

RTI POLICY NOTE ON EVALUATING SOCIAL INNOVATIONS

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ABSTRACT

Expectations of research, technology and innovation (RTI) policy are shifting towards effectively addressing major societal challenges. Due to its potential to increase innovative dynamics, to develop new knowledge and create new solutions, social innovation is increasingly promoted. This raises questions about (potential) effects and impacts of social innovation. The assessment of impacts is a rather new topic in this field, respective research is still in its early stages. This paper proposes to focus on the change of social practices within RTI ecosystems when assessing social innovation. The ecosystem approach is not only a helpful concept to analyse the emergence and diffusion of social innovation in a specific context, it can also be used to support and guide policy design. Implication for evaluation design are discussed and analytical categories presented. A set of measurement dimensions is proposed that can be used in evaluation designs and for future research.

INTRODUCTION

The challenges society is faced with, such as climate protection, energy supply, demographic change and social inequalities, require far-reaching changes and new approaches. Technological contributions will be important but may not be sufficient. Social innovations are seen as a complementary or even alternative way to address these issues and drive social change. Although social innovation is not a new concept (Howaldt and Schwarz 2010, Godin 2012, Moulaert et al. 2013, Howaldt et al. 2015), its application to tackle major societal challenges is increasingly encouraged and promoted.

Since 2009, social innovation has become a key topic at European level and within EU strategies, aiming to support smart, sustainable and inclusive growth. In the 2010s, social innovation was promoted by the European Commission through various policies and initiatives in several policy fields, such as social policy, research and innovation policy, health care and economic policy. Social entrepreneurship research and training was widely included in higher education curricula (Schuch 2021). Aside from a few theoretical and political questions which were aimed in particular at developing a universal definition as well as attempts to classify social innovation normatively and politically, the emphasis was primarily on practical application in various policy areas and the associated scale-up challenges.

A growing number of countries in Europe have adopted a social innovation perspective in research, technology and innovation (RTI) policy planning and strategies. While growth and competitiveness remain key objectives, RTI policy is expected to make significant contributions to solutions and transition paths addressing societal challenges too. RTI policy's engagement with transformative mission policies, which are no longer viewed solely in technological terms but more inclusively, was conducive in this regard. Resulting from this, new and creative ways of cooperation in science, business and society are increasingly promoted to address socio-technical challenges and to increase innovation dynamics even beyond traditional innovation agents such as academia and industry.

The uptake of social innovation in the realm of RTI policy has consequences for the reflection on the actual relevance of the concept in this policy field, its potential application areas as well as its outcomes and impacts. However, it seems that traditional evaluation approaches are not well suited for assessing the emergent dynamics and effects of social innovations. Apart from the diversity of concepts and definitions of social innovation, issues are the lack of knowledge regarding preconditions, potentials and hurdles for the development and diffusion of social innovation as well as the availability of relevant measurement dimensions. Reflecting on the long-term effects of social innovations is a new topic. Current research shows that assessments of social innovation in this regard have mostly been focusing on the immediate effects of individual projects or interventions as well as on benefits for organisations (Streicher 2020, Mildenerger et al. 2020), many of which are only loosely connected to RTI policy. Far less attention has been paid to long-term, overarching analyses of impacts.

This paper aims to extend the understanding of how RTI evaluations can capture the effects of social innovations better, which points are to be taken into account when assessing them and what might be further considered for future impact analysis. It builds on a discussion paper¹ that explores the potential impact of social innovations in the context of Austrian RTI policy. The paper at hand is structured as follows: First, the conceptualisation of social innovation in RTI is discussed; second, examples of RTI policies aiming to change social practices and corresponding examples of evaluation approaches are presented; third, implications for evaluation designs are addressed and potential measurement dimensions to be considered in evaluation designs are suggested; and finally, a conclusion and an outlook on future work is provided.

CONCEPTUAL UNDERSTANDINGS OF SOCIAL INNOVATION

Despite significant attempts to establish a widely accepted definition of social innovation in recent years, the term is still conceptualised and defined in numerous ways by practitioners and researchers (e.g. Schuch and Šalamon 2021, Westley 2013). It is often understood as an umbrella term that encompasses “a very broad range of activity” (TEPSIE 2014), made up of specific social innovations, such as microfinance and fair trade, social entrepreneurship and social enterprise as well as newer approaches like social innovation labs and incubators (SIG 2016). In their review, Milley et al. (2018) concluded that social innovation is also referred to as a process of developing (creative) solutions to complex, multi-dimensional challenges. A corresponding highly cited definition of social innovation describes it as “*the development and implementation of novel interventions, processes, programmes, products or models to meet social needs*” (European Commission 2013, p. 6).

