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THEORETICAL REFLECTIONS ON THE ROLE OF SOCIAL INNOVATION IN CHALLENGE AND GOAL-ORIENTED R&I AGENDA[1]

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1. INTRODUCTION

To overcome or at least contain major societal challenges such as the climate crisis, biodiversity crisis, resource crisis, democracy and trust crisis, as well as the energy and mobility transition (to recall just a few of the most important ones), the idea that technology alone will not be enough has become mainstream. There is growing consensus that complementary, sometimes alternative and transformative social innovations are needed (Weber et al., 2024; Edler 2022, Köhler et al. 2019; Wunder et al. 2019; Schot and Steinmueller 2018; Schartinger et al. 2017). The importance of social innovations for supporting transformation of our economy and society towards sustainability issues is also featured by the socio-technic and sustainability-transition view on system-transforming processes (Havas et al., 2023).

This paper endeavours to show why social innovations should also be included in challenge- and goal-oriented research agendas and how the latter need to

1 This paper builds on a policy brief of the author on "Die Rolle der Geistes-, Sozial- und Kulturwissenschaften und die Bedeutung von sozialer Innovation bei der Umsetzung der Missionsziele (The role of the humanities, social and cultural sciences and the importance of social innovation in achieving the Mission objectives)" published at the Austrian ERA Portal in March 2024. It takes up some ideas mentioned there and takes them further. (https://era.gv.at/public/documents/5030/Policy_Brief_GSK_soziale_Innovation_Missionen.pdf)

be conceptually expanded to ensure that this inclusion is successful. To derive and substantiate this approach, a definition of social innovation is contrasted with the traditional techno-economic understanding of innovation in Section 2 of this paper. An attempt is made to show that the analytical differences between the two definitory approaches are not insurmountable when it comes to innovation. Innovation is understood as the introduction of something new on the market or a social sphere that has value and impact and which is based on the translation of an idea or a concept into tangible outputs or practices. If such an innovation is successfully utilised (by businesses, consumers, civil society organisation, citizens etc.), it could lead to outcomes that improve efficiency and effectiveness, increase the capacity to act, and meets needs better than with existing solutions or even address so far unmet needs.

The third Section aims to explain that what is commonly understood or can be understood by social innovation is closely linked to the understanding of the term "social" in "social innovation" and that this understanding can by no means be taken for granted. The section attempts to show that a certain understanding of social innovation, which is linked to practice theory, provides a bridge for integrating social innovation into challenge and goal-oriented R&I programmes. This understanding emphasises the intentional change of social practices to achieve better solutions to certain social problems (*"social in a broad sense" – see Section 3 and 4)* than is possible with conventional practices. We will argue that such an approach to social innovation makes it applicable for addressing the subject of major societal challenges because it does not remain stuck in a socio-political understanding.

In the fourth Section, we retrace to anchor social innovation into Geel's multi-level perspective framework on socio-technical transitions (Geels, 2020 and 2002) by referring to the exceptional work by Weber et al. (2024). In this way, we show how to position social innovation within the theoretical framework of socio-technical system changes and thus make it more compatible with innovation policy.

The fifth and final Section concludes on how challenge- and goal-oriented R&I programmes should be changed to make them receptive to social innovation research. If technology alone will probably not be enough, as postulated in the opening sentence of this paper, than R&I programmes need to be composed in a holistic manner to achieve the societal goals addressed by transformative research agendas.

2. THE RELATIONSHIP BETWEEN SOCIAL AND TECHNICAL-ECONOMIC INNOVATION

In this Section, we aim to provide a solution to the question of what social innovation is and how it relates to technical and economic innovation. Although there are various definitions in scholarly discourse, coupled with conceptual ambiguity (van der Have and Rubalcaba, 2016; Cuna and Benneworth, 2013; Pol and Ville 2009), an understanding seems to be gaining ground, at least in German-speaking academic schools of thought, that defines social innovation *"as a new combination or figuration of practices in social fields of action that is initiated by certain actors or constellations of actors with the aim of overcoming needs and problems better than is possible with existing practices. An innovation is therefore social insofar as it changes social action and is socially accepted and disseminated in society"* (Howaldt and Schwarz, 2016, p. 6). The advantage of this somewhat unwieldy definition lies in its analytical and epistemological orientation power when compared with central definitory elements of the established techno-economic definition of innovation (see Schuch and Šalamon, 2021).

