

COPING WITH GLOBAL CHALLENGES AND FOSTERING INDUSTRIAL COMPETITIVENESS

EU-wide Research and Innovation Missions

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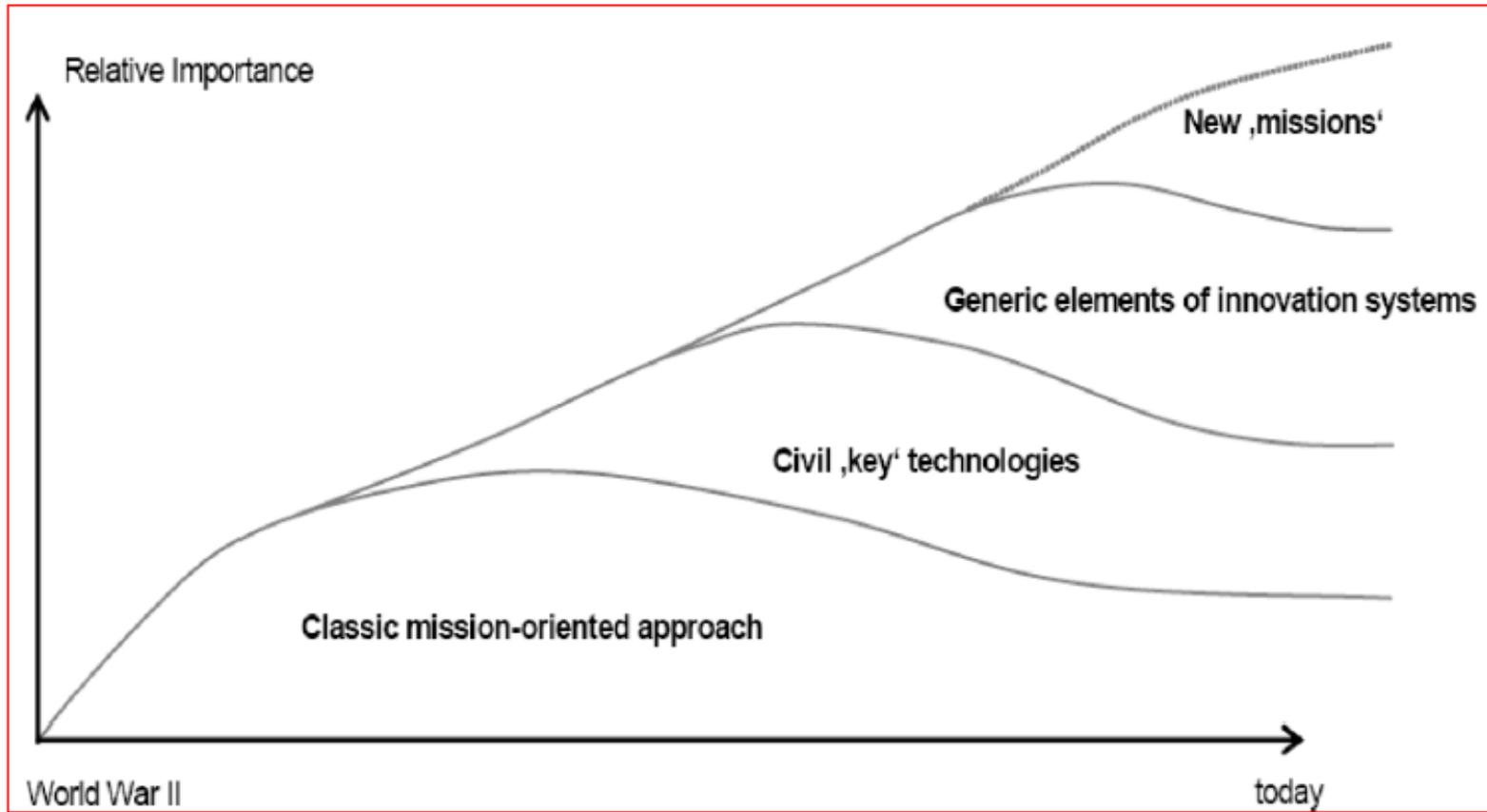
OVERVIEW

- The rediscovery of „missions“
- A more differentiated take on missions
- Missions in Horizon Europe

THE REDISCOVERY OF „MISSIONS“



MISSION-ORIENTED POLICIES



Source: Gassler et al. 2008

THE RECENT TURN IN RTI POLICY

- Mission-orientation is part of the „normative (or strategic) turn“ in RTI policy
(Daimer et al. 2012; Weber 2012; JIIP 2018)
 - Growing attention to the „directionality“ of innovation and technological change
 - Emphasis on societal rather than mainly economic goals
 - Broader understanding of innovation
- Selected signs of the normative/strategic turn in RTI policy
 - Key actions in FP 5 (1998-2002)
 - ERA Rationales report (2007/08)
 - Joint Programming Initiatives
 - Societal challenges in Horizon 2020
 - National „challenge-driven“ programmes (NL, SE, FR, ...)
 - Growing interest of OECD in missions and directionality in innovation policy
 - New „impact-oriented“ evaluation practices

WHAT DO WE UNDERSTAND BY MISSION-ORIENTED R&I-POLICY?