A great number of definitions and approaches convey a normative understanding of social innovations (Pol and Ville, 2009), ranging from narrowly defined application areas of human welfare enhancement (e.g. self-help groups of people with rare diseases) to new social transformative approaches to address pressing societal problems, such as the grand challenges (European Commission 2009, 2011). These problems are complex and feature substantial interdependencies among multiple systems and actors. Hence, social innovation may also produce unintended (negative) effects, which are rarely discussed (“dark side of social innovation”, e.g. Larsson and Brandsen 2016, Mildenerger et al. 2020). Like technical innovations, social innovations can generate positive and negative, direct and indirect effects, and can lead to unintended or intended positive or negative consequences.

The way this paper approaches social innovation is by drawing attention to social practices, how they form and evolve, how they shape action such as participation and cooperation, and how they change ways of doing things. Howaldt and Schwarz (2010, p. 89) define social innovation as “*an intentional, targeted recombination or reconfiguration of social practices, which is attributable to certain actors or groups of actors in particular areas of action or social context, with the goal of solving problems or satisfying needs better than is possible based on established practices*”. The issues of context, here in particular referring to actors and interactions among them, as well as roles and structures are foregrounded. This

makes social innovation more tangible in the RTI context, particularly for developing effective evaluation designs and facilitating the identification and measurement of related effects.

It is important to develop a profound understanding of the various aspects that shape social innovation performance. This means studying the different phases in which social innovation can play a role, i.e. from idea generation to systematic diffusion and scaling (Murray et al. 2010) in order to better understand and evaluate the processes involved. Differentiating social innovations from underlying technology-driven innovations presents a particular challenge. Social innovation can act as an enabler for technologies to become established or diffused (e.g. participatory design processes). Social innovation and technology can also depend on each other (e.g. car-sharing). Sometimes, technological advances are also a precondition and necessary tool for a new social innovation (e.g. 3D printers for do-it-yourself purposes or maker communities). Last but not least, social innovation may also work independently from any RTI developments. Such independent social innovations, however, are not in the focus of this paper.

A promising concept for innovation context analysis is the so-called ecosystem approach (Domanski et al. 2020, Terstriep et al. 2020, Domanski 2018a, Domanski 2018b). It is based on the assumption that new, application-oriented knowledge is, on the one hand, best generated through a multi-perspective approach in order to anticipate and avoid potential target ambiguities, usage conflicts, adaptation requirements and rebound effects. On the other hand, it allows for the highest possible matching of customer potentials and customer needs. Interdependencies and flows between actors are features of innovation ecosystems; roles, resources and structures are important analytical dimensions.

Social innovations affect or can originate from research and transfer processes and should be assessed against their background of emergence, i.e. their ecosystem. This helps to better understand and evaluate the processes involved, the conditions of success and failure, and how to shape ecosystems for social innovation. As stated in the underlying discussion paper, the formats and infrastructures that facilitate participation and interaction across research and transfer phases are of particular significance. Table 1 provides an overview of social innovation aspects that are currently identified or addressed by RTI policy making and lists potential evaluation foci. However, it is emphasised that social innovations are not only reinforced by stimulating ecosystems, but can contribute to (other) social innovations in RTI ecosystems themselves (see the following examples).

Table 1: Aspects of social innovation addressed by RTI policy in related transfer phases

Phase	RTI Policy	Evaluation foci
Research process	<ul style="list-style-type: none"> • Creating/directing/supporting thematic orientation and space (e.g. in calls), so that society (users, citizens, public and semi-public operators) can be more involved as innovation driver. • Offering participation formats (e.g. meetings, workshops, conferences). • Changing practice in the ongoing research process by interconnecting institutions, actors and stakeholders. 	<ul style="list-style-type: none"> • Assessment of degrees of freedom, inclusion potential and regulation (incl. financial rules) in programmes and calls. • Implementation of participation formats • Timing/extent of involvement of relevant target groups (in research questions, design, etc.); • Immediate change(s) in the relevant target groups within the research process. • Infrastructures: What was made available to whom and when and how was it taken up and used? In which way should infrastructures be designed to enable and promote social innovation? • Relevance of networks (e.g. existing competencies, access to resources or people, leverage and multiplier effects).