1. The object of social innovation in this definition is a changed social practice. However, as this school of thought is strongly rooted in practice theory, practice is not limited to the social practice of individual actions and actors but also considers structural and institutional changes, which in turn have an impact on collective practices. The "classical" object of techno-economic innovation is a new technology (technique) in form of a new product or production technology. The OECD subsumes product or production technology under the term technological innovations, but generally speaks of business innovation, which also includes organisational, managerial, marketing and business model innovations (OECD and Eurostat, 2018).

2. Novelty is an important characteristic of both social and techno-economic innovation, whereby new does not necessarily mean "radically new", but can also mean new in a specific context or for a specific actor. Especially when it comes to changes in social practices, it is actually less about the one 'heroic' first-mover and more about scaling and mainstreaming the new social practice in order to generate impact on a large scale, which possibly even contributes to social change.

3. While an economic purpose is decisive for technical-economic innovations, a social purpose is decisive for social innovations (Weber et al. 2024) to be able to overcome social problems better than with traditional practices. However, "social" is by no means limited to the socio-political context, but can include other social spheres such as a society's handling of natural resources or the maintenance of a basic trust in civil security.

4. What both forms of innovation have in common is an intentionality and solution orientation initiated by actors. While the actors for technical-economic innovations are more or less clearly defined (mainly business and R&D organisations), social innovators can be found in all segments of society. If actors, intention and solution orientation are no longer clearly identifiable, fuzzy and overlapping, for example due to multiple subsequent uses and adaptations, and become – so to say – "generalised" or "mainstream", then one will speak of the phenomenon of social change and no longer of a concrete social innovation.

5. Both forms of innovation require practical application. In the case of business innovations, this is economic practice; in the case of social innovation, it is social practice. If there is no application, then we speak of an invention or idea. With social innovations, however, sometimes the 'prophetic' idea, expressed through *"the definition and articulation of new social facts"* (McGowan et al. 2021; p. 21), can lead to certain implementations being initiated.[2]

2 This is where the discourse on whether advocacy is already a social innovation comes in. In the context of the definition of SI used here, advocacy per se is not a social innovation because the immediate solution orientation (expressed by a new product, a new service or a changed practice etc.) can be missing. Advocacy usually draws attention to a problem (e.g. the effects of climate change). Sometimes, however, advocacy also propagates solutions (e.g. 100 km/h on motorways), although these are often not implemented (and therefore not used).

Table 1 summarises the similarities and differences between techno-economic innovation and social innovation.

Tab. 1: Similarities and differences between techno-economic innovation and social innovation in a nutshell

Category	Techno-economic innovation	Social innovation
Object of innovation	a changed technology/product	a changed social practice
Novelty	new in a specific context or for an actor (mostly companies, but can be other actors too)	new in a specific context or for an actor (no ex-ante restriction to a specific actor)
Purpose	economic purpose to cope with problems/needs/wants better than with conventional technologies/products (solution-orientation!)	social purpose to cope with problems better than with conventional practices (solution-orientation!)
Intentionality	prompted by certain actors	prompted by certain actors
Application	in practice	in practice

Source: adapted from Schuch and Šalamon, 2021.

It is also important to recognise that social innovations are not a dichotomous contrast to techno-economic innovations. According to Weber et al. (2024) innovations can be purely technological, non-technological, or a combination of the two, that is, socio-technical. Social innovations can be triggered by technology and technology can also be actively utilised for social innovations. An illustrative example for this combination are digitally supported social innovations (Bria et al, 2016), which were triggered for instance by the use of smartphones for the organisation of work, leisure, care-taking, education, etc. Thus, the differentiation between technological and social innovation turns out to be rather artificial, as most innovations rely to some degree both on new technologies and non-technological changes (Weber et al., 2024). The history of ideas on social innovation is rich in this respect (see Godin and Schubert, 2021; and Godin 2015 for a detailed reflection). However, Edwards-Schachter and Wallace (2017) found that the discourse about social innovation became increasingly neglected during 1975 to 1995, when the focus on techno-economic innovation became dominant both in academic and policy circles making social innova-

tion a peripheral issue, although social innovation in relation to socio-technical innovation did not entirely disappear (Schuch, 2023; Streicher and Schuch, 2022).

