

Introduction to the study

Mission-orientation has gained a renewed impetus in debates around European and national research and innovation policy agendas. Mission-oriented research is not new. One of the best known early examples is the Apollo programme, a grand technological mission, launched in 1961 with the objective to send a man to the moon and return him safely by the end of the decade. These types of initiatives also had, though mostly not explicitly targeted, spill-over effects that led to innovations with broader outreach and impact, such as the invention of Teflon in the moon mission or the internet.

In recent times, missions are typically more directly linked to societal challenges such as ageing population or environmental degradation and climate change, leading to a widening of the concept. For instance, the current German energy transition programme ('Energiewende') is a broader societal mission, not primarily based on research and innovation actions, with ambitious greenhouse gas reduction and renewable energy targets by 2050.

Against this background, the European Commission is investigating the possible ways and means of **reorienting European research and innovation (R&I) funding** towards a more mission-oriented approach in the EU's upcoming 9th Research and Innovation Framework Programme (**FP9**). Mission-oriented research and innovation initiatives, in that respect, should help to provide clearly-defined solutions to solve societal and industrial challenges. They should have the following main features:

- A clearly defined (quantifiable or measurable) goal and a timeline for achieving the goal (directionality and intentionality)
- Be large-scale, i.e. mobilising significant public and/or private resources
- Cut across different disciplines and sectors
- Employ a mix of policy measures (research and innovation, but also regulatory, infrastructural and other support activities, financial and other incentives).

Mission-oriented policies differ from the 'societal challenges' approach (as deployed in Horizon 2020) in that they have clearly stated objectives (if possible quantifiable) and a target date to achieve the objectives.

This should contribute to achieving a dual goal:

1. ***Achieving high and visible impact in selected priority areas.*** The priority areas that the missions should address are important challenges faced by society; and should be areas where European industry, including SMEs, together with research and innovation actors can be the drivers for change.
2. ***Better communication to citizens and engaging society in European R&I policy.*** There is a need for European citizens to understand more clearly what the EU's R&I efforts mean for society, and to shape R&I policy so that it addresses challenges that matter to them.

In order to achieve this dual goal, a set of specific objectives is needed which could pave the way towards a mission-oriented R&I policy. These have been formulated as:

1. Concentration of R&I investment into the mission areas
2. Increase the probability of breakthrough research and innovation in the mission areas
3. Link missions closely to non-R&I policy and regulatory measures (to facilitate systemic change)
4. Facilitate the emergence of best solutions and maximise the expected impact/s of projects by a flexible, purpose-driven choice of funding and non-financial tools; implemented in a bottom-up way (choice of funding instruments and approach)
5. Place more emphasis on cross-sectoral and cross-disciplinary R&I to support missions effectively

6. Ensure uptake, strengthen the demand side's (public procurers, private procurers, consumers) level of involvement and support
7. Improve communication of the goals and impacts of European research to society
8. Engage citizens in shaping missions and R&I policy

The three main options for implementing the mission-oriented approach are:

1. Societal missions (also called 'transformers')

- Broad missions addressing European societal challenges: aiming at achieving truly transformative change in how economic sectors and organisations work, and how citizens live.
- Requiring not only research and innovation achievements, but changes in regulation and user behaviour, and possibly the development of new markets. They will cover coordinated R&I activities in several sectors, across thematic policies (i.e. energy, transport etc) and social innovation.
- Coordination with policy and regulatory actors will be vital.
- The relevant targets will concern broad societal indicators, presupposing a wide uptake of new technologies, products and processes.
- Work Programmes and roadmaps within the EU Framework Programme will have to clearly show the way to achieve the mission, and projects selected will need to demonstrate how they contribute to this.
- Strong multi-level governance and coordination is required (ie. EU, national, regional and urban level)

2. Technological missions (also called 'accelerators')

- Would use a somewhat higher number of more defined missions that are linked to technological breakthroughs.
- The cross-sectoral and cross-disciplinary dimension will be important, but the need to involve social innovation and coordination with policy and regulation will be less strong.
- The relevant targets will concern the performance of the technology (market-ready, production at industrial scale)

3. A mix of societal and technological missions

- Depending on the area, the dedicated pillar will include both high-level societal missions and narrower technological missions. These would have an equal status.

To support the Commission's work, the Joint Institute for Innovation Policy (JIIP) including its members TNO, Tecnalia, Joanneum Research and VTT, together with Danish Technology Institute (DTI) and Valdani Vicari & Associati (VVA), has been commissioned to conduct a study exploring the likely impacts of such a reorientation of the next Framework Programme post 2020, and proposing suitable implementation mechanisms.

In this questionnaire we would like to ask about your views on the relevance of the objectives, on the key characteristics of a possible mission-oriented approach in FP9 and certain questions on how this could be implemented.