Results (output, outcome) of the research process	<ul style="list-style-type: none"> • Changing behaviour in target groups confronted with research results (e.g. as products or services). • Uptake and use of results by society. 	<ul style="list-style-type: none"> • Comparing the acceptance and usage of outputs by relevant target groups (pre-post comparison; with-without comparison). • Indirect changes within the relevant target groups, e.g. a change in social practice (long-term observation). • Spillovers to other social groups and initially non-targeted fields of application. • Spillovers and uptake by policy and regulation.
Feedback into new research processes and RTI policy	<ul style="list-style-type: none"> • Findings from the research process and (potential) behaviour change feed back into new research processes, measures, policies. 	<ul style="list-style-type: none"> • Assessment of formats of feedback loops and level of involvement of participants therein. • Utilisation of results in future policies.

CHANGES IN SOCIAL RTI PRACTICES AND THEIR ASSESSMENT

In the following, three examples that illustrate aspects of social innovation currently addressed by RTI policy, and how they were evaluated, are briefly described. The first example is a programmatic social innovation that provides a supportive framework to incorporate the gen-

der dimension into technology development. The second example is an organisational social innovation that has contributed to gender equality in university appointment processes. The third example is an institutional social innovation ecosystem approach that includes laypersons in the innovation process to better meet their individual needs. Overall, the examples show that RTI policy can act as an initiator of social innovation by facilitating changes in the organisation and implementation of research and innovation processes and the associated social practices.

Box 1: Changes of research processes and results in projects on equal opportunities

<p>AIM OF RTI POLICY</p> <p>Since 2008, the Austrian Research Promotion Agency (FFG) has been funding FEMtech research projects in research, technology and innovation to incorporate the gender dimension into technology development. With this funding line, the FFG aims to: (1) increase the acceptance of and interest in the topic of gender in research projects among researchers; (2) develop customised, innovative solutions that have a demonstration character and (3) increase the quality of technologies and products.</p> <p>As part of an impact evaluation, a case study analysis showed increased gender competence of researchers, which is used to write better research proposals in FEMtech and in other funding programmes. Some research performing organisations established themselves as key players who have carried out several FEMtech research projects with alternating partners. They familiarised newcomers with including the gender dimension in their research to improve results. Overall, the quality of the submitted proposals and funded projects has improved substantially since 2008. (cf. Palmén et al. 2020)</p>	<p>EVALUATIVE APPROACH</p> <p>The evaluation was designed with a mixed methods approach: In addition to the analysis of monitoring data at programme level made available by the FFG, a content analysis of the available project descriptions and a document analysis of former evaluations was conducted to identify outputs and outcomes of the funded projects. Moreover, qualitative interviews with representatives who have participated in three funded projects were carried out to gather more information about various kinds of effects of funded projects. The interviews enabled the evaluation team to capture qualitative outcomes and impacts of FEMtech research projects.</p> <p>To identify whether the target of increasing the community of researchers who deal with the gender dimension in research was attained, a network analysis was performed. In addition, the interviews provided information about the impact the funding programme had on the level of the scientists' changing research practices and thus also with regard to their acceptance of taking the gender dimension into account in research.</p>
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Box 2: Changes of social practices in appointment procedures for full professors**AIM OF RTI POLICY**

It is not only in science and research that the gender bias associated with selection processes for filling top positions is a central hurdle for women. Non-transparent decision-making processes or the existence of informal networks are stumbling blocks – even in formally regulated selection procedures.

One higher education policy programme that addressed this problem and aimed to trigger a change in traditional practices was the *excellentia* initiative (2007–2011) launched by the Austrian Federal Ministry of Science and Research (BMWF). Under *excellentia*, universities received a one-time bonus payment of up to € 70,000 for the additional appointment of women to professorships. The money paid out was to be used for gender equality measures. The bonus payment should initiate social innovation in appointment procedures. Specifically, the bonus was intended as an incentive for universities to reflect on existing regulations for appointment procedures with regard to gender bias and to develop alternatives. The evaluation of *excellentia* shows that this was the case at some universities and that an analysis of the appointment procedures was carried out to determine at which stages of the process the proportion of women decreases.

