



Towards a renewed Framework Programme and Research & Innovation supporting european strategic sectors

An efficient articulation between Framework Programme and competitiveness fund to address Europe's competitiveness and sovereignty Challenges

In the heart of Europe, the [Université de Lorraine](#) (UL) is one of the largest multidisciplinary French public research universities based in Lorraine, Grand Est region, France. With more than 60.000 students spanning 49 geographic locations, it is considered nationwide as being first in terms of engineering education and student entrepreneurship. The university brings together more than 3,900 researchers in 10 research centers comprising 60 research laboratories. In this regard, the UL owns 220 patents families and hosts plug-in-labs, rendering it a leading R&I incubator. UL is fully integrated into its local and transnational ecosystem^{1,2,3} and works with many local stakeholders to share and transmit the creation of knowledge as well as to promote innovation which accelerate the transition from knowledge to applications. UL is also engaged in responding to the major challenges of our society: demographic issues, digital revolution, climate change, loss of biodiversity, chemical pollution, evolution of institutions, by proposing a social, human, legal, cultural, health, economic and technical approach.

its motto is "bringing knowledge into dialogue means innovating"

Summary and proposals

The Université de Lorraine spotlights structural proposals for the next Framework Programme and the Competitiveness Fund to reinforce European competitiveness and sovereignty, combining research, training and innovation in a continuum.

This vision will foster targeted investments in strategic priorities, considering skills transitions, ecosystems and societal changes and will transform European R&I into a driver of sustainable and globally competitive innovation.

Our proposals are in line with the Draghi report, which proposes establishing a proactive European industrial policy, combining public intervention, private investment and adapted regulation to maintain competitiveness, achieve climate objectives and make sustainability and climate neutrality a lever for innovation and competitiveness.

The Université de Lorraine, recognized for its intensive research, expertise in collaborative research, integration into innovation ecosystems and local and regional roots, proposes:

- The integration of the next framework programme into the Competitiveness Fund cannot come at the expense of Research & Innovation (R&I) funding and must ensure that the program's management autonomy is not infringed;
- A scheme that must converge different funds across the entire value chain of essential strategic sectors for European Union (EU) competitiveness and sovereignty;
- Competitive collaborative research (from Technological Readiness Level (TRL) 1 to 6) supporting the creation and strengthening of European strategic sectors;
- Strengthened fundamental research, an essential breeding ground for innovation;
- The creation of a European Advanced Research Projects Agency (ARPA) to accelerate the emergence of solutions to shared challenges (mission-oriented) and based on high-potential scientific and technological results from different programmes (ERC, EIC, collaborative research, Competitiveness Fund);
- A Competitiveness Fund dedicated to innovation aiming to attract massive public and private investments commensurate with the geostrategic challenges;
- A non-restrictive dual approach, used for a strengthened European defense;
- Development of research infrastructures and technological infrastructures necessary for TRL progression, essential for R&I and skills in the EU;
- The mobilisation of sustainable innovation ecosystems, as demonstrated by the Lorraine model;
- The active involvement of social sciences and humanities, at the heart of R&I, to support strategic sectors and assist European societal changes;
- To consider, as an indispensable basis for R&I policies, European values and the strengthening of democratic values;
- Preserving research and innovation requires increasing the EU's own resources.

1. Context and strategic vision

Mario Draghi in his report (The future of European competitiveness – September 2024) proposes the creation of a Competitiveness Fund (CF) to sustain innovation and tackle European challenges of competitiveness, reindustrialization, and sovereignty. New sustainable and responsible value chains on European soil will position Europe in a leading position and gain a competitive advantage. The Université de Lorraine is part of this approach, backing a continuum between R&I and industrial competitiveness. Such an approach based on political priorities will fuel European industrial competitiveness and R&I.

The funding of this continuum across strategic sectors would support competitive collaborative research within a framework program efficiently articulated with other funds. To ensure strong research carrying these sectors, FP10 will benefit from a dedicated budget commensurate with the challenges. It must place research as one of the essential pillars for Europe's ambition to regain industrial leadership and a strengthened position in the world.

