RISIS

RESEARCH INFRASTRUCTURE FOR SCIENCE AND INNOVATION POLICY STUDIES

WHAT IS REALLY SOCIAL INNOVATION IN PRACTICE?

CONTENTS

Social innovation (SI) is an ambiguous concept with multitude of definitions debated vigorously. While the primary impact of the definitional debate is on academic research, it also significantly shapes the scope and design of public policy. The motivation of this study is to analyse the correspondence of the **different definitions of SI in social innovation practice** and draw policy lessons. Through an extensive review of literature of the multitude of definitions and based on previous research, the researchers identify four overall components (**objectives; actors and actor interactions; output; innovativeness**) that the definitions use in different combinations. For the analysis it has been used the **European Social Innovation Database (ESID)**, a comprehensive database of social innovation projects utilising machine learning and text-mining to collect data. ESID does not adopt a specific definition of SI but scores projects based on the **four components** mentioned above, which enables its users to construct a query based on a preferred definition. The researchers consider these components as different types of SI, each indicating to a set of specific features. Based on over 6,000 SI projects included in ESID, University of Strathclyde analyse the prevalence of these types of SI as well as their relationship with each other, geography and topics. The policy brief is supported by a **web app (https://bit.ly/ESIDapp)** which enables the reader to view the underlying data and interactively engage with the analysis.

1. INTRODUCTION

Social innovation (SI) has increasingly been recognised by policymakers in Europe and the United States (US) as an **important driver of change.** The increased attention to SI was marked by event such as the establishment of The White House Office of Social Innovation and Civic Participation in the US in 2009 and the launch of the 2020 strategy in 2010, identifying Social Innovation as a field that should be nurtured in the **Innovation Union Flagship Initiative.** In 2013, the Social Investment package was launched to support EU member states in renewing their social protection systems, with a special focus placed on social innovation projects. The EU Commission subsequently adopted a more systematic approach, propagating and **encouraging social and open innovation through policies** on open innovation and open science as well as social protection policies. Social innovation became an opportunity for experimentation in multiple domains of government and industry through the Horizon 2020 and Collective Awareness Platforms for Social Innovation and Sustainability (CAPS) programme (Addarii and Lipparini, 2017).

While the term SI has been in circulation since the early 19th century (Godin, 2012), it still lacks conceptual clarity in spite of its rapid take-up since the early 2000s. The policy brief provides **an analysis of the correspondence of the various definitions of SI on real life projects** by employing European Social Innovation Database (ESID), a comprehensive and authoritative source of information for SI projects in Europe and beyond developed as part of the RISIS Project.

In the next section, an overview of ESID is illustrated as well as the flexible conceptual structure that enables the researchers to embrace variety of approaches to social innovation as well a typology of SI. In Section 3, the findings of the analysis of the projects contained in ESID are presented. Section 4 deal with the policy implications emerging from the study conducted by University of Strathclyde.

a data source of SI, mainly funded by the EU, they were mainly limited in size, scope and data collection methods.

This gap motivated the researchers to create ESID[1] which was first constructed as part of the **EU-funded KNOW-MAK project** and is currently a part of the **RISIS project.** ESID utilises **semi-automatic advanced machine learning** and natural language processing techniques to collect information about social innovation projects from the publicly available information on the web. ESID also uses some limited human annotation to train the machine learning models and to ensure the quality and the integrity of the data. Thanks to its innovative method, ESID offers the **advantage of being much more comprehensive** in size and themes it covers, a flexible conceptual structure, richer and more consistent information, and sustainability as it requires much less human involvement.

Currently, the main entity in ESID is **SI projects.** It also contains a number of project features, main ones being their scores on four SI criteria (see below), location (country, city, NUTS regions, approximate coordinates), topic (Key Enabling Technologies and Societal Grand Challenges adapted from H2020 priority areas), a short summary, URL, source from which we identified. In the first phase, ESID identified SI projects from over **90 known sources** (including previous limited databases, membership registers, prizes nominations, appearance in directly related media, etc.). Subsequently, the researchers crawled websites and other information on the web. By using this large corpus, the team then verified, extended and enriched the information on SI projects.