Based on these results, the processes were then adapted by, for example, defining binding evaluation criteria at the time the position was advertised. This was to avoid that criteria for individual applications were handled flexibly. In other cases, informal practices were formalised to reduce the influence of existing informal networks on the appointment process. (cf. Wroblewski 2015, 2014)

EVALUATIVE APPROACH

The evaluation design comprised an ongoing implementation evaluation as well as an ex-post evaluation of the programme impact. Evaluation results feed into programme implementation via interim reports and stakeholder workshops. The evaluation provided information on progress regarding the development of alternative social practices in appointment procedures already in interim reports to facilitate programme adaptation.

The evaluation was based on a mixed methods approach and focused on two impact dimensions: (1) the share of female professors and (2) the development of unbiased appointment procedures. Quantitative data was used to analyse women's participation in different stages of appointment procedures (applicants, hearing, shortlist) as well as the development of the share of female professors.

Case studies were conducted to analyse the appointment procedures regarding potentially gendered practices and the awareness of members of appointment committees and the rectorate regarding gender bias in appointment procedures. The case studies were based on the analysis of documents and guidelines defining the appointment procedure for full professors. Moreover, interviews with members of appointment committees and the rectorate were conducted to capture the change of social practices in appointment procedures and to analyse their awareness regarding gender bias in the procedure as well as how they interpreted and implemented guidelines.

Box 3: Changes of research processes and social practices through the maker movement**AIM OF RTI POLICY**

“Maker spaces” and the “Do-it-yourself movement” can be seen as social innovations within the RTI actor landscape. The RTI policy objective associated with the support of maker spaces is, firstly, to enlarge the innovation base by involving laypersons in practical technology development by supporting specific infrastructures. Secondly, these maker spaces serve to create very specific products and product designs the market has no corresponding offer for. Thirdly, a positive connotation and low-threshold access to technology should be propagated.

Open physical workshops (i.e. maker spaces) equipped with new (e.g. 3D printers) as well as traditional tools and technologies enable a bottom-up development of ideas into prototypes. Suggestions usually come from society and the maker population itself, and are put into practice by the steadily changing maker population under the guidance or with the help of the community. To secure their functionality, maker spaces are “curated”, i.e. organised and supervised. Maker communities build “collective intelligence” so that innovative ideas of civil society actors (individual citizens as well as formal and non-formal groups of citizens) are not abandoned for lack of know-how.

EVALUATIVE APPROACH

As of project inception, it was planned to monitor the performance of the CAREABLES project, evaluate the expected outcomes and assess its potential impact. A set of monitoring criteria and impact metrics was developed at the initial stage of the project. For the appropriate data collection, a set of quantitative and qualitative data collection instruments was developed to evaluate the project's performance at different points in time (Schaefer et al. 2018).

The objectives of the evaluation centred on (i) how the accessibility of the CAREABLES platform for open-source products could be improved, (ii) how well knowledge exchange worked and on the quality of collaboration, (iii) how documentation and replicability worked, (iv) and in how far the quality of life for people with special needs could be improved. The evaluation approach was based on a literature review and theoretical assessment of how to evaluate participatory co-design projects and collective awareness platforms (CAPs).

A special evaluation emphasis was on assessing the collaborative processes involved in the co-design of open healthcare as well as the potential of the developed CAREABLES platform, which was designed for documentation and sharing of open healthcare solutions. For the

The maker community is thus a new social practice for generating innovations, especially in the field of design and technology. An example of a maker community is the H2020 project CAREABLES (<https://www.careables.org>). The project is integrated into decentralised infrastructures (“maker spaces” in various European countries) and networks them around a common goal: the creation of open, inclusive and digitally supported health products together with the people concerned. Different (offline, online) formats and events are offered in which people with special needs work together with so-called “makers” (often creative thinkers, hobbyists). In the project, the methodology for the co-design of the products is developed and the cooperation is accompanied. Interested parties can download detailed documentation on individual “careables” via the CAREABLES platform, adapt and further develop them. A positive side effect of the cooperation with makers is the experience of self-empowerment and appreciation among those affected, which improves their quality of life.

latter, indicators of usability and user experience were used. The methods for that included “think aloud”, interviews, surveys, cognitive walk-throughs, logging data, etc. It could be demonstrated that some CAREABLES were diffused to other continents and significantly scaled-up. For knowledge exchange and quality of cooperation, multiple methods were used, including live-event evaluation cards (feedback), a focus group, and platform usage statistics. As regards the personal and social impact (i.e. quality of life), interviews and storytelling methods were applied.