This strategic sector approach will take into account, across the entire value chains, the development of corresponding skills, potential societal evolutions, and the mobilization of innovative ecosystems from the regional to the pan-European level.

It is essential for the EU to base this continuum upon a foundation of European democratic values that ensure the well-being, defense, and integration of all European citizens in an international context of disinformation.

The revival of reindustrialization, competitiveness, and sovereignty in Europe will give each stakeholders a role in the decision-making process. Thus, academic stakeholders will feed decision-making based on scientific realities, citizens will participate in defining an evolving Europe, and socio-economic actors will encourage the establishment of a framework adapted to their activity, supportive and respecting the constraints of our era such as environmental protection.

2. For competitive collaborative research in support of European strategic sectors

The challenges of European competitiveness and sovereignty require defining European strategic sectors for which universities and public and private research actors must mobilise quickly. Competitive collaborative research will support these priority sectors towards which the actors involved in the innovation value chain (higher education and research institutions, national research organizations (NROs), research and technology organizations (RTOs), industries, regions, etc.) will converge. This collaborative research will make it possible, starting from fundamental research, to reach technology maturity levels up to 6 on the TRL scale. This maturity level is necessary to launch a technology in a real environment and to be able to transfer innovation to industrialists.

The Université de Lorraine bolster the development of strategic sectors in a research, innovation, and competitiveness continuum so that academic stakeholders contribute to European objectives and collaborate with the industry. It has organised itself around major thematic priorities linked to its own strengths and in connection with its ecosystems, setting up a research connected to industrial and regional actors. Beyond research, the Université de Lorraine plays an important role in the development of essential skills in its territory and beyond.

At the heart of these strategic sectors, we find:

- Low-carbon energy at an affordable cost, the key to industrial competitiveness and a matter of European sovereignty, associated with the decarbonisation of industrial processes at controlled costs;
- The development of responsible (ethical and trustworthy), energy- and resource-efficient AI, to meet unmet needs (AI+X) and to accelerate scientific discovery;
- Digital and new quantum technologies, to gain efficiency and support industrial transformation;
- A new approach to Health, for better resilience and sovereignty in the face of crises, climate change, and population aging, while taking into account environments (one health);
- Better consideration of natural ecosystems and their services (e.g., carbon sinks) associated with better management of natural resources over their life cycle, including critical raw materials (especially for the development of advanced materials) and the development of biotechnologies, enabling the market launch of new innovative products that are more respectful of the environment and health.

These strategic sectors will nourish Industry 5.0, which must be deployed on European soil to remain competitive and foster the economic dynamism essential for preserving our societal models and our independence.

These examples of strategic sectors are highlighted in several European political priorities^{4,5,6,7,8,9} as well as in several reports and analyses^{10,11,12} of the challenges Europe must work on in the coming years. The figure below presents an efficient vision of the integration of the next Framework

Programme into the CF, safeguarding a research and innovation continuum in Europe. These aspects are developed in the following chapters.