- Old missions
 - “**big science** deployed to meet **big problems**” (Ergas 1987)
- New missions
 - ...“initiatives [which] typically are **ambitious, exploratory and ground-breaking** in nature, often **cross-disciplinary**, targeting a **concrete problem/challenge**, with a **large impact** and a **well-defined timeframe**. More specifically, they have a **clearly defined (societal or technological) goal** with preferably **qualified and/or quantified targets** and **progress monitored along predefined milestones.**” (JIIP, 2018)

A MORE DIFFERENTIATED TAKE ON MISSIONS



THE FUNDAMENTAL DISTINCTION

*„If a man can land on the moon,
why can't we solve the problems of the ghetto?“*

Nelson, R. (1977): The Moon and the Ghetto. An Essay on Public Policy Analysis

TYOLOGY OF MISSION-ORIENTED POLICIES

Type of Mission	Goals / Orientation	Examples
‘Science / Breakthrough-Missions’	Aiming at scientific breakthroughs sometimes, but not always with view to the potential application	Human Brain Project, Quantum Flagship, (Ebola)
‘Technology / Accelerator’ – Missions	Realizing functioning complex Solutions, which need concerted and massive application of ressources	Apollo/Artemis-Mission, civil nuclear powerplants, TGV, Concorde, Battery research
‘Transformative Missions’	Change of existing (large-scale) socio-technical systems, involving social, technological, organisational and institutional innovations	German ‘Energiewende’, ‘Mobilitätswende’, Sustainable and secure water management (NL)
‘Umbrella-Missions’	Initiatives that follow over-arching goals, including parts which are missions in the proper sense (even of different sorts)	German High-Tech-Strategy Global Climate Change research

SUCCESS FACTORS: LESSONS FROM THE PAST

- They almost always emerge from a **sense of urgency** that is shared by a wide array of stakeholders
- There must be a **‘fertile ground’** in terms of scientific and industrial capacities and political and cultural environments
- There can be **‘great leaps forward’**, but they cannot be too great...
- There must be **long-term direction** towards and **commitment to clearly identified missions**
- They are managed by a **clearly identified and empowered governance body** which can be held responsible for the achievements of the mission(s) – even in missions where there are multiple stakeholders

MISSIONS IN HORIZON EUROPE

A SERIES OF PREPARATORY ACTIVITIES...

- Lamy Report (2017)
 - 1st mention of „missions“ in FP 9 preparatory documents
- RISE Expert Group Report (2017)
 - Principles of a mission-oriented approach
- 1st Mazzucato Expert Report (2018)
 - Outlining a mission-oriented approach for FP 9
- ESIR Expert Group Report (2018)
 - Differentiated view on and governance challenges of mission-oriented policies
- JIIP Research Report (2018)
 - Empirical cases of missions
- BOHEMIA Foresight (2018)
 - Foresight on candidate missions from a 2035 perspective
- 2nd Mazzucato Expert Report (2019)
 - Governance principles for missions in Horizon Europe
- Etc.

THE COMMISSION'S TAKE ON MISSIONS

- **Ambition**
 - Relating EU's research and innovation better to society and citizens' needs;
 - Concentrating efforts to achieve strong visibility and impact
- **Definition**
 - A mission is a portfolio of actions intended to achieve **a bold and inspirational as well as measurable goal** within a set timeframe, with impact for science and technology, society and citizens that goes beyond individual actions.
- **Approach**
 - Specific missions will be **co-designed with Member States, stakeholders and citizens**
 - **They will be** programmed within the Global Challenges and Industrial Competitiveness pillar (drawing on inputs from other pillars)
 - Identification of specific mission within broadly defined mission areas, with the help of mission boards

PROGRAMMATIC VIEW: FROM AN S&T-DRIVEN TO A SOCIETY-DRIVEN APPROACH

- All mission areas are „transformative“ in nature
 - Driven by longer-term societal and/or environmental concerns
 - Other types of „science“ or „technology/accelerator“ missions figure under different headings (e.g. partnerships/JTIs, FET Flagships)
- Five broad mission areas agreed between European institutions
 - Adaptation to Climate Change, including societal transformation
 - Fighting Cancer
 - Healthy Oceans, Seas, Coastal and Inland Waters
 - Smart and Climate-neutral Cities
 - Soil Health and Food
- Mission areas cover very broad terrain
 - Mission boards established to identify a small number of specific missions within the broader mission areas
 - Mission board members cover a broad range of expertise: science, industry, government, civil society, stakeholders