As discussed above, SI has a multitude of vigorously debated definitions. As humans do not have an agreement on the exact meaning of the concept, it was challenging to train a machine learning model on SI. To overcome this challenge, University of Strathclyde conducted a literature review based on previous work and identified four main elements all definitions use in different combinations and emphasis (Caulier-Grice et al., 2012, Choi and Majumdar, 2015, Dawson and Daniel, 2010, Ettorre et al., 2014, Grimm et al., 2013, Harrisson, 2013, Jessop et al., 2013, van der Have and Rubalcaba, 2016, Edwards-Schachter and Wallace, 2017):

1. Objectives: Social innovations satisfy societal needs - including the needs of particular social groups (or aim at social value creation) - that are usually not met by conventional innovative activity (c.f. "economic innovation"), either as a goal or end-product. As a result, social innovation does not produce conventional innovation outputs such as patents and publications.

2. Actors and actor interactions: Innovations that are created by actors who usually are not involved in "economic innovation," including informal actors, are also defined as social innovation. Some authors stress that innovations must involve predominantly new types of social interactions that achieve common goals and/or innovations that rely on trust rather than mutual-benefit relationships. Similarly, some authors consider innovations that involve different action and diffusion processes but ultimately result in social progress as social innovation.

3. Outputs/Outcomes: Early definitions of social innovation strongly relate it with the production of social technologies (c.f. innovation employing only "physical technologies") or "intangible innovation." This is complemented by some definitions, which indicate that social innovation changes the attitudes, behaviours and perceptions of the actors involved. Some other definitions stress the public good that social innovation creates. Social innovation is often associated with long-term institutional/cultural change.

4. Innovativeness: The majority of these definitions emphasise novelty and innovativeness as essential characteristics of social or other types of innovation, while there are others (Rogers, 2010) who relieve this criteria for social innovation. The novelty criteria are often seen as one of the key distinguishing factors between social innovation and social entrepreneurship (Cunha et al., 2015, Phillips et al., 2015). Similarly, most definitions share other essential characteristics of the classical OECD definition of ("technological product and process") innovation, namely involving a distinguishable practical activity (i.e. idea to be implemented) and resulting in new products, processes, services and models (OECD and EUROSTAT, 2005).

Rather than choosing a particular definition, ESID scores each project for the above four criteria on a three-point scale (**0 no indication of the criteria, 1 partially satisfies, 2 fully satisfies).** This enables its users to construct their own definition by filtering for the four scores.

The researchers experimented a number of different machine learning techniques for predicting the each of the criteria by analysing the text contained on the web.

The best performing set of models utilised the state of the art Bidirectional Encoder Representations from Transformers (BERT). BERT models performed about 90% (F1 Measure) on average on the evaluation data coded by humans. This is exceptionally high performance, considering the fact that the human coders agree on about 85% (inter-annotater agreement).

Currently ESID contains **11,441 projects from 153 countries.** Some of these projects are "negative examples" (e.g. scoring 0 for all four criteria) required for machine learning models. Furthermore, some projects do not have complete information (e.g. location not identified as yet or topics not matched). The analysis focuses on 6,341 "positive" projects for which complete information is guaranteed.

As part of RISIS 2, ESID will be improved in three main areas:

1. **Expansion**: the aim isto increase number of project to tens of thousands;

2. **Extension**: New features, such as aims and impact of projects, will be added;

3. **Dynamic retrieval**: the aim is to collect web data in regular intervals to be able to track the changes in projects.