There are also social innovations in which technology plays no significant role. The early days of veganism, still considered "esoteric" by many in Europe only ten to twenty years ago, could be an example of this, although the vegan industry has made enormous technological progress with significant investments in the meantime. In 2023, the global vegan food market was valued at more than USD 37 billion, growing at a compound annual growth rate of 13.5% during the forecast period to 2032[3]. However, veganism started primarily as a social movement, which quickly responded with no- or low-tech supported social innovations such as vegan cooking classes to meet its needs and, over the course of a few decades, revolutionised a dominant social practice and a long-standing business model from a niche[4]. As an increasingly "mainstream or generalised" social practice, it reduces animal suffering, which for many was and is a central motive for an intended effect, and it reduces greenhouse gas emissions from animals (which is probably more of an indirect and unintended effect).

3. THE MEANING OF "SOCIAL" IN SOCIAL INNOVATION?

The understanding of the term "social innovation" presented in the section above postulates the importance of social innovation for innovation and change, but does not yet clarify its function or its substance in relation to transformation or social change, which is why we attempt an approximation in this section by reflecting on the different meanings of "social" in the use of the term "social innovation", without plunging into the depths of sociological subtleties and paradigm battles.[5]

3 https://www.fortunebusinessinsights.com/de/markt-f-r-vegane-lebensmittel-106421; accessed on 11 June 2024.

4 Very recently, Austria established a job profile and apprenticeship for vegan and vegetarian cookery as of 2025, which signals a transition from a niche to a mainstreamed practice with new institutional characteristics.

5 We are explicitly looking forward to feedback on the simplifications made here, so that we can either develop the concept further or discontinue it.

Table 2 attempts to differentiate the meaning of "social" in the term "social innovation" with reference to current discourses, whereby a simple scheme is deliberately presented to make the different attributions of meaning to the term "social" more clearly comprehensible.

Tab. 2: Dimensions of the term "social" in social innovation discourses

Dimensions of the term "social" in SI discourses

Social = 'Help for the socially disadvantaged' = socio-political meaning	**Social** = 'doing good' = normative meaning	**Social** = ,changing social relations and status' = socio-structural perspective	**Social** = ,changing social practices' = behavioural perspective

Convergence in SI practice, although the socio-political approach is more narrow negating ecological concerns in their substance as an object of SI, which, however, occupy an important space in the 'doing good' approach.

Sometimes combined in SI practice.

Potential Key aspects for transformative social innovation

The majority of articles in relevant social innovation journals such as "International Journal of Social Entrepreneurship and Innovation", the "Stanford Social Innovation Review" or "The European Public & Social Innovation Review" as well as contributions at major international social innovation research conferences (such as ISIRC) pursue a socio-politically connoted understanding of the term social innovation. "Social" here gets the notion of "charitable, helpful, merciful"; and relates to measures to improve the economic and/or social situation of disadvantaged social groups in particular. In this context, social innovations often refer to the improvement of the living conditions of socially disadvantaged groups, which in turn can be defined very diversely, depending on the object of investigation and research question (e.g. minorities of all kinds). This rather dominant and, of course, very important approach for society is outlined in the first pillar in Table 2.

This understanding of social innovation is naturally subject to some criticism. This includes, for example, the limited target group focus on socially disadvantaged groups only and the restricted socio-politically focus, whereby the distinction between "social needs" and "social wants" often remains unclear, as does the question of who actually has the power of definition and agenda

setting[6]. And, although the meaningfulness of socio-politically motivated social innovation should of course not be disputed per se, the question also arises as to what extent social innovation in this understanding is actually just a substitute for the failures of (regular) social policy and policies. Social innovations that compensate for social grievances to prevent bad things from happening and take the pressure off an overheated cooking pot (metaphorically speaking) also tend to stabilise the established socio-political regime more than to reform or even transform it.