EVALUATING SOCIAL INNOVATION

As shown by the examples above, the complexity of social innovations needs to be adequately dealt with in evaluation designs. Traditional evaluation approaches do not take specificities of social innovation into account appropriately (e.g. Preskill and Beer 2012, Weaver and Kemp 2017, Milley et al. 2018). Especially standard economic methods are criticised for not reflecting the full value of social effects that cannot be monetised or are difficult to monetise (Weaver and Kemp 2017, p. 10). One key issue raised in the evaluation literature is that mixed-methods approaches, tailored to purpose and context, which can potentially consider quantifiable (tangible, monetised) as well as qualitative outputs and outcomes that cannot be expressed in monetised forms are necessary to account for the complex nature of social innovations. The developmental evaluation approach formulated by Michael Quinn Patton (2011) is another frequent approach. Developmental evaluation “*seeks answers to questions that are relevant to innovation, by helping social innovation actors to take a broader systems perspective and help them navigate (inherently uncertain and judgement-based) processes of change, by making them reflect on their assets, their theory of change and the opportunities and dangers afforded by a changing context*” (Weaver and Kemp 2017, p. 4).

Developmental evaluations in the field of social innovation are based on the principles of participation, utilisation and reflexivity. To meet these expectations, a “fit-to-purpose” participatory approach is suggested which aims at establishing a collaborative structure between evaluators and relevant stakeholders. This collaboration should support mutual learning throughout the evaluation process. Hence, the evaluator acts as a strategic learning partner, a facilitator or a “critical friend” (Rallis and Rossmann 2000, Balthasar 2012) for reflexive processes. Furthermore,

the evaluation design should be flexible to respond to emerging issues and questions in the course of the innovation process.

In Table 2, categories of participation, interaction and technology integration are presented that should be considered when developing the evaluation design focusing on the effects and impacts of social innovation in the context of RTI. The targeted change of social practices may lead to different impacts like increasing citizenship or stakeholder participation in research and innovation processes, contribution to inclusive societies, a change of the political discourse or the adaptation of social practices through technological developments. Likewise, technology development and social innovation can go hand in hand through co-development processes. Technology can also be developed or adapted and used specifically for the deployment of social innovations.

The early involvement of relevant target groups in research processes, the joint formulation of problems, and the observation of changes in the target groups are important. Such changes in the research process as well as increased support from RTI policy for technologies that generate or enhance desired social innovations can lead to more inclusive and society-relevant research outputs. The table summarises potential goals of RTI policy and possible dimensions for measurement to be considered in evaluation designs. Ideally, the evaluation should capture individual level change as well as collective and systemic changes.

