



Perspectives

Response to “Missions and mission-oriented innovation policy for sustainability: A review and critical reflection”

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1. Introduction

Kirchherr et al. (2023) voice a set of critiques on the current literature about mission-oriented innovation policy (MOIP). The critiques can be summarized as follows: (1) MOIP literature suffers from a normativity bias; (2) a preference for top-down governance; (3) a blind eye for stakeholder monotony; (4) picking winners by governments; (5) unintended effects. After reviewing the selected articles that the authors list as foundational studies, I did not find a thread of evidence to support their claims. In fact, the literature seems to be very responsive to these issues, as I will demonstrate, point by point, from the very articles that were cited. The only possible conclusion after comparing the critiques with the reviewed literature is that Kirchherr et al. base their criticisms on presumptions, rather than a close reading of the literature.

Now, let's compare their critiques with the evidence presented in the reviewed literature.

2. Normativity bias

First, the authors criticize scholars for a simplistic view on sustainability challenges. They suggest that the articles they reviewed assume that sustainability challenges are tame problems and that the scholars are not aware of the wickedness of the challenges at hand. Kirchherr and colleagues do not do justice to the articles that have been reviewed. For example, Georghiou et al. (2018, page 5) contrast technological missions with a Type B mission "... where solutions are unknown and the problems are 'wicked' and escape simple definition – here the historical archetype is Nixon's War on Cancer but wider societal problems such as sustainability or migration also come into this category". When problems are wicked, different stakeholders have contradictory perspectives on the problem. This is also acknowledged by Janssen et al. (2021 p 440): "Recent findings from transformative innovation policy in Sweden (Grillitsch et al., 2019) suggest that alignment of interests can be critical for effectively providing directionality. Taking such observations to missions, one may ask which interests are explicitly or implicitly prioritized, and how are they represented".

One of the reviewed articles is Wanzenböck et al. (2020). The core contribution lies in unpacking the concept of wickedness in relation to mission-oriented innovation policies. "Our starting point is an analytical decomposition of societal problems and innovative solutions based on three dimensions of wickedness: (1) contestation; (2) complexity; and (3) uncertainty" (Wanzenböck et al., 2020, page 474). Wanzenböck and colleagues explain: "It is the 'wicked' nature of societal problems (Rittel and Webber 1973) which poses new questions and obstacles for innovation policy makers. Pursuing a societal mission oriented approach raises the issue of how to identify, define, and subsequently target a complex and unstructured problem, for which solutions—be they technological or non-technological—cannot be predefined (page 474). Wanzenböck et al. (2020) is well cited by the other MOIP scholars, indicating that this line of thinking is well

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accepted.

Serious authors on the topic of mission-oriented innovation policy acknowledge the struggle with wicked challenges, and therefore suggest a stronger engagement with empirical studies to evaluate how these policies deal with the wicked problems. Janssen et al. (2021) write: “To move forward in the debate and practice, we propose that further scrutinizing the narratives, promises, and practices which underpin this generation of missions is a necessary step to develop a robust empirical program that can substantiate the validity and efficacy of MIP’s bold ambitions” (page 439).

It is hard to understand how the claim by Kirchherr and colleagues can be made when the articles they review clearly and explicitly deal with the issue of problem wickedness.

3. Top down governance

The second critique is that the authors on MOIP implicitly are proponents of a strong government and top-down governance practices. What Kirchherr et al. may have overlooked is the fact that the innovation and sustainability transitions community views transitions as deep changes in socio-technical systems. The sheer complexity of these systems makes it extremely difficult, if not impossible, to effect change in a top-down manner. This is nicely spelled out by Ghosh et al. (2021, page 741): “No actor is in the position to control the process”. This is echoed by Janssen et al. (2021, page 440) “Hence, missions emerge as a negotiated outcome between different interests, concerns, and imperatives”. Janssen and colleagues continue on page 442: “Inclusion is not merely necessary for legitimizing missions vis-a-vis other stakeholders, but essential for genuinely addressing the underlying challenge and harnessing the capacity and resources from various groups”. Further, Georghiou et al. (2018, page 9) highlight the collective character of mission policy: “A mission must meet the aspirations of the citizens and needs of society with a pull from a market and a capacity to execute it. In this context, the way missions are set out from the design to the implementation is critical to avoid a mismatch between what should be done and what can be achieved. For R&I policy, this formulation must especially resonate with the dreams of citizens who are to implement these missions: researchers, innovators of all sorts, students and all of their communities”. Kivimaa (2022, page 56) even includes the importance of stakeholder variety in their definition of mission policy: “...The involvement of an expanding and more diverse group of actors into the processes where visions are formulated ... Experimental approaches in co-creating such visions”.

In conclusion, the authors of the foundational articles do not advocate top-down governance. Instead, they see merit in inclusive governance involving a wide range of stakeholders. The critique is therefore not justified.

4. Stakeholder monotony

The critique about stakeholder monotony is also hard to grasp. The authors acknowledge that the literature on MOIP is by no means exclusively focused on government, but then state that the problem is that the government is seen as a core actor or core mover. Let’s see how the reviewed articles discuss the role of the government vis-à-vis other actors.

Gosh et al. (2021, page 741) state: “How (transition outcomes) are enacted is a deeply political process, riddled with choices and conflicts between multiple actors with incongruent interests, this means inclusion of users, citizens, industry, government, knowledge institutions, and actors of the cultural dimension such as artists and media.”

Wanzenböck et al. (2020, page 476) state, “New innovation policies require new and more decentralized governance modes. With societal needs being a central innovation policy objective, there is an enlarged variety of stakeholders influencing and being influenced by policy agendas (Borras and Edler, 2014; Kuhlmann and Rip, 2018). Governance arrangements may thus have to go beyond well-established innovation systems built around universities or incumbent firms, as to involve citizens, users, professionals, NGOs, and lower governments (Frenken, 2017).”