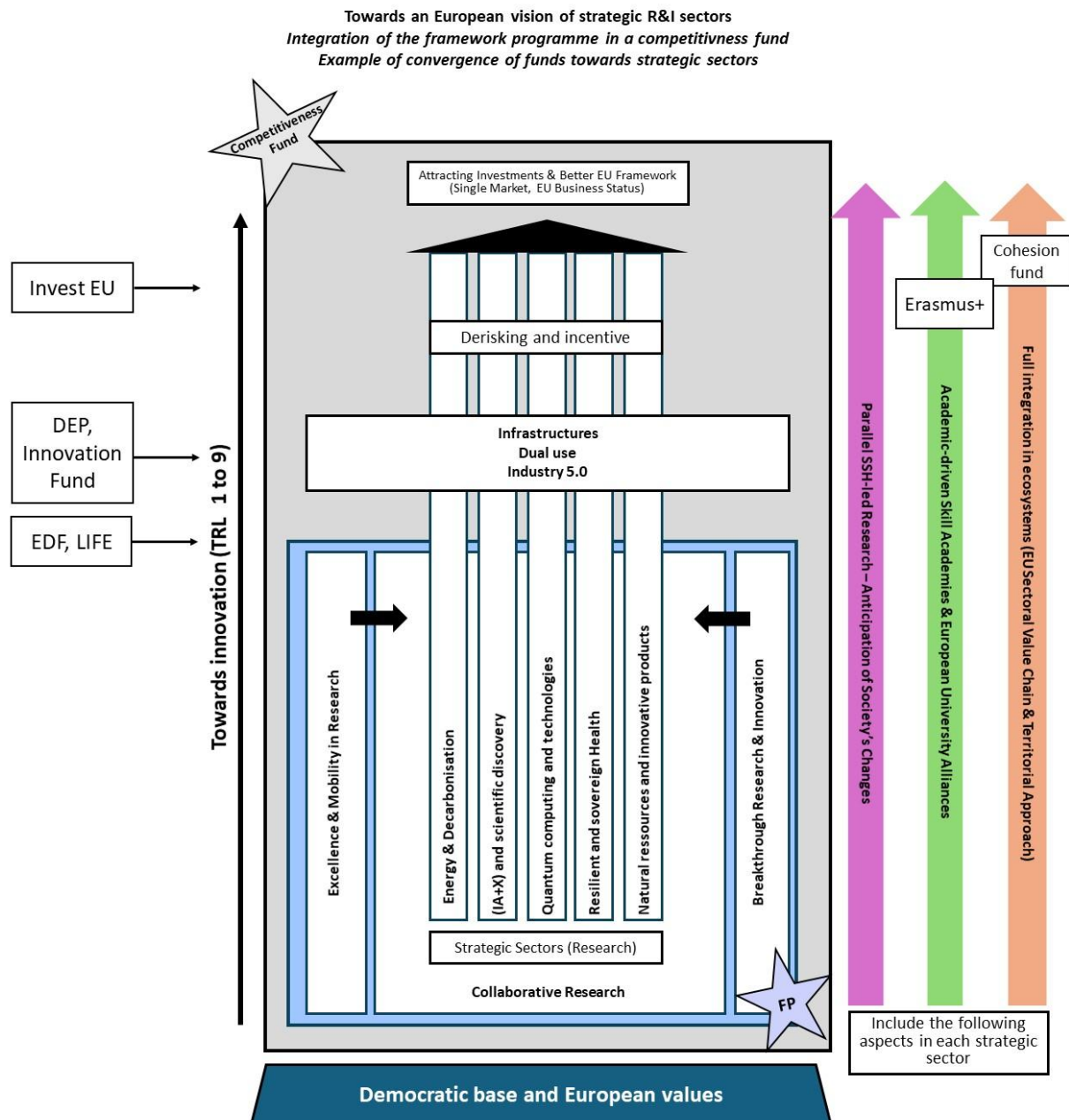


Figure 1: integration of the framework Programme into the Competitiveness Fund

3. Building on new and emerging ideas

In this approach of research aiding strategic sectors, it is essential to highlight the emergence of ideas and new concepts that will feed these sectors or even initiate new ones. To this end, it is necessary to:

- Promote excellent fundamental research (ERC, MSCA) to foster boldness, risk-taking, and interdisciplinary exchanges

- Empower the most strategic breakthrough research and innovations (EIC)

These tools must be boosted so that all projects deemed excellent are funded. This vision implies encouraging the creation of bridges between these mechanisms, for the most impactful projects.

4. Investing in research and technological infrastructures

The continuum between high-performance research and rapid, effective innovation requires increased access to high-level research and technological infrastructures. These infrastructures are essential for moving from laboratory research (proof of concept) to large-scale validation (pilot line). It is necessary to increase the number of infrastructures at all levels of the innovation chain and to simplify their governance and accessibility for R&I actors. These infrastructures could be shared at the European level in certain areas to accelerate the development of strategic sectors.

Beyond making a greater number of infrastructures available, a simplification related to the acquisition and renewal of equipment for research units in the next framework programme is essential. This equipment allows for studies to pass an initial milestone before scaling up on research infrastructures.

