
**Workshop on mission-oriented innovation policies in the UK and Germany:
approaches and experiences**

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Workshop summary

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Over the last years, research and innovation (R&I) policies have been increasingly linked to addressing the Grand Societal Challenges. This development towards a new generation of mission orientation has led to the emergence of a variety of policy initiatives at supra-national, national and sub-national level with different degrees of scope, goals, and ambition. To further develop such mission-oriented innovation policies (MOIP), a one-day workshop in Berlin was jointly organized by the UK Department for Business, Energy & Industrial Strategy (BEIS), the German Ministry of Education and Research (BMBF) and the Fraunhofer Institute for Systems and Innovation Research (ISI) in November 2019. The topics covered included the design of effective and achievable missions, approaches to solve coordination issues during the implementation phase, and methods to assess the impact of policies. This short workshop summary gives an overview of several key insights from the experts' discussions.

1. Introduction

The workshop started with an introduction by Jakob Edler (ISI), who welcomed the participants and gave a brief introduction to the Fraunhofer ISI's support mandate to the German High-Tech Strategy 2025 (HTS).¹ He emphasized that this research project is at an early stage and that the bulk of the conceptual work still lies ahead. Mission-oriented policies are about addressing and ultimately solving problems. In essence, these policies are aiming at a systemic transformation. Jakob Edler emphasized that missions will not be successful if we cannot mobilise innovation in order to transform the systems that support the mission. At the same time, the goals of mission-oriented policies should always be designed to be accomplishable, not least because missions are also supposed to increase public legitimacy for R&I spending. In this context, Jakob Edler also referred to a related research project currently being conducted at Fraunhofer ISI that

¹ For further information, please see <https://www.isi.fraunhofer.de/en/competence-center/politik-gesellschaft/projekte/htf2025.html>

aims at productively combining the two – often competing – R&I policy rationales of innovation for the sake of competitiveness vs. innovation to address societal problems. He also highlighted the importance of discursive intelligence as a part of strategic intelligence that is necessary to bring about systemic shifts. After this introduction, Teresa Schlüter (BMBF) also welcomed all the participants. For the BMBF, missions are seen as a tool to strengthen interdepartmental cooperation in R&I policy, involve relevant non-governmental actors and thus accelerate the implementation of research results. The missions of the HTS 2025 have a long-term perspective, but the first milestones and intermediate goals are to be reached in this legislative period.

2. Developing a mission typology

To open the discussion, Ralf Lindner (ISI) introduced a novel typology to better understand the diverse forms of mission-oriented policies being implemented today, and to provide the basis for a useful concept of impact assessment. Although mission-oriented policies have become increasingly popular, to date, no established concept to assess the impact of these policies exists. A major challenge in developing such an analytical concept lies in the heterogeneity of the missions themselves. To capture the diverse nature of missions, any assessment method needs to be sensitive to these differences. Therefore, there is no "one size fits all" approach to assess the impact of mission-oriented policies. The Fraunhofer team has developed a typology with the aim to not only classify the missions of the current German High-Tech Strategy 2025, but to apply it to missions in other national contexts.²

By including key distinguishing dimensions (type of problem, type of solution, goal vs. problem orientation, complexity of internal and external governance), the proposed typology consists of four ideal types:

- (1) Accelerator Type 1: main focus on scientific progress, comparatively low complexity of coordination
- (2) Accelerator Type 2: bringing knowledge to application, cross-cutting fields
- (3) Transformer Type 1: transformative goals, complexity of governance with cross-cutting responsibilities
- (4) Transformer Type 2: transformative goals (with emphasis on behavioural change, redistributive character), very high demand for coordination of cross-cutting responsibilities.

² The detailed typology can be found here: <http://publica.fraunhofer.de/dokumente/N-586291.html>

It should be noted that each mission usually carries elements of all these ideal types, but is generally characterised by a strong overlap with one of the types. During the workshop, it also became clear that missions may change over the course of time and shift from one ideal type to another.

3. Grand Challenge Missions in the UK Industrial Strategy

The next session focused on the use of artificial intelligence for data-driven healthcare innovations as part of the UK Industrial Strategy. Originally, the mission had focused on using artificial intelligence for early diagnosis applications. Subsequently, however, the enormous potential of artificial intelligence for other healthcare aspects was recognized, leading to a gradual broadening of the mission. From the governance perspective, this mission is interesting because the NHS is simultaneously a regulator and a service provider in the healthcare domain. Importantly, the mission has a high level of political support, which is expected to positively influence its chances of success. At the moment, the project team is working on the development of indicators to track the success of the mission. As one participant pointed out, for the first time, strategy and delivery are brought together in a single domain. In that respect, public procurement is also an important factor.

