

INDUSTRIAL RESEARCH & INNOVATION FOR IMPACT AND EUROPEAN ADDED VALUE

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Fraunhofer welcomes the LAMY report on maximising the impact of EU research and innovation programmes. The LAMY report places investment in research and innovation at the core of European efforts to foster a better future for all citizens in a rapidly globalizing world. It points at the European paradox - Europe is successful as global scientific powerhouse, but it lags behind in the conversion of knowledge into innovation; the report thus calls for a "broad-based, impact-focused research and innovation policy". Fraunhofer supports this statement and emphasizes that the EU added value lies in an ecosystem approach, with cross-border and multidisciplinary collaboration between all actors of the value chain. Creating impact along the entire value chain requires the involvement of small- and medium-sized companies (SMEs) and established industry partners, as well as research and technology organizations (RTOs), in order to promote research results and novel technologies into different markets and fields of application. Stimulating industry and SME participation will therefore be essential to actually demonstrate the success of the future research and innovation programme to the European public.

1 Industrial R&I's contribution to the European Research Council

Systematic academia-industry cooperation at low TRL can enable scientific discoveries to move along the European innovation chain at much higher speed. On the one hand, European companies need to build up absorptive capacities beyond their regional ecosystems; on the other hand, academia needs to build on business support and application driven thinking already at a very early stage of development. Science is a major contributor to industrial innovation, but the results of basic research are too unpredictable in terms of returns for private companies. Early stage industry involvement can create a better understanding for these risks in companies and ultimately lower them. In many cases, and especially for basic research at low technology readiness levels (TRLs), the relations and the understanding for the needs of the other party are particularly difficult. RTOs have proven to be helpful translators and facilitators.

There is no doubt that the European Research Council (ERC) is a European success story in funding basic science. Already in 2009 the ERC Scientific Council set up what is called today the working group on "Innovation and relations with industry". Since then, the ERC slowly started to fund the academia-industry cooperation through the Proof of Concept (PoC) scheme. A scheme that from the start was only open to ERC grant holders and provided comparatively little funding.

Fraunhofer believes that the ERC should build up on the PoC scheme. Providing more attractive project funding and opening up the scheme to non-grant-holders could help to draw more companies into the programme. RTOs can play a vital role in connecting the different stakeholders and ultimately help to attract companies that do not conduct basic research in-house.

2 Industrial R&I's contribution to the European Innovation Council

The LAMY report pointed out that "EU's substantial knowledge assets, based on science and research, need to be faster and more intensively turned into innovations, in the form of new products, processes, services and business models, which generate value for economy and society". Fraunhofer supports this view, as well as the observation that "industry plays a fundamental role in this transformation".

The transformation period lies between the proof of concept under laboratory conditions and the optimisation to a specific application in the real environment. There, any technology undergoes a resource-intensive maturation process in order to assess its value in different fields of application. Especially when it comes to potentially breakthrough technologies, there is not only one field of application, but a multitude of possible options – each worth being tested.

Industry has to be included as soon as possible in order to proof the applicability of a technology to a specific application. However, the maturation of any technology is neither linear, nor predictable, and industry is reluctant to invest at this early stage. The LAMY report rightly states: the participation of industry is to be encouraged.

The main task in the maturation process of a technology is to break down the many possible application opportunities into the very limited amount of profitable ones. And since profitability depends on many external factors, it is crucial to find the "window of opportunity" and to time innovation accordingly. RTOs are best suited to understand this complexity, to integrate the variety of potential stakeholders and to coordinate the adoption process with the right timing.

The earlier one starts assessing the value of a technology in a structured way, the shorter the time to market and the higher the probability of success of the technological innovation. It is high time to exploit the potential of technologies in a more systematic way to finally bring European research to the market and to create real European added value. Therefore, Fraunhofer recommends the insertion of a specific instrument in the European Innovation Council (EIC) between FET Open and Fast-Track-to-Innovation (FTI), aiming at assessing the value of a promising technology with breakthrough potential in a collaborative, cross-disciplinary, cross-sectorial, cross-institutional and cross-border approach.

3 Industrial R&I's contribution to Missions

Strong industry involvement in European research missions will be pivotal to their success and their impact on the ground. Ultimately, companies will have to provide technological solutions, products and services that can complete a mission. It is therefore highly important that future missions are attractive to industry from the start. Missions must not only demonstrate solutions for a plastic-free ocean in the lab (one of the examples mentioned in the LAMY report), but they need to result in solid business cases that will make companies want to get actively involved in the cleaning up of the oceans.

In order to stimulate industry involvement, possible missions must not be isolated research funding programmes, but they should be accompanied by policies and incentives that increase their attractiveness for companies and encourage the deployment of their research results. Such policies could include negative incentives (e.g. taxes on emissions – ECTS or stricter regulations) and positive incentives (e.g. strong public procurement of products resulting from the mission, deregulation, certain tax advantages, feed-in tariffs). In the case of "plastic-free oceans", the public procurement of technology or even the procurement of the litter itself could increase the attractiveness of the mission for private companies.

Industry involvement is not only essential for the success of the mission itself, but will need to help research results and novel technologies finding their way into different markets and fields of application. Famous examples of missions (e.g. in the field of space and defence: GPS, internet, etc.) have shown that the technologies developed may find their way into entirely different commercial applications and innovative products. The missions should therefore ensure a cross-sectorial industry involvement.

In past framework programmes, RTOs have shown strong abilities to pull industrial partners and SMEs into the different funding schemes. Moreover, RTOs enable the translation of research results into different applications and can demonstrate technologies that are needed to complete the relevant mission. Many RTOs have been working mission oriented for many years and come with enormous experience in managing mission oriented projects with a range of different partners.