5. Combining research for civil and military applications

In the current context where defense has become a political priority for Europe, it is essential- and UL has already taken a position on this matter - (White Paper in response to the public consultation on dual use - 2024), to favor dual-use solutions (civil and military). The dual-use approach must, of course, become an opening for collaborative R&I and not a restriction. Research with military potential should not stop or restrict its civil counterpart. As with research, the orientation of innovation towards military applications should not block the development of civil applications or reduce the scope of collaborations.

A mechanism should facilitate military research to fuel and contribute to initiating research in the civil domain.

6. A Competitiveness Fund to strengthen strategic sectors

A CF focused on strategic sectors will intensify the technological development of solutions and services. This CF must bring together existing funding covering the innovation chain and must attract private investment and EIB intervention.

- A) It is necessary to provide a real continuity between research and innovation by integrating a de-risking and incentive tool. Support for technology transfer should also be an objective of this new Fund.
- B) Funds centralised within this fund should converge to be of use for strategic sectors.

Value chain committees bringing together Member States, the European Commission, industrialists, regions, and research organizations and institutions, including universities, will define political roadmaps based on the strategic R&I agendas of PPPs and specialisation axes at the territorial level.

This CF must benefit from a favorable European political context through an investment attraction mechanism and the establishment of a global single market. Proposals have been made in the text « compass Europe » with a proposal for a 28th status for start-ups. In the absence of European industrial policies, efforts should be made towards more advanced harmonisation of national legislations to allow for the emergence of large companies and to ensure as much as possible that competition policy does not hinder the emergence of European champions.

7. Creation of a European ARPA

- Objectives of an ARPA serving European challenges

The Advanced Research Projects Agency (ARPA) must respond flexibly and as quickly as possible to the EU's sovereignty objectives, a challenge made all the more urgent by recent geopolitical developments.

To this end, the ARPA will identify and accelerate scientific and technological breakthroughs to provide rapid and sustainable solutions to targeted priority challenges. This mechanism will accelerate the development of advanced technologies capable of sustaining identified strategic industrial value chains and creating or strengthening associated sectors.

The effects of this ARPA will only be optimal if accompanied by de-risking measures and massive public and private investments.

- Identification of priority challenges by the ARPA

There are very different strategic approaches to research within the Member States and territories of the EU. However, all face common problems such as the price of energy, the challenges of AI, access to natural resources and critical raw materials, or the health of an aging population. Such a mechanism must primarily address common and shared targeted challenges.

Another major common challenge is European defense. The dual-use approach will therefore be necessary within this mechanism.

- The ARPA: a mechanism linked to FP10 and the Competitiveness Fund

This ARPA mechanism should, within the framework of FP10, capture projects presenting promising scientific results and technologies at the level of the ERC (Excellence Research), competitive collaborative research, and the EIC (Breakthrough Research). The ARPA must also identify, within the strategic sectors of the Competitiveness Fund, innovative technologies with high potential and support them on a go/no-go model, in line with the targeted solutions.

The figure below illustrates the vision of a European ARPA.