This second understanding of social innovation is linked to the first approach, which also understands the term "social" in social innovation very normatively in the sense of "doing something good". This second understanding of "social", however, transcends the thematic socio-political agenda of the first approach by taking a broader view on "social challenges or problems" and, for example, also addresses social problems in dealing with nature. This perspective opens up the inclusion of several different target groups, not just marginalised groups. In essence, the difference between this second and the first understanding of the term is that "doing good" cannot be understood exclusively in socio-political terms, but also includes other aspects, such as social innovations that strive for other improvements in the real world, e.g. ecological improvements, or common good issues such as in the field of mobility or energy provision. Sometimes both approaches can be found in combination (e.g. social innovations dealing with energy poverty or climate resilience of marginalised groups).

A fundamental point of criticism of the "doing good" approach in general is the normative dilemma of deciding what is actually "good" and who has the power to define it in view of different interests and perceptions, not least among target groups that come from and have been socialised in certain coercive milieus. In this context, there is also the accusation of "teleological naivety". This refers to the often naïve self-image of social innovators that they assume to only do good, but sometimes neglect or even negate power relations, social structures, conflicts of interest and rebound effects triggered by their interventions.

The third conceptual understanding of social innovation outlined in Table 2 focuses on the purpose of changing social interactions, relationships and the social status of those affected. It is a socio-structural perspective that is often characterised by keywords such as "empowerment", "ownership" and "participation" (*have a say*). It refers to the capacity to act. Here, too, the distinction

6 This also points to the question of the role of a certain marginalised group as passive object or as an active subject.

between this and the other conceptual understandings is by no means clear-cut, as there are also cases in practice where a connection between the "doing good" approach and the socio-structural approach is aspired. The frequently quoted EU terminology of social innovation used by the European Social Fund in the sense of *"social in its ends and in its means"* indicates this connection, in which the process design of social innovation is understood to be just as central as the actual goal (e.g. better care; easier access etc.) (European Commission, 2021). When designing a socially innovative process, particular emphasis is placed on aspects such as inclusion, democratic participation and empowerment, i.e. not just better provision of help for a "care case". However, cases of substantial participation (beyond pure contribution) tend to be rare or abstract because there are intersectional restrictions that often cannot be substantially overcome by individual social innovations. The socio-structural perspective can also be a bridge between the first two, very normative understandings of the term "social" and the fourth understanding discussed here, because the changes in social relations can affect both the micro level and the macro level. An example of the changes in social relationships at the micro level are street newspapers, which have turned (sometimes begging) homeless people into vendors and thus improved their social status. Examples on the macro level were the abolition of slavery or serfdom, or nowadays the recognition of a gender beyond the male-female dichotomy. The latter examples not only changed social relationships but also institutional structures, which in turn changed (or are in the process of changing) collective and individual practices.

The fourth prototypical understanding of the term "social" in social innovation shown in Table 2 focuses on changing social practice(s) and can be regarded as behaviourally oriented. Practice means more than an activity; practice also refers to networks of practice, institutions that promote or constrain certain practices, cognitive frameworks that give meaning to certain practices, etc. This understanding, which also forms the basis of the definition of social innovation presented in Section 2, is of interest because it refers to practices in a wide variety of spheres of social life and is not limited to socio-political or philanthropic areas.

Social innovations, understood as intentional social practice changes, prompted by certain actors, with the aim of overcoming needs and problems better than is possible with existing practices, can take place in a wide variety of areas such as the way

- how we consume (e.g. veganism; shared economy; packaging-free shopping);

- how we live and organise ourselves (e.g. digitalisation of social relationships; new working modes such as working from home; shared flats for elderly people);
- how we produce (e.g. circular economy; bioeconomy; community-based agriculture; energy communities);
- how we create and reproduce meaning (e.g. global/local; digital/non-digital; both formal and informal);
- and the way we interact with our environment (e.g. changing mobility behaviour to help tackling the climate crisis; urban gardening as an approach to prevent biodegradation; socio-ecological use and partnership models to reduce waste of resources).