Table 2: Categories, goals and measurement dimensions

	Goals of RTI policy	Evaluation design	
		Qualitative dimensions	Quantitative dimensions
Participation	<ul style="list-style-type: none"> • Identification of new target groups • Involvement of relevant target groups, including civil society actors, NPOs, public and semi-public institutions that enhance welfare 	<ul style="list-style-type: none"> • Characteristics (type, structure) of target groups • Relevance and form of involvement 	<ul style="list-style-type: none"> • Number and socio-demographic structures of participants from relevant target groups • Extent, duration of involvement of relevant target groups (e.g. in research design) • Number of projects involving relevant stakeholders
	<ul style="list-style-type: none"> • Establishment of incentive systems for increasing the willingness to contribute to social innovations in exchange of science and practice, and/or • Development of (funding) measures that require or presuppose the participation of specific actors in RTI 	<ul style="list-style-type: none"> • Concepts and programme theory of initiatives implemented • Participation behaviour • Role and extent of inter- and transdisciplinarity • Development of and participation in networks • Type and purpose of outputs and outcomes (concepts, products, processes, services, changed framework conditions, changed regulations, changed policies) • Uptake of measures by target groups (e.g. specific application cases) 	<ul style="list-style-type: none"> • Number of measures (size of funding programmes, competitions, available budgets; input additionality, etc.) • Frequency and distribution of inter- and transdisciplinarity • Frequency and distribution of various types of links and relationships in networks • Number of outputs, outcomes (concepts, products, processes, services, changed framework conditions, changed regulations, changed policies) • Number of people affected by these outputs and outcomes • Resources spent on coordination and monitoring
	<ul style="list-style-type: none"> • Creation, provision of participation formats • Provision of joint infrastructures (testing environments, experimental laboratories, social labs) 	<ul style="list-style-type: none"> • Forms of participation • Purpose, acceptance and usage of infrastructure • Participation behaviour • Efficiency and flexibility of implementation 	<ul style="list-style-type: none"> • Resources spent on setting up and operating a facility • Number of formats, infrastructures • Update of formats, infrastructures
Inclusion	<ul style="list-style-type: none"> • Consideration of diversity in society • Promotion of participation, equal opportunities, gender equality • Empowerment of individuals • Capacity building of organisations 	<ul style="list-style-type: none"> • Qualitative actor feedback • Self-description of actors pre/post (e.g. encouragement, inspiration, appreciation, competence development) • Visibility of participation 	<ul style="list-style-type: none"> • Level of actor satisfaction • Number of actors who feel empowered • Number of actors who built up capacity
Changes in discourse	<ul style="list-style-type: none"> • Opening up new topics, perspectives • Changes in social interaction • Contribution to acceptance, dissemination and institutionalisation of social innovation 	<ul style="list-style-type: none"> • Development of new, improved competences, knowledge • Intensified networking • Changes in the population (e.g. attitude towards science) 	<ul style="list-style-type: none"> • Number, share of people with new/improved competences, knowledge • Links and relationships in networks • Number, share of people who have changed their attitude
Level and added value of technology integration	<ul style="list-style-type: none"> • Enabling new social practices through adequate technology input • Enabling technological diffusion through supportive social innovations • Co-design and mutually supportive co-development of new technologies and social innovations 	<ul style="list-style-type: none"> • Case studies in relation to • reinforcement effects, • acceptance, • innovation content (scope and scale) • Contribution to social welfare in the broadest sense 	<ul style="list-style-type: none"> • Speed of innovation, diffusion rates (roll-out) • Scale of social diffusion, levels of social acceptance, accessibility and affordability • Number of adoptions and adaptations in different regions, contexts or by different stakeholders (scaling-up)

CONCLUSION

Social innovations are more frequently being addressed in RTI policy. This raises questions about (potential) effects and impacts of social innovation. However, assessments of impacts is a new topic in this field, respective research is still in its early stages. While RTI policy has seen rapid developments in impact evaluations of technology and innovation promotion, it lacks understanding of the processes of social innovation and their effects, let alone a systematic approach to assess them.

To make social innovation more tangible in the RTI context, this paper proposes to focus on the change of social practices within RTI ecosystems when assessing social innovation. The ecosystem approach is considered a helpful concept to analyse the emergence and diffusion of social innovation in a specific context and to explore factors and mechanisms that shape success and failure, effects and impacts. Ideally, the ecosystem approach should not only be used for the evaluation of social innovation, but also to support and guide policy design. Thinking about and outlining expected impacts already when conceptualising the policy lays the groundwork for later evaluations.

For a context-aware evaluation design, the paper suggests drawing attention to the different phases of research and innovation in which social innovation can play a role. Particularly important are the formats and infrastructures that facilitate participation and interaction across research and transfer phases. To account for the complexity of social innovations adequately, a “fit-to-purpose” participatory approach is suggested that aims at establishing a collaborative structure between evaluators and relevant stakeholders and at advancing the learning experiences for everyone involved. Evaluation designs should consider categories of participation and inclusion, interaction and integration using qualitative and quantitative data. As a major contribution of this paper, a set of measurement dimensions alongside these categories is proposed that can be used for future work. In a next step, concrete indicators are to be developed in a systematic way, enabling long-term monitoring and comparison of social innovations.

In past RTI evaluations, little to no attention was paid to the question of social innovations that were triggered, reinforced or changed by technological developments or research. However, an increasingly mission-oriented RTI policy must address this and RTI evaluations dealing with transformative mission-oriented RTI policies need to expand knowledge about the effects of social innovation.

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