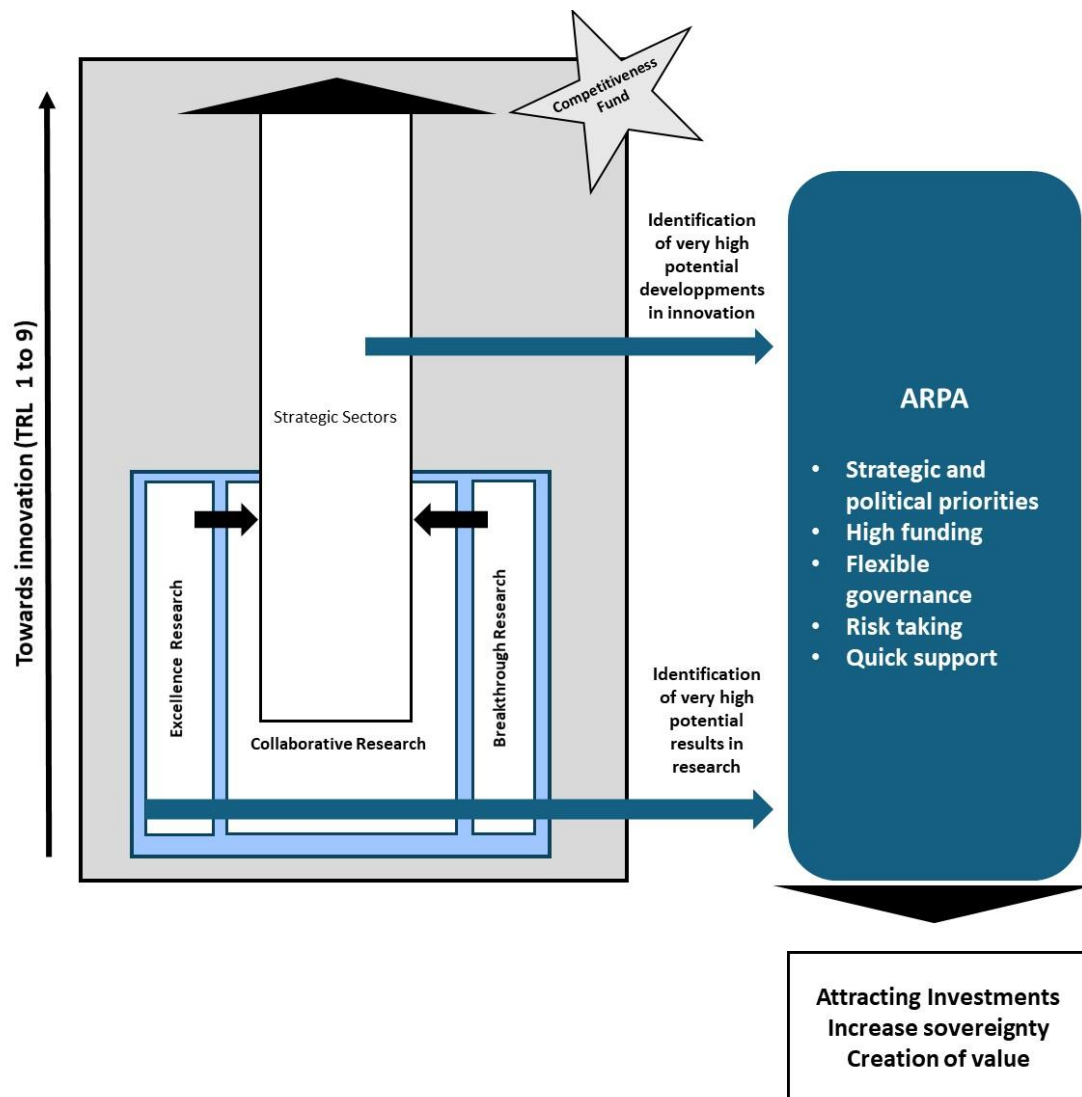


Figure 2 : European ARPA

- **A mechanism that must be accompanied by massive funding and investments**

This ARPA would mobilise public funds for high risk-taking and would attract, through incentive mechanisms, massive private funding to accelerate the development and market launch of high value-added solutions.

- **Adapted governance for a flexible structure**

The ARPA must be understood as a flexible structure responding to targeted political challenges as quickly as possible, and possessing strong expertise in detecting and accelerating promising scientific results and technologies.

The ARPA requires three levels of governance:

- **A political roadmap**, spanning the duration of the framework programme, outlining the issues and challenges to be addressed. This roadmap will be defined by the relevant DGs of the EC, Member States, and regions;
- **Thematic expert committees** (with academics, industry representatives, etc.) in charge of implementing the ARPA roadmap and monitoring the strategic management process for R&D portfolios that must be put in place to identify promising innovations early, support the maturation of projects, and identify funding relays.
- **Dedicated innovation expert teams** for the selection and monitoring of these projects by theme, supporting the expert committees.

8. Skills, a challenge for the development of strategic sectors

Skills are vital for a transformation of the social body (citizens, workers, decision-makers) to adapt to transitions, through initial training and reskilling.