Georghiou et al. (2018, page 11) state: “Achieving a mission therefore requires the concerted action of a wide array of players: not only scientists and technologists, but also manufacturers, users, public institutions, policy makers at all levels.”

The literature clearly and strongly argues for a wide set of stakeholders to engage in mission formulation and the subsequent actions. This follows in perfect harmony from key insights in sustainability transition literature. We know that the root cause of failing transitions is deeply locked in socio-technical systems that suffer from decades of path dependencies and co-evolutionary optimization processes between institutions, actor behavior and technologies. Weber and Rohracher (2012) have rightfully coined the term ‘transformational system failures’ to indicate that actors embedded in these locked-in socio-technical systems have a very hard time adjusting their course of innovation to major societal challenges. Vested interests, bounded rationality and strong interdependencies between actors prevent essential change from occurring. The systemic nature of this state of lock-in requires some form of coordination to help actors collectively find new development pathways. This is where missions come in. They may function as a lever to overcome this state of transformational failure. Missions may provide new directionality and may aid in overcoming the coordination problem with governmental organizations that play a role in facilitating such coordination in a multi-actor setting.

5. Picking winners by governments

Kirchherr et al. warn that governments may pick winners. In this case, they do not criticize the foundational articles. Instead, they acknowledge that picking winners is not something that is advocated in the literature. This is correct, as nicely put by Robinson and Mazzucato (2019, page 946): “In contrast to the centralized Type-1 missions such as the Apollo Program and the Manhattan Project, Type-2 mission-oriented policies need to be enacted in a decentralized and distributed innovation system, connecting broad, complex and often contested challenges with concrete problems to be solved by innovation actors. Type-2 policies can capitalize on bottom-up activities (common to

diffusion-oriented policies), but the agencies that facilitate them also must connect with political authorities”.

Instead, Kirchherr et al. underpin their argument by referring to empirical policy practices where a specific solution is seemingly promoted *ex ante*. Strangely enough, they refer to a circular economy policy that applies a ‘reduce, reuse, recycle’ framework. This is an example contrary to picking winners. An alternative name for this approach could be the ‘reduce, *and* reuse, *and* recycle’ framework. As such, it takes a wide range of solutions into account, such as increasing the material efficiency of a product to reusing a product several times, such as bottle refilling. For each of the categories, multiple options are available. The government is by no means picking a winner. In contrast, this policy framework summarizes the full breadth of options (Reike et al., 2018).

6. Unintended effects

Finally, the authors claim that the authors of the foundational articles are insufficiently aware of potential unintended effects. In my opinion, the authors of the foundational articles are quite reflexive when it comes to pursuing societal missions and the risks that they might entail. Kivimaa et al. (2022, page 56) state: “Policy processes should more explicitly consider the different side-effects of innovation policies” and Georghiou et al. (2018, page 6) state: “A caution is that challenges may be captured by fashion in terms of which issues rise to the top of the agenda and hence a rigorous process of evaluation is needed to ensure continuing relevance and commitment”. In Wanzenböck et al. (2020), uncertainty, limited knowledge, unintended consequences and side-effects are part of the definition of wickedness.

7. Conclusion and outlook for further research

The authors of the foundational articles seem to be very aware of the potential pitfalls of mission policies and do a thorough job in laying out some of the conditions for successful mission policy. At the same time, policy makers are putting mission-oriented paradigms into practice in different ways and with different ambitions. These are relative new phenomena, and the impact of mission policy still needs to be evaluated. It is therefore important to critically study what happens in practice. Instead of *ex ante* criticisms without serious empirical foundation, it makes more sense to first study the rise and consequences of mission policies empirically. The main purpose of Hekkert et al. (2020) was to present the first outline of a framework that can be used by scholars to do exactly that. If it turns out that, after careful evaluation, mission policy indeed suffers from top-down governance or a normativity bias, critique is justified. However, rather than conducting a rigorous and science-based review, Kirchherr et al. form an opinion void of empirical grounding about this new development based on presumptions and a pre-biased interpretation of the literature. The authors appear to stick to generic and sensationalist tropes rather than engage in robust scientific principles. Dealing with such important and contested topics in the sustainability transitions domain, we, as scholars, should adhere to the fundamental academic standards of diligent reading, proper referencing and nuanced assessments of empirical evidence.

Given the current strong emphasis of policy makers on societal challenges and the long timeframes needed to solve these challenges I expect that mission policies will stay popular in policy circles for the years to come. This is a great opportunity for scholars interested in empirically understanding the impact of mission policy on the dynamics of societal transitions. Important research topics are the following: First, how do missions come about and how do different actor groups influence the selection and scope of societal missions? Second, what is the *impact* of missions on the day-to-day behavior of actors and their transformation decisions? And more generally: do missions lead to acceleration of societal transformation? Third, how does mission policies play out at different policy scales (supra-national, national, regional) and what are the interaction effects? An interesting exercise would be to focus on a specific region where missions related to different societal problems and formulated at different policy scales all come together and influence each other. Fourth, in line with Braams et al. (2021) who show that public organizations struggle with the legitimacy to engage in transition policies we need to understand what the competences are that need to be built in public organizations and (public-private) policy networks to design and implement mission policies. To answer these empirical questions most likely requires advances in methodological tools (e.g., socio technical configuration analysis (Heiberg et al., 2022)) and conceptual frameworks (e.g., Mission Oriented Innovation Systems (Hekkert et al., 2020) and Transformative Innovation Policy framework (Gosh et al., 2021)).

Declaration of Competing Interest

The author declares that there no conflict of interest related to this publication.

Data availability

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