Central points of criticism to this understanding of social innovation refer to the difficult but in fact promising distinction between social innovation and social change (and thus between agency and behavioural change), or the difficult operationalisation of this understanding in real-world applications. Moreover, if the focus on practice changes lacks the dimension of a "social purpose" as a demarcation to the economic profit-making purpose, then also changed social practices in business such as the introduction of Taylorism at the beginning of the 20th century or other organisational changes in business operations could be regarded as social innovation too. However, such an unbounded understanding of social practices in the context of social innovations would undermine the identity core of a social innovation, namely its social purpose. Such a delimited understanding, which ignores the difference between "economic" and "social" purpose also endangers the definitional and epistemological content and power of social innovation to provide hermeneutic orientation (Schuch and Šalamon, 2021).

The practice-oriented focus of social innovation appears to be particularly interesting for the transformation discourse, not only because it opens up a broad space for social innovation action, but also because this approach can be grounded in practice theory (Howaldt and Schwarz, 2017), whereby elements of "behaviour" and "behavioural change" as well as "intentionality" and "agency" can both be considered and analysed. In practice theory, social practices can be scrutinised on different levels between action and structure, which, in addition to the structural context that expresses cultural knowledge, norms or values, also takes the subjective perspective into account. In real life, social practices consist of more or less organised bundles of activities. They are understood as social because they are shared by people and help us to unders-

tand the social world around us. Social practices, however, are subject to social change and social innovations can lead to new social practices and to social change as discussed in the next Section.

4. INTEGRATING SOCIAL INNOVATION IN CHALLENGE- AND GOAL-ORIENTED R&I AGENDAS

While we are aware of the differences between challenge- and goal-oriented R&I, we believe that these are at an abstract level not so much of primary importance in relation to the logic presented. Both, challenge- and goal-oriented innovation agendas often, but not always, point to the same need, namely, to support the transformation of our societies (including the way how we produce and consume) in the direction of ecological, economic and social sustainability. That this claim may be unattainable or even could have dangerous implications for a free social order is not something we want to go into here. However, the necessity of institutional and practice change is considered as a crucial factor in achieving broader or more narrow goals stipulated by several challenge and goal-oriented R&I agendas including the EU Missions. Havas et al. (2023) define goal-oriented transformative change as a closely interrelated set of fundamental changes at the level of socio-technical or an entire socio-economic system, with changes simultaneously affecting its underlying technologies, business models, cognitive frames, institutions, networks as well as practices, initiated by various types of actors to achieve a major overarching goal.

The emphasis of new social practices also makes it easier to understand social innovations as part of new social practices that can be either system-stabilising (e.g. to take the pressure out of an acute problem situation) or system-transforming, which manifests itself in institutional pressure, the breaking of path dependencies and – as a result – in institutional change (Haxeltine et al., 2017). Avelino et al. (2019; p. 196) understand transformative social innovation *"as social innovation that challenges, alters or replaces dominant institutions in the social context"* and as *"irreversible, persistent adjustment in societal value, outlooks and behaviours".* Bundles of new social practices can lead to a reconfiguration of dominant practices and institutions and can contribute via such processes to social change. Social change, in turn, is understood in terms of co-evolutionary changes in structures, policies, institutions, practices and behaviours. These are often supported by technology. The recursive relationship between social

innovation and the institutionalisation of new social practices is similar to evolutionary and complex systems thinking about technological innovation (Weber et al., 2024).

The understanding of transformative social innovation opens a bridge to the multi-level perspective framework on transition (Geels, 2002), which is a process-oriented dynamic heuristic of a system in flux, that argues that sustainability transitions cannot be achieved as merely bottom-up or top-down processes but require an interplay of micro-level niche developments and meso-level regime changes. In this heuristic, the niche level provides space for experimentation, including experimentation for social innovations. It is the locus where it is possible to deviate from an existing practice and obtain knowledge about user behaviour, collaboration needs, new practices and rules (Smith and Raven, 2012). The regime level, on the other hand, provides stability through its dominant institutions, infrastructures, and a common understanding of problems and possible solutions. Weber et al. (2024) mention in their Multi-Level Perspective on Social Innovation, which builds on the heuristics of Geels, that the regime level is governed or influenced by the following three social forces: institutions, social network and cognitive frames.

