

Mission-Oriented Innovation Policy workshop series: Observations from workshop 1 – Scoping an Agenda setting

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SUMMARY OF OBSERVATIONS

Mission-oriented Innovation Policy is regarded as a potent approach to tackling today's wicked societal challenges. The approach is however still in its infancy and requires further development through learning-by-doing. The workshop raised the following observations:

- *Formulate a goal that is legitimate, measurable, and in keeping with your strengths.* To achieve this, governments may build on work done by the SDGs and should consider an organization's expertise and mandate to pursue the challenge;
- *Ensure legitimacy for not just individual missions, but also the missions approach itself.* Opposition to the MIP approach should be anticipated and can be mitigated by framings, preventing certain terminology and linking to urgent societal challenges.
- *When determining mission directionality, balance solution exploration and exploitation.* Adjust mission policy to the development stage of its solutions and consider using combining the benefits of mid (actionable) and long term (direction) targets via milestones.
- *Look for combinations of technological and behavioral solutions.* It is important to recognize the power of behavioral solutions, which is typically not leveraged by traditional innovation policies.
- *Leverage existing agendas and structures, but also depart from them.* Build on broad networks of the willing, while being careful of vested interests. Consider scenario approaches to explore less conventional solutions. Agencies could take on a neutral broker role in developing such ambitious agendas.
- *Create competition between stakeholders and know the pioneers and laggards.* Try to build coalitions of the willing and consider using competition-based moving targets that optimize what mission progress stakeholders can realistically achieve.
- *Bottom-up approaches should physically engage stakeholders at an early stage.* To generate creativity, different views and stakeholder support, move beyond involving the usual suspects, involve them in an early stage, create real life examples to ease articulation and increase involvement, create a neutral environment, and consider design thinking approaches to stakeholder involvement.
- *Top-down approaches should reflect critically on whom to involve.* Consider whether it is important to involve everyone, in order to critically balance maintaining broad stakeholder involvement given time and resources constraints. Make highly uncertain missions adaptive through reflexive monitoring and evaluation.

1. Introduction to the workshop

Aim of the workshop

This report summarises the first in a series of workshops organized by Utrecht University's Mission-oriented Innovation Policy Observatory ([MIPO](#)) and the OECD. The series helps policy makers in dealing with the design and governance of missions. The aim of this workshop series is threefold:

1. *networking* - bringing pioneering practitioners in the field of Mission-oriented Innovation Policy (MIP) together;
2. *learning* – to exchange knowledge on the opportunities, 'good' practices and pitfalls regarding MIP;
3. *co-creating* – to inventory and build on each other's experiences to further our knowledge on MIP.

This first workshop focused on scoping and agenda setting of MIPs. 42 participants joined this workshop, representing 13 different countries worldwide. This report is the culmination of a co-creation process with multiple partners, as it captures the accumulation of lessons learned, both those shared by the plenary speakers as well as those exchanged in the breakout sessions. We start out by generically introducing the concept of MIP, before describing various specific observations and lessons drawn from the MIP scoping and agenda setting workshop.

If you are interested in joining future workshops as a practitioner or would like to be informed about future reports, contact j.h.wesseling@uu.nl.

Definitions of MIP

Different definitions of MIP have been suggested in this workshop:

- VINNOVA: "Missions are bold, inspirational, with wide societal relevance. They indicate a clear direction, ideally targeted and measurable, with ambitious innovation actions. They are delivered through multiple top-down and bottom-up activities, and co-created via cross-disciplinary, cross-sectoral and multi-level relationships".
- OECD: "Public intervention aiming to address societal challenges via a coordinated package of research and innovation policy measures. It spans several stages of the innovation cycle from research to demonstration and market launch; crosses various policy fields; uses various instruments; is targeted towards ambitious and concrete goals in a defined timeframe".
- MIPO: "a directional policy that starts from the perspective of a societal problem, and focuses on the formulation and implementation of a goal-oriented strategy by acknowledging the degree of wickedness of the underlying challenge, and the active role of policy in ensuring coordinated action and legitimacy of both problems and innovative solutions across multiple actors". See also MIPO's position paper¹ on MIP.