3. FINDINGS

Our analysis of ESID shows that the four different criteria is distinct and indicate **a different dimension of the concept of SI** (correlation coefficient is about 0.50). While middle score ("1) is the most common, there is a substantial number of projects with low ("0") and high ("2) scores (Figure 1). This indicates that the umbrella concept of SI includes a number of different types. The four criteria used to classify projects in ESID are employed to create a typology:

• Objectives oriented: Criterion objectives scored higher than other criteria

• Outputs oriented: Criterion outputs scored higher than other criteria

• Actors oriented: Criterion actors scored higher than other criteria

• Innovativeness oriented: Criterion innovativeness scored higher than other criteria

• Multiple orientation: Two or three criteria scored same

• Balanced: All four criteria scored same

Figure 1. Projects by their Scores

While about **85% of the projects have multiple and balanced orientations** (the latter two types above), there are about **15% of the projects** in the database in which one criterion is markedly more important than the others. These former four types are important as they have a component more significant than others which might indicate a differential underlying practical and conceptual dynamic and consequent policy implications. These projects might not also be necessarily considered as SI by some SI definitions as most definitions combine multiple criteria.

Distribution of these types to geography reveals significant differences (Figure 2):

• Objectives oriented projects are related with addressing to a significant social need and constitutes about 8% of all "positive" projects in ESID. These projects have **significantly higher proportion in regions where economic and social development is lagging behind** (e.g. about 14% in Africa, Asia, and South and Central America) and in regions with high economic inequality (i.e. about 11% in North America), while they are less than the average in EU and non-EU Europe (5%);

• **Actors oriented projects are significantly higher in Europe,** compared to other regions. This is possibly because the EU definition and the consequent policy emphasis of SI focus on actors and actor interactions.

• Innovativeness oriented projects are markedly higher in North America than any other region due to the "innovation gap";

• Outputs oriented projects are small proportion of the total (about 2.5%) and do not have significant differences between regions.
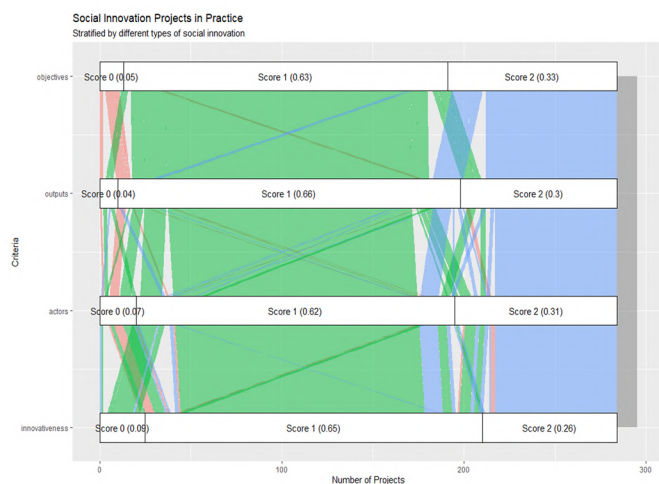
Figure 2. Types of SI by Region
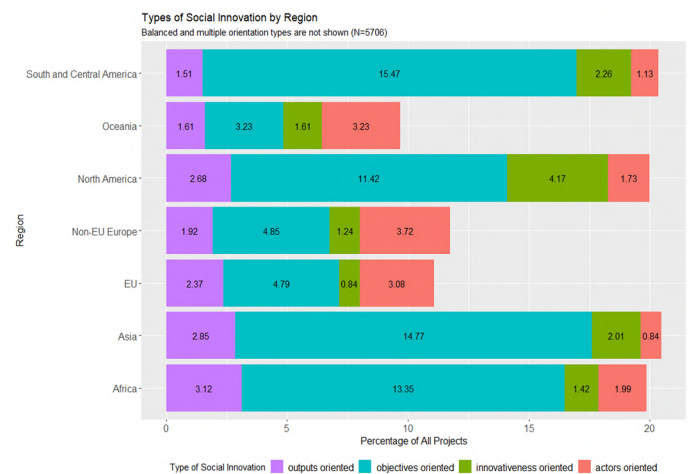
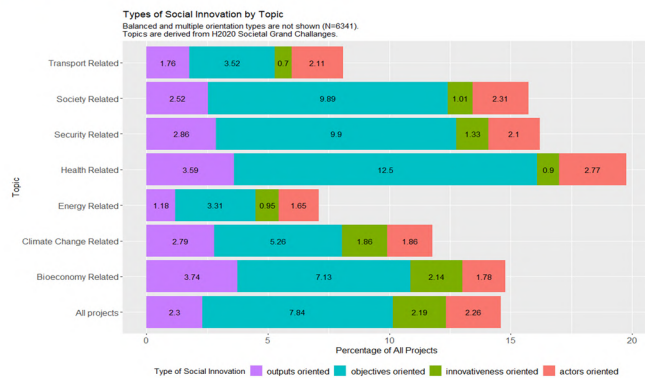The distribution of these types to different topics also presents a similar picture (Figure 3):