Moving novel socially innovative solutions that meet social needs or wants better than traditional ones from the niche to the regime level is not just a matter of diffusion and upscaling, which also results in a lot of trial and error but requires the embedding of these new solutions in institutional environments that may themselves equally require major changes (Weber et al., 2024). However, incumbent regime actors might be tempted to hinder social innovation initiatives if their status is challenged by them. Such a conflict can either lead to the failure and decline of the social innovation or to its continuous improvement and persistence. In the latter case of success, Weber et al. (2024, p. 58) explain that *"a process of reframing and adapting institutional frameworks, policies, and practices begins that opens up institutional space in the regime for the new Social innovation to inhabit and leads to the circulation and anchoring of the new knowledge associated with it."* They further argue that regime changes caused by successful transformative social innovation initiatives (or bundles of social innovations) are usually characterised by low speed and broad scope, which means that they could need decades to unfold (low speed) but can lead to a broad scope of changes too. Examples for such a system transition are the energy or the mobility transition (see Weber et al., 2024).

The third and most abstract (highest) level in this multi-level perspective on transition heuristics is that of the socio-technical landscape (Geels 2002),

which provides even stronger structuration and guidance through cultural norms, cognitive beliefs, or existential external pressures such as climate crisis, but is beyond the influence of single actors and considered as a slowly changing context both for (social) innovation and socio-technical transformation. In this evolutionary thinking, the concept of social exnovation becomes important too, which is understood as the purposive and explicit phasing out or modification of unsustainable social practices and institutions.

Although social innovation has been addressed in the multi-level perspective framework on transition only in recent years, it seems that this framework is sufficiently open and flexible to accommodate social innovations and how they evolve from niches to widespread solutions and practices as shown by Weber et al. (2024). Moreover, the sustainability transition literature, which has been stressing environmental aspects also opened up to social issues recently (e.g. in relation to just transitions).

Edler et al. (2022) have analysed the policy approaches for promoting social innovation in Germany with regard to mission-oriented innovation policy (MOIP) and transformative innovation policy (TIP). In transformative innovation policy (TIP), socially desirable transformation dynamics are taken up and strengthened (Diercks et al. 2019; Schot and Steinmueller 2018; Steward 2012). This involves identifying social innovations in their niche, creating scope for bottom-up dynamics and improving the conditions for further development through scaling-up or system-wide adaptation (scaling-out). In contrast, the MOIP (Larrue 2021; Mazzucato 2018) defines very specific goals (missions) in the political process, which are then to be achieved through the mobilisation of innovation. In terms of social innovation, the MOIP goes beyond the emergence of social innovations and deliberately poses the question what new social practices could be initiated to achieve mission goals. Experimental spaces that are set up and supported in a transdisciplinary scientific manner are essential for this. However, Edler et al. (2022) also state that neither the initiation nor mobilisation of social innovations play a major role in EU Missions. This is also due to the conceptual deficit to consider social innovation as an adequate lever. Without appropriate political support, e.g. through funding measures, the potential of social innovation, expressed in initiated new practices and the willingness of citizens to change their behaviour, will not be exploited.

5. CONCLUSIONS

To understand and utilise the potential of social innovation for challenge- and goal-oriented transformative R&I approaches, it is firstly important to move social innovation away from the purely socio-political perspective that has dominated social innovation research to date. The success of transformation towards sustainability will not depend so much on convincing marginalised groups to adopt sustainable social practices, but on whether it is possible to convince the majority (i.e. usually the broad middle class) to do so. The latter also has significantly greater power to bring about change than marginalised groups.