While these definitions put the emphasis on different aspects of this comprehensive policy approach, they all converge towards *three main features of MIPs*: 1) stronger strategic orientation towards clearly defined challenge-based goals, 2) better coordination across existing disciplinary, sectoral and policy silos, and 3) more effective implementation to achieve the common goals.

Missions for wicked problems

The missions of today focus on tackling *wicked societal problems*, which is fundamentally different from the big science missions and technology missions of the past. In our workshops, we aim to focus on today's, particularly challenging societal missions. Targeting wicked problems means that practitioners working with MIP need to deal with three aspects^{2,3}:

- *High contestation* – as stakeholders involved in the mission design process have different perceptions about the nature of a societal problem and the solutions they consider relevant and attractive.
- *High complexity* – the complex and interconnected nature of societal problems and different types of solutions raises questions of ‘Who is responsible?’ and ‘How to cooperate?’. Missions may require entire innovation ecosystems to transform.
- *High uncertainty* – as knowledge on problems and solutions is often lacking or fragmented, such as the long term environmental, social and economic impacts of certain solutions or even of non-action.

Finally, some societal problems, like climate change, also have a sense of *urgency* (although not always acknowledged by all stakeholders), making the MIP process even more challenging. However, this sense of urgency is also a key triggering factor in several MIPs.

Focus of the first workshop: ‘scoping and agenda setting’

Practitioners need to acknowledge and deal with these wicked characteristics in their mission processes, ranging from selecting and defining a clear goal (the mission), over mobilizing stakeholders and networks in the different stages of the MIP process, to the evaluation of missions. The first MIPO-OECD workshop focused on the early stage of the mission-orientation process, i.e. the ‘scoping and agenda setting’ of MIPs.

From ongoing interactions with policy makers engaged with missions, we have learned that various tensions might occur during the scoping and agenda setting part of the mission process. A wide mission scope, for instance, increases chances of finding the ‘best’ solutions, but risks that resources are spread out too thinly and that the high uncertainty resulting from too many solutions stalls the mission. Similarly, an open stakeholder dialogue allows for broad support and creative inputs, but it is expensive and might invite conflicts that cannot be overcome. The workshop served to learn from practitioners’ recent experiences on formulating missions statements and developing agendas on how to pursue these missions.

Disclaimer: every mission is unique – not all lessons apply equally!

To make sense of the broad range of missions being defined, researchers have made various attempts to typify missions. The following distinctions are made:

- *Problem-led vs. solution-led missions*³. Problem-led missions focus on defining the problem into an actionable, broadly supported mission, before pursuing the development and use of innovative solutions. Solution-led missions center around a solution that has potential to contribute to overcoming different societal or economic problems.
- *Incremental vs. radical missions*. Missions requiring marginally novel solutions developed by established innovation ecosystems are a different approach from missions that require radically new solutions that can only be developed by fundamentally transformed innovation ecosystems.
- *Missions with developed or undeveloped solutions*. Depending on the stage of development of the solutions, policy should support innovation activities ranging from exploratory research to upscaling.
- *Missions requiring technological and/or behavioral solutions*. Innovation policy is well versed in supporting technological solutions, but not in supporting behavioral solutions, like reducing consumption, which are typically addressed by sector or domain-specific policies.
- *Different mission approaches*. Some participants limited it to science & technology programs; others used it to coordinate various policies beyond innovation alone; others again developed mission policy outside the discourse and framing of MIP.

2. Inventory of observations during the workshop

In the above we showed that missions are unique and may evolve, which implies that there is *no one-size-fits-all approach*. Hence, lessons learned from one context should not be applied to another, without examining implications of contextual differences. This underlines the importance of learning-by-doing when engaging with MIP.

In the following we inventory the different observations made in the workshop. However, these observations are highly context specific, but unfortunately, it was often not possible to fully relay these contexts in the breakout sessions. Consider this when taking note of the following workshop observations.

Formulate a goal that is legitimate, measurable, and in keeping with policy mandates

Participants indicated that governments looking to initiate MIP directed at societal challenges, could get a head start by building on the UN *Sustainable Development Goals*. First, because the SDGs reflect sustainability in the broadest sense – allowing for flexibility in

focusing the mission. Second, SDG targets and indicators have been developed that provide handholds for more specific MIP. Without proper indicators and monitoring progress, mission goals become arbitrary targets devoid of meaning. Third, and perhaps most importantly, 193 governments have approved the SDGs in 2015 with a commitment to deliver in 2030. This represents a solid basis of legitimacy which may be necessary to overcome opposition to the new role of government in directing innovation processes to overcome societal challenges. At the same time, it can be a challenge to determine the degree of detail and depth of the various SDG targets and indicators; involving stakeholders is crucial to find the right level of detail.