The next part of the session dealt with the UK's "clean growth" mission, which aims to build and foster industrial clusters for sustainable innovations, namely to "establish the world's first net-zero carbon industrial cluster by 2040 and at least one low-carbon cluster by 2030". In the UK model, the clusters are not predefined, but geographical areas that have "organically grown" into a cluster structure are candidates. In cooperation with University College London (UCL), BEIS has conducted a series of workshops, so-called "policy labs", to map the system under study, including the industrial clusters. These workshops aimed for a co-production of knowledge, involving a broad range of stakeholders. For example, representatives from the industrial sector were invited to scrutinize the first cluster maps produced by the project team and provide valuable feedback. During this process, five key themes were identified, which were turned into priorities for action in the next step. These priorities then laid the foundation for the mission's delivery plan.

After this, the workshop discussed the UK Buildings mission, which aims to halve the energy use of buildings by 2030. As the participants pointed out, a major challenge of this mission is the complexity of the building sector and the many different actors involved. As a consequence,

many levers needed to achieve the mission's goals are primarily the responsibility of other departments. In the future, such work across departments will increasingly have to make use of different policy levers in order to bring people together. The mission may also have significant macroeconomic consequences that should be considered and addressed right from the start. Similar to the Industrial Cluster Mission, mapping workshops including behavioural aspects were organized to better understand the system in its full complexity. In contrast to the Industrial Cluster mission, the implementation plan already existed prior to the mapping exercise, which also defined the system boundaries to be considered. Therefore, the system mapping was useful primarily to challenge the measures in place.

4. The German High-Tech Strategy 2025

Next, the workshop discussed the German High-Tech Strategy (HTS) 2025, starting with the "Combating Cancer" mission. Due to its close links to the German "National Decade Against Cancer" and the National Cancer Plan, many different actors are involved in the mission. There is also a direct connection to the EU Mission on Cancer. Operational questions regarding the mission are mainly managed by a working group that meets 3-4 times per year. Behavioural change is fundamentally important to achieve the mission's goals. Studies have shown that 30-40% of cancer cases might have been avoided if citizens had led a more "prevention-conscious life". It was pointed out that the mission needs to be expanded in order to be successful and gain as much public support as possible. At the moment, the method to assess the success of the mission is still under development.

Next, the workshop considered the "New Sources for New Knowledge" mission. Three German ministries are engaged here: BMBF (coordination), the Federal Ministry for Economic Affairs and Energy (BMWi) and the Federal Ministry of Justice and Consumer Protection (BMJV). According to the participants, when applying the ISI typology, this would qualify as an accelerator mission that is also attempting to change behavioural aspects. Since the goals of the mission are quite broadly formulated, a main aim is to establish a process to advance the topics of "open science" and "open innovation" and foster productive interactions in these domains. Unfortunately, so far, the academic community is hardly involved in the mission. Further, there are many decentralised responsibilities for different lines of action (nota bene: or for different policy instruments, such as "the leading-edge cluster competition" or citizen science projects). As a consequence, it will be very difficult to assess the impact of this mission and a bundle of

success indicators may be needed or steps towards reaching certain goals; this calls for the need to combine quantifiable goals with qualitative indicators wherever possible.

The final part of the session discussed the HTS mission "Achieving substantial greenhouse gas neutrality in industry". Three ministries are engaged in this mission (BMU, BMBF and BMWi), which also relies on a very important stakeholder dialogue with representatives of different industrial branches. The long investment cycles in industry represent a key challenge to achieving the mission's targets. Focussing on the two main levers of increasing energy efficiency and switching to renewable energy has proven insufficient to reach the mission goals. Additionally, innovative and disruptive technologies have to be developed and established on the market to avoid process emissions in industrial production processes. Already today, due to upcoming reinvestments, many new production plans have to be designed in line with the climate neutrality goals for 2050. The mission supports this transformation by various funding schemes, e. g. the BMU's funding programme for the decarbonisation of industrial processes, and creating innovative institutional capacities and catalysts, e. g. the Competence Centre on Climate Change Mitigation in Energy-Intensive Industries, again funded by the BMU. Additionally, the mission tries to establish specific lead markets, for example, for procurement in the building sector.