MISSION BOARDS HAVE A DIFFICULT TASK

- Mission boards are expected to propose and justify one (possibly two) mission(s) within their very wide-ranging areas of work
- Example: Adaptation to Climate Change, including Societal Transformation
 - Expertise in sectors, policies and systemic, transformative solutions (governance, technological, non-technological, services, behavioural changes, investments) in fields including notably:
 - climate change adaptation and mitigation;
 - climate services;
 - natural resources;
 - systemic and nature-based solutions;
 - environmental advocacy and citizen engagement;
 - sustainable production and consumption;
 - disaster risk reduction and management including public health and critical infrastructures;
 - international development in the field of climate change;
 - science communication;
 - water management;
 - biodiversity;
 - agriculture,
 - finance and insurance.

THE SELECTION CRITERIA

- Five criteria proposed for selecting missions
 - Be bold, inspirational, with wide societal relevance;
 - Have a clear direction: targeted, measurable, and time-bound;
 - Be ambitious but realistic research and innovation actions;
 - Be cross-disciplinary, cross-sectoral, and cross-actor innovation;
 - Driven by multiple, bottom-up solutions
- In addition: European added value
 - Missions in Horizon Europe must clearly be of Europe-wide importance
 - There must be clear benefit of addressing it at European level

Source: Mazzucato (2018), EC (2018)

A NEW RATIONALE, AND ALSO A NEW (EXPERIMENTAL) APPROACH?

- Missions will not cover the bulk of Horizon Europe, but have a strong orientating influence
 - Funding ~ 10% of pillar 2 (~700 Mio € per year), ~ 800-1000 Mio € per mission
 - Budget not directly allocated to missions, but part of strategic/work programmes
- Cross-cutting character of missions in Horizon Europe
 - Rooted in pillar 2 (Soc. Challenges / Ind. Competitiveness), but drawing also on
 - Pillar 1 (ERC, Infrastructures): Missions may need to recur to basic/frontier research
 - Pillar 3 (EIT, EIC): accelerated uptake of new solutions through start-up/scale-up,
- Cross-cutting significance of missions for other European and national policies
 - For mission-oriented R&I to trigger transformations of major systems of provision, it needs to be scaled and generalised
 - Need for policy alignment through harmonised framework conditions and demand-side policies (e.g. regulation, standards, public procurement)
 - Requires early involvement of sectoral policies in agenda-setting associated to mission-oriented R&I

THE IMPLEMENTATION CHALLENGE: MOVING AWAY FROM TECHNOCRATIC PLANNING

- Limitations of the established programming approach of FPs
 - „Societal Challenges“ in Horizon 2020 too much disconnected from the development of work programme
 - Calls with narrow and specific tasks are not suitable for broad societal challenges
 - „Missions“ as an attempt to ensure greater impact with regard to societal challenges (~ mission areas)
- The problem of double uncertainty
 - Uncertainty about possible innovative solutions
 - Uncertainty about the scope and nature of the problem
- Elements of a new implementation model emerging
 - Stronger and earlier involvement of citizens, practitioners and stakeholders
 - (Re-)building public sector capabilities
 - Scaling and generalisation through finance and mobilisation of „downstream“ actors
 - More emphasis on social, organisational and institutional innovation
 - Less top-down, more bottom-up agenda-setting
 - More flexibility and adaptability of programming

CHALLENGES & CONDITIONS FOR THE SUCCESSFUL IMPLEMENTATION OF ‚NEW‘ MISSIONS

- Has to include **application and diffusion in the design of the policy** (especially in the technology accelerator/ transformative types),
- Has to include **social innovation next to technological**,
- Has to ensure **coherent application of instruments and means** („policy mix“)
- Must have **reflexive mechanisms built in**,
- Needs strong ‚**political ownership**‘, strong **operational and political governance** and **widespread buy-in of actors**

- ...taken all together, missions calls for a **substantial overhaul of governance and policy capacities** (especially for, but not exclusively for transformative missions)
- ... probably the **biggest challenge** in making mission-oriented R&I happen

NEXT STEPS

- Implementation of missions in Horizon Europe
 - A large scale experiment with new mission-oriented approaches (mostly transformative)
 - ...but partnerships also address technological/accelerator missions?
 - ...FET Flagships as ‚science missions‘?
 - ...European Defence Fund as an emerging vehicle for mission-oriented approach?
 - ...from Strategic Energy Technologies (SET) plan to Energy Missions?
 - Strategic programming approach will be crucial for missions in Horizon Europe
 - ...still under construction
- Missions and national policy
 - Adjustment of national and actor strategies in view of mission-oriented approach
 - Missions at national level?
 - Mutual policy learning with the help of OECD and EC Policy Support Facility

THANK YOU!

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