Selecting a societal challenge is however not only about finding a challenge worthy of pursuit, but should also *consider an organization's expertise and policy and regulatory mandate to pursue the challenge*. The same holds for the organization's ability to attribute innovation funding to a mission – ministries without budgets are expected to have difficulties triggering commitment from corporate interests.

As opposed to defining a mission and then building coalitions, some participants experienced it as fruitful to *build on existing coalitions* of actors that have already formed around a societal challenge. This may safeguard stakeholder commitment – although it is important to reflect on stakeholder representation in existing coalitions.

Ensure legitimacy for not just individual missions, but also the missions approach itself

Top-level political backup may be necessary to start and maintain a mission. This is however hard to obtain due to the novelty of the MIP concept and uncertainty about the role of the government it demands. Certain politicians and ministries may consider missions as interventionist, technocratic or consider it threatening to ministerial power and budgets. In some cases, technology-fix thinking and the linear model of innovation even dominates policy making, based on the premise that societal problems will automatically be solved by funding public research. Effective missions, however, should probably move beyond R&D funding. Opposition to mission thinking, in particular to moonshot-type, top-down missions, can result from the memories of failures from the 60s and 70s of 'picking winners'. Finally, participants indicated that a shift in mentality is needed amongst civil servants, from protecting Ministers to participative civil servants that stimulate mutual learning in missions through 'learning arenas'.

Participants suggested different *ways of mitigating opposition to the MIP approach*, including preventing certain terminology (e.g. 'picking'); linking missions to SDGs; using societal-challenge-related framings (e.g. 'green'); placing modern missions and MIPs in the context of 'transformative innovation policy', aimed at changing socio-economic structures. Finally, it has been noted that the label of missions itself is less important than the actual practice of setting ambitious goals and engaging stakeholders in the pursuit of that goal.

Practitioners also highlighted the importance of *urgency* in overcoming opposition. The urgency of dealing with for example wars, disease and natural disasters has resulted in

substantial political backing for governmental action in the past. Participants stress that if some of this urgency can be harnessed for MIP, political and stakeholder commitment may be more likely.

When determining mission directionality, balance solution exploration and exploitation

Participants stressed it is important to *balance between exploitation of existing solutions*, meaning the reaping of low hanging fruits for quick (e.g. CO2 emission reduction) gains, *and the exploration of radically new solutions for the future*, meaning the solution pathways that can actually meet the long term (2040/2050) mission goals. Too much exploitation risks lock-in on existing solutions, while too much exploration may miss out on some easy gains or may even remain in the ivory tower of research and development. Particularly urgent missions require an aggressive approach towards upscaling and wider diffusion of solutions, instead of always researching and developing the best future solution. For many societal problems, there are plenty of solutions already; the problem is widespread adoption. In such cases, governments should focus on making lighthouse projects, or system demonstratorsⁱ, more visible and create market incentives to foster upscaling, instead of remaining stuck in the R&D stage. Hence, *establishing the state of development of the solutions for the societal problem is a crucial step in determining the mix of innovation policy instruments supporting the mission.*

Related to the previous is the *timeframe* that missions aim for. 2050 targets typically signal explicitly that current solutions will have no place in 2050, and direct the search for radically new solutions. They are, however, not very actionable as they signal no urgency – just consider the timespan of governments, not to mention the short-term economic performance indicators by which corporate management is judged by investors. 2030 targets are already much more appealing, but don't give as clearly a signal of the future society we need. *Why not combine targets via milestones?*

Look for combinations of technological and behavioral solutions

Missions that only focus on technological solutions and omit behavioral solutions are likely to fail. *It is important to recognize the power of behavioral solutions.* They can be stand-alone solutions, like reducing energy consumption or travelling less. But they can also support or even be a prerequisite of technological solutions, think about charging behaviors for electric vehicles. Finally, behavioral solutions can ease the challenges of technological solutions. Car sharing for example *could* (not will!) reduce the demand for cars, and thereby the total number of electric vehicles. *Traditional innovation policies are less likely to leverage the benefits of behavioral solutions.*

ⁱ "A systems demonstrator is an inspirational and tangible vehicle for change, demonstrating what is possible at the level of whole systems." - VINNOVA⁴. Examples are streets, farms or campuses.