5. Thematic Sessions

5.1. Process for selecting new missions

The strategic orientation of the HTS has evolved over the last decade from a "key technology" to a "grand challenges" and now a "mission-based" approach. It contains an expanding notion of innovation including social innovation, new business models, process innovation and participation of society. Missions were selected via a negotiation process across government departments. While the BMBF is responsible for coordinating the HTS, which forms the strategic framework of the German government's research and innovation policy, the implementation of each mission is financed by thematically relevant funding programmes, and administered by the respective departments, as well as contributions of other actors such as businesses, scientific bodies or civil society. When selecting missions, the right timing is important. One criticism during the discussion was that, when looking back at the selection process in Germany, it would

have been beneficial to have more time to discuss the choice of missions with external stakeholders and between ministries beforehand. In the UK, the criteria for selecting the missions were closely aligned with the UK's industrial strengths and the choices are highly political.

Participants agreed that if foresight processes are being used, it is essential that they are well-aligned with policy formulation processes. It is difficult to engage the public at the outset of the formulation process, and often more valuable once basic missions have been defined. However, so far, there are no well-established routines of involving citizens in mission-oriented innovation policy in either Germany or the UK.

5.2. Co-creation, co-delivery and co-evaluation of missions with industry and citizens

In the UK, engagement strategies are part of the delivery plans. Ideally, co-delivery should be closely connected to the co-communication of the mission. In this regard, the name of the German HTS stands out as a well-established brand, but this might have to be updated to make public communication about the missions easier. Efforts to arrange events that bridge the gap between different communities, stakeholders, disciplines and institutions to support mission-orientation can be observed in both countries. It is important that all actors understand the bigger picture and do not only focus on their core area of interest. Furthermore, it seems essential to use a mission brand for joint delivery and communication (nota bene: one example is the corporate identity of the German "combating cancer" mission including a joint declaration with seven points of action). Participants reported that, especially in Germany, the topic of social innovation is the subject of a growing discussion.

A pending question related to the role of expert committees is how to measure their impact and trace whether or not their recommendations were taken up by policy makers. Providing indicators or (qualitative) case studies that answer this question would be of great value to demonstrate signs of co-creation, which is part of the missions' "DNA".

5.3. Analysis – policy appraisal in missions (e.g. using systems mapping to inform delivery priorities), monitoring and evaluation

It was discussed that missions are different to many other governmental programmes, for which a cost-benefit analysis is typically conducted beforehand. However, missions are to be understood more as commitments, particularly due to their uncertain outcome. In the UK, the metrics

to assess the success of missions are determined by the mission teams in contrast to the individual programmes, which undergo external evaluations. Ultimately, the Grand Challenges Programme will also be evaluated, led by the Grand Challenges Board and the Industrial Council. In addition, the overall approach has been subjected to an independent review. Different UK representatives pointed at the boon and bane of missions in terms of making use of many more policy levers at the same time to deliver than used to be possible when looking at former generations of innovation policy.

6. Closing remarks

In her closing remarks, Teresa Schlüter (BMBF) pointed out that, even though the distinction between accelerator and transformer missions makes sense from an analytical point of view, in practice, both are needed to achieve the necessary system shifts. To achieve these shifts, ultimately, strong narratives for the missions have to be developed. All the participants agreed that the cross-national exchange of ideas and perspectives was of great value for all and should be continued in the future. Jakob Edler (ISI) proposed that the next step could be to hold a joint workshop on system mapping.

Further "take home" observations of the participants included:

- When comparing Germany and UK there are distinct differences with regard to *set time scales and set goals attributed to the missions*. Furthermore, different *levels of maturity regarding implementation processes and manifestations of pioneer spirit and thirst for experimentation in policy making* can be observed. Additionally, differences regarding the *active involvement of policy makers when it comes to crafting and assessing policies* became apparent, as well as a difference in the approach to defining a baseline of systems and mission conditions at the beginning of the mission policy.
- Challenges and expectations arise for all policy makers from *the need to incorporate different generations of innovation policies into current missions*. Often "new labels are put on established content", which accordingly results in a challenge for *attributing the impact of mission-oriented policies aiming at system transformation*.
- In addition to the challenge of cross-departmental policy making, a major trademark of mission-oriented policies seems to be the task of *forging a mission brand* and conceptualising a *corporate identity for missions* in order to assemble the heterogeneous group of actors "behind each mission" to attribute agency and commitment.
- *Sustained high-level commitment and support from the political hierarchy* was regarded as a key factor for cross-departmental coordination and ultimately mission success.