledge and better understanding? Is the R&D clearly linked to the own research agenda of the research organization?
- Are the project objectives intrinsically feasible (i.e., under the explicit adoption/assumption of a good R&D approach and a good R&D team)?
- Is the R&D approach elaborated in enough detail, and well-tuned to support the realization of the project objectives? Is the planning realistic for the duration of the project?
- Does the proposal contain clear objectives, deliverables and milestones, and are these clearly linked to the project approach?
- Do(es) the applicant(s) have sufficient insight into the risks involved (and mitigation thereof) in the execution of the work plan/project?
- Is there a good balance between the R&D load and the requested manpower/resources? Is the requested equipment cost reasonable and well-argumented? Is the competence of the applicant(s) sufficient?

b) Strategic fit with high-level objectives of the MOONSHOT innovation program

- Does the proposal clearly fit with the high-level objectives of the MOONSHOT innovation program and with the KPIs of the relevant MOONSHOT research trajectories (MOTs)[5]?
- Does the proposal clearly describe what the potential scale of the impact on these KPIs is (quantified estimation based on described influencing parameters)?

c) Valorization perspectives

- To what extent does the proposal effectively respond to a demand of strategic importance for a wider group of companies and to what extent does it connect with the activities of this target group of companies?
- Is the technological solution sufficiently important for the target group of companies to assume that successful results will effectively be picked up and exploited in a foreseeable future?
- Is there a clear match between the project execution (development approach) and the valorization objectives?
- Does the proposal include a well-argued vision and approach towards valorization with a detailed valorization plan? Is a rough 'roadmap-to-industrial-adoption' described: from concept over demo/pilot/prototyping to industrial implementation?
- Is the relevance of the proposal clear for the target group of companies? Is a good involvement and interaction dynamics in a foreseeable future to be expected between target companies and the applicant(s)?
- Do(es) the applicant(s) have a good track record regarding valorization and the transfer of research results?

[5] Please consult the context document "The Flemish industry carbon circular and low in CO_2 by 2050 through the development of marketable innovative technologies in Flanders by 2040" in which more information on the MOONSHOT objectives can be found.

Gezien om gevoegd te worden bij VR 2023 2212 DOC. LSI moonshot

Brussel, 22 december 2023

De minister-president van de Vlaamse Regering,

Jan JAMBON

De Vlaamse minister van Economie, Innovatie, Werk, Sociale economie en Landbouw

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