To make wicked societal challenges more feasible and actionable, some participants have broken challenges down along the lines of existing coordination structures, albeit at the risk of maintaining silos. This allowed for building on e.g., technology-specific or sector-specific consortia of scientists, industry experts and policy makers (triple helix – typically too narrow for mission consultation processes) as well as civil society (quadruple helix). These consortia then defined the agenda for innovative solutions. This risks however overlooking cross-sectoral coordination, which everyone agrees remains important to adequately tackle challenges, to exploit synergies and to safeguard compatibility of solutions. It is also essential to specify to what extent the coordination structures are mobilized only to develop (and implement) solutions, or also part of setting the mission goals in the first place. *At this point it is unclear what division of roles works best under which conditions.*

Leverage existing agendas and structures, but also depart from them

Sometimes missions build on policy legacies oriented towards fostering economic competitiveness. Participants indicate that marrying this orientation with wicked societal problems in a MIP approach is challenging. Participants use concepts like *'green growth'* to facilitate this integration, although the underlying assumption, that sustained economic growth can be environmentally sustainable, *is doubtful.*

Agencies can take on a neutral broker role. One participant's agency has invited different governmental bodies and helped them formulate missions. Hosting conversations via this neutral party helped in breaking down departmental silos. Breaking down departmental silos may also result in pooling resources to create larger budgets that generate more momentum in solution development.

Defining missions with a *broad range of stakeholders* (at least quadruple helix) *that are 'willing'* allows agencies to depart from existing agendas and break lock-ins while maintaining stakeholder commitment. Practitioners working on urgent missions aiming to move to upscaling stage, should be cautious in involving powerful, established industry (associations) with explicit interests in maintaining the status quo just for the sake of involving all stakeholders.

Finally, *scenario approaches* can be useful for missions tackling wicked societal problems. It is important not to dismiss less conventional solutions as unfeasible at the outset; some participants experienced these scenarios as instrumental in first exploring the economic, social and environmental consequences of such solutions.

Create competition between stakeholders and know the pioneers and laggards

Many practitioners perceive stakeholder involvement as the biggest challenge in mission formulation processes. One fundamental question in gaining support for an ambitious mission, is *how to deal with pioneers and laggards.* It is always important to identify the pioneers of industry and take them onboard – they are more willing to support ambitious

goals than representatives of collective interest groups (notably industry associations that benefit from the status quo).

Another expert recommends creating some sense of *competition between stakeholders* in supporting and achieving the mission, allowing for moving targets that differentiate between what stakeholders can realistically achieve. This may be particularly useful when uncertainty about expected mission progress is high and can be achieved by setting up a clear set of indicators and transparently monitoring the progress of each stakeholder towards meeting the mission. This creates another performance indicator by which actors, particularly firms, compete.

Many practitioners distinguished practices for a top-down vs. bottom-up approach. Typically, this decision is context specific – some governments are policy-led while others see what missions gain traction in terms of corporate or community buy-in (which begs the question of how to avoid capture).

Bottom-up approaches should physically engage stakeholders at an early stage

Bottom-up stakeholder involvement approaches can generate creativity, different views and more support, easing solution implementation at a later stage. The problem with bottom-up approaches is that their effectiveness is dependent on the ability of people being able to articulate the wicked problem and to envision ad-hoc solutions. Participants identified several practices to deal with this:

- It can be challenging to be really inclusive. It is important in such projects to *move beyond the usual suspects* of industry and academia, but to also include the end users (e.g. kids for school food).
- It is important to *involve* citizens and other stakeholders *in an early stage*, when the mission is broad and specify its focus along the way. Don't ask them how to solve their problem, but take a more anthropological approach and listen to them explaining their problems first and create a step by step joint learning and iterative process so that they get a feeling of co-ownership of the problem.
- *Create real life examples* of problem-solution interfaces and have face-to-face interactions, through e.g. workshops or living labs. This eases articulation and makes stakeholders enthusiastic and more committed to the mission.
- Avoid sending long questionnaires as a defacto substitute for real interaction.
- Make sure to create a *neutral environment* and use 'neutral' canvasses to collect collective input of a variety of stakeholders.
- *Design thinking can be very helpful in organizing the stakeholder involvement process* – see Box 1 for an overview of VINNOVA's take on its design principles.