Looking at the SDGs also makes clear that many of the goals postulated there, some of which also provide guidance for the European Framework Programme for Research and Innovation (Horizon Europe) (Mayer and Schuch, 2019), cannot be achieved through technology (alone) (e.g. *"Gender Equality"; "No Poverty"; "Good Health and Wellbeing"; "Reduced Inequalities"*; to name just a few; see also Wilsdon et al., 2023, on the strong contribution of SSH[7] in SDG-related research). In the first five defined EU Missions for instance *("Cancer", "Cities", "Climate", "Soil", "Waters"),* which are part of Horizon Europe, the technological framing is still dominant, but by no means exclusive[8]. Even if the EU Missions provide a rather technological and, in some cases, even limited transformative perspective, social innovations, understood as new social practices in the definition presented in Section 3, could find their place in them[9]. R&I policy, however, needs to recognise that to achieve the objectives of challenge- or goal-oriented R&I programmes fairly and integratively, it needs to enable

7 SSH= Social Sciences and Humanities

8 The Horizon Europe Regulation (2020) defines "missions" as follows: ‚mission' means a portfolio of excellence-based and impact-driven R&I actions across disciplines and sectors intended to:
- achieve, within a set timeframe, a measurable goal that could not be achieved through individual actions,
- have impact on society and policy-making through science and technology, and
- be relevant for a significant part of the European population and a wide range of European citizens.

9 Examples of this could be new public health processes for the early detection of cancer (especially in men); patient-inclusive monitoring of diseases/health; changes in eating habits and lifestyles; new business models in the circular economy through the involvement of citizens and consumers; climate-conscious and resilient urban planning, development and usage models; alternatives to dominant mobility behaviour; self-organised energy communities and much more. The social and economic sciences can also contribute to a better understanding of social developments in cross-mission issues too (such as topics relating to fairness, social resistance, the risk of poverty through missions, environmental economics or legal research on property/common property).

appropriate strategic and operational measures and instruments for the synergetic integration of social innovation and social innovation research into such programmes. Furthermore, to strengthen the socio-ecological resilience, EU Mission agendas should be set up inclusively from the outset, i.e. with the involvement of citizens and civil society organisations, which can be important incubators of social innovations too.

It is also important to move away from the heroic and equally naïve idea that social innovations only create something good. We need to accept that every social innovation inevitably inheres interests and power relations and creates different degrees of *"empowerment"* and *"(dis)empowerment"* (Avelino et al., 2019). Veganism makes few friends with milk producers and pig farmers. However, the more farmers keep their animals in unworthy conditions, i.e. do not change their traditional capitalistic farming practices, the more veganism will grow and take away the guild's dominant business model.

Transformation tasks will also meet with resistance, not only from dominant companies, capitalistic practices and regulations, but also from ordinary people who fear that their freedoms will somehow be restricted (e.g. the freedom to drive a combustion car into the city centre). To understand the resistance to transformational endeavours, to shed light on it and to develop social exnovation from unsustainable practices, and – probably most important - to translate this topic into a rational social discourse, comprehensive SSH research is needed. On the other hand, to take such topics on board, SSH has to be prepared to break out of its academic, too often self-referential comfort zone. Thus, the SSH are also called upon to redefine their relationship and function to society and the grand challenges (see König, Nowotny and Schuch, 2019).

Finally, since the contribution of (transformative) social innovation to challenge- or goal-oriented R&I programmes is little known, which is partly due to the predominately marginal involvement and participation of SSH in general and social innovation research in particular in such programmes, inspiring national and international examples should be collected, analysed and prepared for the scientific discourse as well as for an integrative, mutually open dialogue between science and society through various formats.

Learning experiences from social innovation pilots within (future) challenge- or goal-oriented R&I programmes should then also be incorporated into the R&I policy discourse. Innovation policy should politically support and promote the diversity of social innovation in such a way that it can unfold its transformation potential constructively (see Eder et al., 2022). Challenge- and goal-oriented research funding would do well to grant space and support to social innovation

undertakings and to find the right balance between intervention and emergence. In the future, evaluations of challenge- and goal-oriented R&I programmes should then also determine whether these programmes provide sufficient space for social innovations, whether they support them adequately, and whether the programme regulations are conducive for social innovation and social innovation research or not. In this sense, design evaluations will be needed first, followed by process evaluations, which will have to be supplemented by impact evaluations in the future.

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