The European Commission has published the document on the Skills Union, which aims to increase workers' skills and attract new talents. In this context:

- In connection with the digital and green transitions and in relation to strategic sectors, incentive mechanisms will be developed within the CF, particularly from centralized programs dedicated to cohesion policies (ESF) and education (Erasmus+), so that universities assume their responsibility in the framework of lifelong learning in their territory or in connection with partner universities (European alliances);
- The establishment of Skills Academies meets the needs of strategic sectors (transformation of value chains, new value chains). New skills necessary for the development of new technologies and the creation of new jobs are taken into account, and the transition and reorientation of workers already in employment in disappearing or transforming professions are supported. The Université de Lorraine is very favorable to the establishment of Skills Academies but calls for strengthened collaboration between DG R&I, DG EAC, DG Grow, DG Connect, and DG Emp to harmonize these structures. The Université de Lorraine, and the academic world more generally, already structures training priorities (initial and continuing) in relationship with the objectives of the Skills Academies. These Academies must rely on universities and territories;
- To satisfy the needs of the strategic sectors mentioned above, the skills academies provided for in the Net-Zero Industry Act must have agile governance and steering, shared among DG R&I, DG EAC, DG Grow, DG Connect, and DG Emp, ensuring a global vision on all aspects related to skills;
- The Université de Lorraine calls for these Skills Academies to be backed by European University Alliances to offer training programs at all expected levels (Bachelor's, Master's, and Doctorate);
- The Université de Lorraine advocates for funding these academies proportional with the challenges Europe must face;
- These academies must attract international talents and offer better visibility of training opportunities in Europe.

9. Mobilisation of ecosystems to support European strategic sectors

We will rely on universities such as the Université de Lorraine, integrated into innovative ecosystems, bringing together all actors necessary for the development and deployment of value chains, to support strategic sectors and improve European sovereignty.

Interactions between European ecosystems will be strengthened, working towards the establishment or reinforcement of strategic sectors from the local to the transnational level. In this sense, the hydrogen valleys scheme deserves to be strengthened in priority areas (energy, health, AI, innovative materials, etc.).

The mobilisation of funds from different DGs (R&I and Regio, Connect, Grow) will eventually result in strategic sectors being supported by multi-partner ecosystems, bringing together territories, the socio-economic world, and research actors. The CF will, for example, support industrial deployments in the territories.

10. Placing society and democracy at the heart of strategic sectors development

In the current global context, democracy and society must be placed back at the heart of research and innovation policies. Europe must defend its values and allow citizens to find their place in defining the world of tomorrow. It is about developing a model specific to our collective vision.

UL, in its position paper (role of SSH research for the upcoming programming period 2028 to 2034), proposed a new approach for integrating social sciences and humanities into FP10 and the CF. Implementing research coordinated by SSH actors involving physical and technological science actors, in parallel with the development of strategic sectors, will anticipate social and societal evolutions. This will help to provide efficient solutions, related to citizen's expectations and better legislation at the European level, additionally by taking into account changes observed in our society alongside the development of technological and non-technological innovations.

11. References

1. [UniGR](#)
2. [Eureca Pro Alliance](#)
3. [Grand Est Europe, DynamHyse](#)
4. JRC policy report on Bioeconomy (2024)
5. Building the future with nature: Boosting Biotechnology and Biomanufacturing in the EU (2024)
6. SET Plan Progress report (2024)
7. State of the Energy Union Report (2024)
8. The European Health Union (2024)
9. AI Act – Net Zero Industry Act – Advanced Materials for Industrial Leadership (2024)
10. The next frontier for climate change science (2024)
11. Strengthening the competitiveness of the EU (2024)
12. Align Act Accelerate (2024)



This document is part of the REIL* project

This consortium brings together partners from the Lorraine site: UL, CNRS, Inria, INRAE and Inserm

Ce travail a bénéficié d'une aide de l'Etat gérée par l'Agence Nationale de la Recherche au titre de France 2030 portant la référence

ANR-22-ASDR-0034



--