Box 1, Ten design principles for mission prototypes – by VINNOVA⁴

Outcomes: The prototype must indicate how it delivers against, or refines, core shared outcomes, and agreed mission trajectories.

Scale: the prototype must initiate and nurture interaction or impact at next scales above and below. Scale can be organizational and spatial.

Vehicle: The prototype should indicate what existing and widespread system elements can be incorporated as the ‘carrier’ for ideas.

Data: the prototype must create new strategic data for shared impacts and value, whilst building new capacity for managing such data.

Conditions: the prototype must uncover, articulate, and initiate necessary changes in regulation, policy, financing, and incentives.

Capability: the prototype must develop skillsets, perspectives or organizational realignments necessary for missions.

Context: the prototype must engage in new user research and ethnography, adding to the understanding of user needs and desires.

Map: the prototype must describe how it interacts with, and refines, an overall systems-map for the mission.

Engagement: the prototype must use citizen-facing formats to articulate intent, co-design action and outcomes, and stimulate discussion.

Agility: the prototype should describe an adaptive strategy for delivery, indicating how it is able to react to changing conditions

Top-down approaches should reflect critically on whom to involve

The benefit of a top-down approach lies in creating momentum for upscaling – particularly important for urgent missions. A risk however is to stay stuck with existing players and their problem views and preferred solutions. Suggested practices to overcome this were:

- *Maintain broad stakeholder involvement vs. time and resources constraints* (some practitioners have actively involved over 500 organizations in seven months). Sometimes stakeholder involvement can move even to the local community level – to move beyond existing agendas of e.g. strategic innovation programs. *Consider whether it is important to involve everyone* in the mission formulation process, or to ensure the buy-in of stakeholders not involved in other ways. Some practitioners opt to only involve the research and innovation stakeholders that commit (financial) resources to the mission, to quickly formulate concrete missions and guarantee commitment of investors. The risk is that the mission may be slowed down when innovations need to be adapted by stakeholder not involved.
- An adaptive approach, based on reflexive monitoring and evaluation, may be required for highly uncertain missions – see Box 2.
- Link the mission to the needs and demands of the stakeholders for their active engagement – see Box 2.

Box 2, the illustrative case of autonomous driving

The case of autonomous driving (a solution-centered mission) provides a nice illustration, as the impacts they can have on city planning problems, climate change and resource consumption remain unknown. As unanticipated negative side-effects emerge, the mission governance should monitor and evaluate these, and adapt the mission accordingly. Furthermore, this mission is codetermined by several global and local conditions, such as accelerated global competition in the automobile industry with newcomers (like Google, Tesla, Apple), concerns about the future industrial competitiveness, and shared concern about mobility problems in a society with aging and decreasing population. These conditions reflect both economic and societal interests, generating a strong motivation for policy makers, ministries, agencies, corporations, local communities and other stakeholders to participate in the mission program. There is a tension between dealing with the strong opinions of experts as well as involving the less articulated citizens.

3. References

- ¹ MJ Janssen, JCL Torrens, JH Wesseling, I Wanzenböck, J Patterson, 2020. Position paper 'Mission-oriented innovation policy observatory'. Available at: <https://www.uu.nl/sites/default/files/MIPO%20position%20paper%20-%20v21-05-2020.pdf>
- ² Alford, J., Head, B., 2017. Wicked and less wicked problems : A typology and a contingency framework. Policy Soc.
- ³ Wanzenböck, I., Wesseling, J., Frenken, K., Hekkert, M., Weber, M., 2019. A framework for mission-oriented innovation policy : Alternative pathways through the problem-solution space, Working Paper.
- ⁴ VINNOVA (BETA-2020) Designing Missions: Mission-oriented innovation in Sweden – a practice guide by Vinnova. BETA version.