• Objectives oriented projects are more related with topics such as **health, security and society** while they are less related with energy and transport;

- Actors oriented projects are less related with energy and climate change topics;

- Innovativeness oriented projects are less associated with projects with an EU priority topic, except bioeconomy;

- Actors oriented projects are more associated with health-related topic, while they are less associated with energy, climate change and bioeconomy related topics.
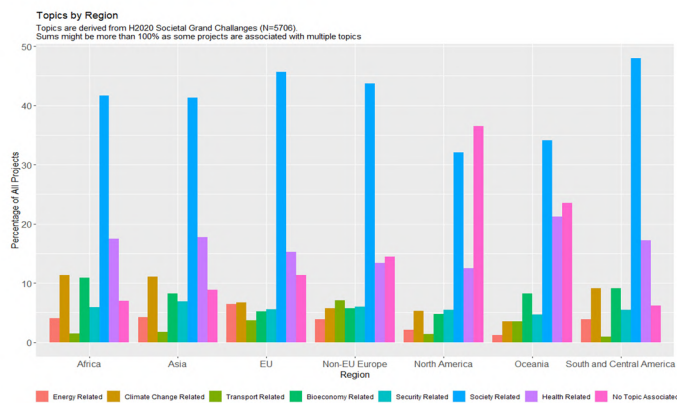
Figure 3. Types of SI by Topic

Types of Social Innovation by Topic
Balanced and multiple orientation types are not shown (N=6341).
Topics are derived from H2020 Societal Grand Challenges.

Finally, the **topics derived from EU policy priorities** have a significant correspondence in real life SI projects in the EU, with only about **15% of the projects not associated** with at least one of the topics compared to about 35% in North America. This is primarily due to North American projects being topic focused (mainly associated with only about 15% of the projects not associated with at least one of the topics compared to about 35% in North America. This is primarily due to North American projects being topic focused (mainly associated with only about 15% of the projects not associated with at least one of the topics compared to about 35% in North America.

This is primarily due to North American projects being topic focused (mainly associated with single topic), while **EU projects generally including multiple topics**. Furthermore, the relative importance of the topics is similar across all geographies except North America. Some of topics such as society are very broad (Figure 4).

Figure 4. Topics by Region

Topics by Region
Topics are derived from H2020 Societal Grand Challenges (N=5706).
Sums might be more than 100% as some projects are associated with multiple topics

4. POLICY IMPLICATIONS

Conventional innovation activity has widely accepted definitions, inclusion and exclusion criteria and measurement methods (i.e. OECD/EUROSTAT Frascati and Oslo Manuals). However, SI, as a concept in circulation almost as long as conventional innovation, is still vague with a multitude of definitions. While the vigorous debate on definitions is useful for conceptual study, not having and established and comprehensive definition hampers the empirical study. This also **risks policies that support SI to being too narrowly focused on their scope and design**. ESID utilises a conceptually flexible approach to identify and classify projects according to any of these definitions, through encapsulating all the elements variety of definitions employ. The analysis conducted by University of Strathclyde shows that the practical reality of SI does not correspond to strict and simple definitions featured in academic and policy literature.

An example of this narrow focus related to the **official European Commission SI definition** which limits SI to the objectives, and actors criteria with little emphasis on outputs and innovativeness. This kind of narrow focus might exclude about **25% of all SI projects** in practice. Furthermore, this might also lead to an under-appreciation of the features included in the other criteria: outputs criterion is related with long-term social change and transformative capacity and innovativeness criterion enables policymakers to make a clearer demarcation between SI and social entrepreneurship. This is also evident in this analysis as projects located in the EU has markedly lower emphasis on outputs, and innovativeness criteria, while they have more emphasis on actors and actor relations compared to North America.

The study also shows that there is significant **"policy pull"** on social innovation topics. Only about **10% of the projects are not associated by one of the EU priority societal grand challenges,** compared to one third of the North American projects. While this is primarily due to the substantially active policy engagement in the EU, it might also have adverse consequences of reducing diversity of topics.

Notes

REFERENCES

ADDARII, F. & LIPPARINI, F. 2017. Vision and trends of social innovation for Europe. Technical Report). Brussels: European Commission.

CAULIER-GRICE, J., DAVIES, A., PATRICK, R. & NORMAN, W. 2012. Social Innovation Overview: A deliverable of the project: "The theoretical, empirical and policy foundations for building social innovation in Europe" (TEPSIE). Brussels: The Young Foundation.

CHOI, N. & MAJUMDAR, S. 2015. Social innovation: Towards a conceptualisation. Technology and Innovation for Social Change. Springer India.

CUNHA, J., BENNEWORTH, P. & OLIVEIRA, P. 2015. Social entrepreneurship and social innovation: A conceptual distinction. Handbook of Research on Global Competitive Advantage through Innovation and Entrepreneurship. IGI Global.

DAWSON, P. & DANIEL, L. 2010. Understanding social innovation: a provisional framework. International Journal of Technology Management, 51, 9-21.

EDWARDS-SCHACHTER, M. & WALLACE, M. L. 2017. 'Shaken, but not stirred': Sixty years of defining social innovation. Technological Forecasting and Social Change, 119, 64-79.

ETTORRE, D., BELLANTUONO, N., SCOZZI, B. & PONTRANDOLFO, P. 2014. Towards a new definition of social innovation. Organizational Innovation and IT Governance in Emerging Economies. IGI Global.

GODIN, B. 2012. Social Innovation: Utopias of Innovation from c.1830 to the Present. Project on the Intellectual History of Innovation.

GRIMM, R., FOX, C., BAINES, S. & ALBERTSON, K. 2013. Social innovation, an answer to contemporary societal challenges? Locating the concept in theory and practice. Innovation, 26, 436-455.

HARRISSON, D. 2013. Social innovation: What is coming apart and what is being rebuilt? Challenge Social Innovation: Potentials for Business, Social Entrepreneurship, Welfare and Civil Society. Springer-Verlag Berlin Heidelberg.

JESSOP, B., MOULAERT, F., HULGÅRD, L. & HAMDOUCH, A. 2013. Social innovation research: a new stage in innovation analysis? Cheltenham, UK: 'Edward Elgar Publishing, Inc.'.

OECD AND EUROSTAT 2005. Oslo Manual: The measurement of scientific and technological activities, Proposed guidelines for collecting and interpreting innovation data, Paris, OECD.

PHILLIPS, W., LEE, H., GHOBADIAN, A., O'REGAN, N. & JAMES, P. 2015. Social Innovation and Social Entrepreneurship: A Systematic Review. Group and Organization Management, 40, 428-461.

ROGERS, E. M. 2010. Diffusion of innovations, Simon and Schuster.

VAN DER HAVE, R. P. & RUBALCABA, L. 2016. Social innovation research: An emerging area of innovation studies? Research Policy, 45, 1923-1935.

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